SPANISH INDUSTRIAL CAPABILITIES FOR BIG SCIENCE

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES
CDTI INNOVACIÓN

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Spanish Industrial Capabilities for Big Science

Ministerio de Ciencia, Innovación y Universidades

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CDTI

FOREWORD

In a rapidly changing world where we are facing increasingly complex climatic, economic and geopolitical challenges, international scientific collaborations emerge as a source of inspiration and knowledge to overcome and find new solutions to tackle these challenges. Humankind is inherently driven by a spirit to understand the universe and expand its knowledge, and in this context international collaborations and innovation thrive.

Big Science infrastructures are the backbone of European science. They attract technologists and scientists from various scientific disciplines and act as catalysts for the development of new concepts and theories. But beyond their contribution to science, Big Science facilities also foster economic development within the countries involved in their design and construction, requiring new technology solutions which improve companies' competitiveness and international projection.

For Spain, involvement in Big Science facilities is a driver to facilitate international collaboration, to test our capacities in very singular projects and to stimulate innovation. Together with the Ministry of Science, Innovation and Universities, CDTI Innovación has the mission to foster collaboration between the national and international Big Science research ecosystem and the Spanish industry. This is one of the cornerstones of our Strategic Plan 2024-2027, by which CDTI Innovation has the mandate to develop the Big Science market in Spain in collaboration with Big Science infrastructures and scientific institutions. This strategy is being pursued in the framework of international science facilities and also domestically with the network of national singular research infrastructures.

Spanish participation in large scientific facilities has contributed towards a significant advancement of Spanish science over recent years and has fostered the growth of our science industry sector. In the last twenty years, our industries have developed Big Science projects worth more than 2 billion euros in technologies of the uttermost complexity such as optomechanics, cryogenics and vacuum, magnets, diagnostics, new materials, power supplies, instrumentation & control, detectors and information and communication technologies.

Our strategy to get involved at the early stages of innovation is aimed at positioning Spain's industry in future exciting projects. Some noteworthy endeavours are the PRISMAC (Programme of High Field Superconducting Magnets) agreement between CERN, CIEMAT and CDTI Innovación for the design, prototyping, testing and industrial development in magnet engineering, assembly and qualification within the scope of the HL-LHC project and FCC study, or the precommercial procurement initiatives that we are currently running to develop prototypes for future scientific facilities such as IFMIF-DONES (a neutron accelerator based in Granada with a key role in the European fusion roadmap) or hadrontherapy facilities. Both of these initiatives have a clear positive societal impact.

This catalogue provides a complete overview of the technological capabilities of Spanish companies when working with Big Science facilities. With a consolidated industrial sector in this field, our industry is prepared to play a major role in the future, investing in R&D to push forward technological breakthroughs. Through these words I acknowledge the effort and passion of these companies.

We hope that scientists, companies and research infrastructures, as well as future partners, will find this compendium useful and that many successful partnerships will be encouraged to successfully face the challenges and opportunities ahead of us.

José Moisés Martín Carretero
Director General
CDTI INNOVATION

Hosting Organisation: **CDTI INNOVATION, E.P.E.**
Address: C/ Cid, 4. 28001, Madrid
Web: https://www.cdti.es/en/large-research-infrastructures
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Email: catalogogics@cdti.es

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES
CDTI INNOVACIÓN

CDTI AND BIG SCIENCE

CDTI Innovation is the national innovation agency belonging to the Spanish Ministry of Science, Innovation and Universities, which fosters the innovation of Spanish companies, with a special focus on the Big Science market. We run these activities from our headquarters in Madrid, supported by our international network.

We are the official Industrial Liaison Officer (ILO) for CERN, ESO, ESRF, ESS, European XFEL, F4E, ITER, ILL and SKAO, encouraging the involvement of Spanish industries in these organisations and providing support for others. CDTI also is the industrial expert in the Horizon Europe Research Infrastructures and EURATOM-Fusion programme committees. In addition CDTI Innovación promotes the participation of Spanish industry and its technology capabilities towards national research infrastructures included in the Map of Unique Science and Technology Infrastructures, managed by the Ministry of Science, Innovation and Universities. We are involved:

1. WITH INDUSTRY

- Raising awareness and informing potential suppliers about medium and long-term plans of the research infrastructures as well as forthcoming calls for tenders.
- Providing support to companies in their understanding of the technical, contractual and financial requirements to become a supplier.
- Monitoring awarded contracts to Spanish industry.

2. WITH RESEARCH INFRASTRUCTURES

- Informing research infrastructures about our national industrial capabilities.
- Supporting international and national research organisations to set up collaborations with industry in the R&D phase and promoting technology transfer activities, often through the participation in European projects.
- Providing advice on the definition and implementation of the organisations' purchasing rules.
- Organising industrial events, international infodays, Spanish days at the science facilities, national infodays and workshops.
- Fostering the use of innovation procurement in Big Science

3. WITH OUR DELEGATION

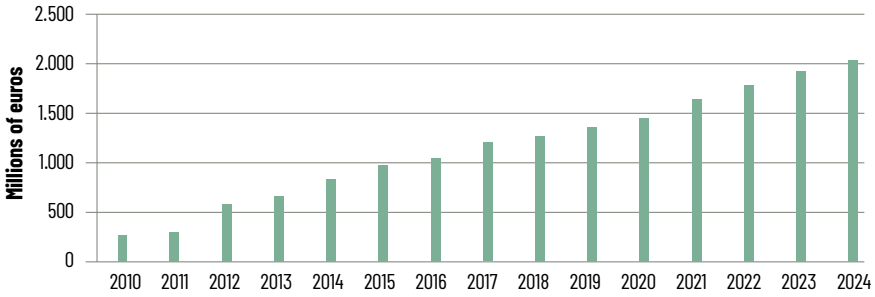
- Collaborating with the Spanish delegations to the research infrastructures' governance bodies as expert for industrial matters.
- Advising our ministry in the definition of in-kind contributions.
- Analysing industrial capacities for Spanish hosted research infrastructure projects.
- Collaborating with our ministry as member of the national research infrastructures committee, providing support for all industrial and technology-related matters.

Spanish pavilion at BSBF 2024 in Trieste, Italy

SPANISH SUPPLIERS IN BIG SCIENCE FACILITIES

Since 2005, Spanish industry has been awarded over 2 billion euros from Big Science facilities, won in a highly competitive market without rules of guaranteed georeturn. Our national industry has contributed to the main technological areas of these projects in areas as relevant as mechanical engineering, control systems, electro-magnetism and superconductivity, power systems, radiofrequency systems and cryogenics and vacuum.

Accumulated industrial Return return in Big Science Facilities - Astronomy, Particle Physics and Fusion (*)



* CERN, ESO, ESRF, ESS, European XFEL, F4E, IO, SKAO, PRISMAC

BIG SCIENCE FUNDING TOOLS

CDTI Innovación supports industrial research and innovation projects for large scientific facilities with a wide variety of funding instruments which cater for startups, individual projects, industrial consortia and collaboration with research institutions.

More information at:
https://www.cdti.es/en/rdi-support

CDTI headquarters, Madrid

Hosting Organisation: **INDUCIENCIA, THE SPANISH SCIENCE INDUSTRY TECHNOLOGY AND INNOVATION PLATFORM**
Address: Paseo Ubarburu 39, Oficina 308. 20014, Donostia-San Sebastián (Gipuzkoa)
Web: https://www.induciencia.es
Phone: [+34] 943 201 836
Email: s.tecnica@induciencia.es

DESCRIPTION

INDUCIENCIA Technology Platform is a structured forum, with the goal of aligning research and technological priorities around the Spanish science industry sector. It is led by the industry and managed by INEUSTAR, the Spanish science industry association. INDUCIENCIA gathers the Spanish agents involved in the science industry sector: Unique Scientific and Technological Infrastructures, companies of all sizes, universities, scientific facilities, research or technology centres and public bodies (CDTI, AEI, ICEX, etc.).

INDUCIENCIA is committed towards the market, enhancing innovation with the objective of assuring competitiveness, sustainability and growth of the science industry sector by promoting public-private collaborations.

Unique Scientific and Technological Infrastructures workshop (April 2022)

MAIN ACTIVITIES

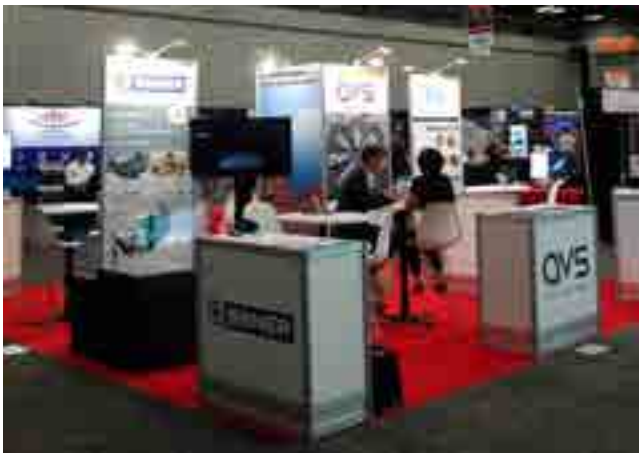
As the reference forum for collaborative activities, in close cooperation with the different stakeholders, INDUCIENCIA organizes different activities aiming at:

1. Improving Spanish Science Industry competitiveness by
   - Carrying out networking events
   - Developing specific training programs
   - Acting as consultant for public authorities
2. Encouraging R&D activities by
   - Identifying main common industry-academy R&D priorities
   - Coordinating and supporting collaborative projects
   - Fostering technology transfer
3. Promoting International opportunities by
   - Organising joint Spanish participation in different international forums (IPAC, SPIE, SOFT, LCWS, etc.)
   - Encouraging the analysis of international collaboration and industrial opportunities
   - Setting up direct/reverse missions

MEMBERSHIP INFORMATION

Any Spanish agent involved or interested in Science Industry sector can join INDUCIENCIA. Membership is free of charge and can be requested by filling in the following form:
https://www.induciencia.es/unete-a-la-plataforma/

ALBA Synchrotron workshop (May 2022)



SPIE booth

Big Science Industries

Company name:	**ACORDE**
Address:	El Castro 22N. 39011, Santander
Web:	http://www.acorde.com
Turnover:	7.34 million EUR in year 2023
Employees:	52 in year 2023
SME:	YES
Phone:	[+34] 942 764 400
Email:	acorde@acorde.com

ACORDE
Space & Defence
RF EXPERTS

ACTIVITY AND SKILLS

ACORDE, founded in 1999 and NATO AQAP-2110 certified, designs, develops and manufactures in-house high-performance RF subsystems from S band up to Q band, being a world reference in X and Ka bands. The company provides robust, reliable and field proven solutions to customers worldwide in Defense, Space, Scientific, Energy and Telecom markets.

ACORDE manufactures compact and lightweight high power BUCs, SSPAs, LNBs, LNAs, TLTs and frequency converters, in stand-alone or redundancy configurations, and versatile approaches such as dual and quad sub-bands integrations, both in standard and built-to-spec products. Customised RF electronics and advanced M&C systems are also provided to our demanding customers, all over the world.

Ka Band LNAs redundancy system

SKAO. South-Africa site

CONTRACTS FOR BIG SCIENCE FACILITIES

- [SKAO - AAC OMNISYS] SKA MID Band 1 Feed Package Controller (2023 - 2025)
  ACORDE provides the RF boards controlling the Feed Package of Band 1 Antennas for the South-African site of the program.
- [ESA - ESTEC] Event Horizon Imager (2018 - 2018)
  ACORDE provided RF modules (amplifiers and multipliers) for the ESTEC laboratory, aimed at testing the instrument, whose purpose is the high-resolution imaging of the shadows of supermassive black holes from space.
- [OTHER - INTA] BEPI COLOMBO Test Facilities
  (2010 - 2014)
  ACORDE provided High-Power RF amplifiers (18-40 GHz) for INTA testing laboratory, for RF the testing of BEPI COLOMBO, PAZ and GALILEO space programs.

RELEVANT R&D PROJECTS

- Deep Space Receivers (2021 - 2023)
  Redundancy LNAs systems for Deep Space data reception.
- [ALPHASAT] ESA-ALPHASAT (2012 - 2014)
  Aldo Paraboni Experiment. Dual Ka/Q band LNB.
- [PAZ] Ground Testing Equipment (2010 - 2012)
  PAZ Satellite ICCS and RF EGSE Instruments

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | ELECTRONICS AND OPTOELECTRONICS | INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS | DEFENSE | ENERGY | SPACE

CERTIFICATIONS

ISO-9001 | AQAP-2110

Company name:	**ADVANCE ENGINEERING MADEMAN S.L.**
Address:	Pol. Ind. La Cerrada II, 25. 39600, Maliaño (Cantabria)
Web:	http://www.avancem.es
Turnover:	1.02 million EUR in year 2024
Employees:	6 in year 2024
SME:	YES
Phone:	[+34] 942 252 007
Email:	eng@avancem.es

ACTIVITY AND SKILLS

Advance Engineering Mademan, S.L. (AVANCEM) is a technological based engineering company where innovation and R&D is in our DNA. Our know how is applied in Radiofrequency, Ultra High Vacuum, Cryogenics and precise Mechanics. We count with own manufacturing capabilities specialised in machining and welding. Our bridge cranes are 10Tm. Almost all activities are concentrated in our headquarters (10.000 m^2). In this sense we can provide a complete expertise cycle:

- Design Engineering
- Manufacturing engineering
- Manufacturing
- Integration (even in clean room)
- Verification & Test

Avancem provides our customers all the way up from the conceptual design to turnkey solutions. Our main customers are either private firms as public research centres in fields as particle accelerators, astrophysics, space, defence and industry.

RELEVANT R&D PROJECTS

- Design and development of a high power and efficiency microwave guiding system for research and telecommunicaction infrastructures (ECOGEN) (2021 - 2023)

CIEMAT - LIFIRE

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ET - IFAE] Manufacture of beampipe baffles (2024 - 2024)
  The baffles are a key component of the vacuum pilot sector of the Einstein Telescope developed at CERN
- [YEBES OBSERVATORY] Supply for the fitting out a class 10.000 clean room for assembling components (2024 - 2024)
- [CERN] Manufacture of tubes with cooling jacket (2024 - 2024)
- [ALBA] Manufacture of tube with flanges (2024 - 2024)
- [ESS - LUND-SWEDEN] Chopper top housings for ODIN AND HEIMDAL (2024 - 2024)
- [INTA] Feedtrough and connectors for the C2CC cryogenic system (2023 - 2024)
  Design and manufacture of feedthrough and connectors according to the requirement and characteristics of the cryogenic system, meeting the technical needs at the temperature leves, and fulfilling the requirement of maintaining vacuum (10e-6 mbar) within the cryostat system, while remaining magnetically isolated.
- [INTA] Vacuum subsystem for the ground calibration cryostat of ATHENA project (2023 - 2024)
  The vacuum subsystem is forme by: Line distributor, primary Vacuum line, and high vacuum line.
- [GTC] Manufacturing and supply of spare parts for the OSIRIS Slit subsystem (2023 - 2023)
  Machining and assembly of spare parts made of different materials such as aluminium, bronze and stainless steel
- [CERN] Design and supply of one storage structure and two transport trolleys (2023 - 2024)
  Structures designed with aluminium profile. In addition, the trolley has a lifting system. Both structures has 18 meters long.
- [INTA] Redesign, manufacturing and test of cryosections for the thermal characterisation of PLATO (2022)
- [CIEMAT] Design, manufacturing, supply, transport, installation and commisioning of a experimental setup to characterize burning in lithium (2022)
- [CIEMAT] Design, development and delivery of a complete system to test Ltihium events in support of IFMIF - DONES (2022)
- [IFCA] Design, manufacturing and commisioning of a cryostat to measure CCDs; Ironman (2021 - 2021)
- [INTA] Cynematic mounts for PLATO (2021 - 2022)
- [INTA] ISO-5 clean room for vibration tests in N-03 space programs department (2021 - 2022)
  Design, manufacture and commissioning of a REMOVABLE CLEAN ROOM (ISO-5) to cover a vibration zone, with contamination control, as well as temperature, humidity and pressure control to characterize PLATO. It is formed with mobile module to allow the analysis of large pieces.
- [Polytechnic University of Valencia] Manufacturing of PMTs for NEXT (2021 - 2022)
- [LSC] Machining of the radiopure copper shielding for NEXT (2021 - 2022)
  Machining of 40 copper bars up to 1,6 m long and 6 tons.
- [DIPC] Chemical cleaning and ectching of copper elements for NEXT (2021 - 2022)
  Cleaning of 40 copper bars up to 1,6 m. long and 6 tons.
- [GTC] Supply of a cryogenic cryocooler for the new detection subsystem Osiris (2021 - 2022)
- [ALBA] Precise motorised plataforms for LOREA (Ultra high vacuum) (2021 - 2021)

Modular cryostat

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | MECHANICS AND OPTOMECHANICS

MARKETS

DEFENSE | ENERGY | NUCLEAR | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**AERNNOVA AEROSPACE SAU.**
Address:	C/ Leonardo da Vinci, 13, Parque Tecnológico de Álava. 01510, Miñano (Álava)
Web:	http://www.aernnova.com
Turnover:	898.00 million EUR in year 2023
Employees:	5,500 in year 2023
SME:	NO
Phone:	[+34] 945 185 600
Email:	general@aernnova.com

ACTIVITY AND SKILLS

Aernnova is a World-Class Supplier of Integrated Aerostructures, Components and Engineering Services. It is 100% Private Company, the 2020 key business figures are: 514 M€ Revenues, 4537 Employees in 6 Countries with 14 Locations and more than 20 different customers.

Aernnova can take full responsibility over the complete life cycle of an Aerospace industrial Program: from Conceptual & Detail Design, Testing, Certification, Prototyping and Manufacturing to Product and In Service Support. Aernnova has an extensive experience and best-in-class composite structures capacities and capabilities and One-Stop-Shop from Raw Metallic Material to Manufacturing and Final Processing.

Aernnova has very strong capacities and capabilities in new complex product development, manufacturing engineering and aftermarket support, especially for complex composite structures. Aernnova holds a wide portfolio of Aerospace Certifications and Approvals from Airworthiness Authorities and Customers including Design (DOA), Production (POA) and Maintenance (MOA) from EASA and AP1020 from Airbus for the Management and Cascade of Design Organization Authority & Signatory.

Aernnova has internal know-how and expertise in Developing new Light Weight Structures, Design, Stress, FEM Models, Fatigue and Damage Tolerance analysis, Materials and Processes selection, Quality-Test Management and Configuration Control are applicable to support Large Scientific Facilities technical challenges.

CERN LHC tunnel Pictures during LS2

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS BILBAO] Design and manufacture of the constituent modules of the neutron chopper cascade of the MIRACLES instrument (2021)
  Scope of work: Systems/Assembles of the chopper, operation software for all the axes and parts, wiring to cabinets, auxiliary services and installation at ESS Lund.
- [ESS BILBAO] Supply of a neutron chopper engine (2020)
  Scope of work: Chopper motor (including spindle, shaft, bearings, and other moving and fastening parts), radial, position and reference thrust sensors, speed sensor and resolver, controller, electronics, and wiring
- [ESO] Testing of VLT/ELT and ALMA Dataflow Software (2020)
  Scope of work: Supporting ESO to improve the overall quality of their software products, therefore increasing reliability of their systems and end user satisfaction. To provide quality assurance and testing services that will reduce the time to market and development cost of ESO's software through a combined approach of manual testing and automation. There are some tools involved in the project: Java (main programming language), Jira, Git, Jenkins, Cucumber, Docker, Docker Swarm and Selenium
- [ALBA] Pcvue SCADA updating (2020)
  Scope of work: Helping CELLS ALBA to update the SCADA system of the entire facility, implementation of a version control system and export of configurations, optimization of SQL database resources, integration of new signals to the SCADA and continuous maintenance and improvement of the system.
- [CERN] Provision of mechanical design and engineering services (2018 - 2024)
  Scope of work: Provision of mechanical design and engineering services at CERN. Including mechanical engineering, design and drawing activities for the accelerator complex, experimental facilities and detectors.

RELEVANT R&D PROJECTS

- [ESA – SEOSAT INGENIO] Mechanical Ground Support Equipment (2000)
- [BOEING 747/8] Wing & fuselage sections, 787 wing & tail sections, 747-LCF Swing zone mechanism
- [AIRBUS – A380] Fuselage and Tail, A350 Wing and Tail, A220 Center Wing Box
- [EMBRAER – 170/190] Rear Fuselage and Tail, 145 Wing, KC-390
- [BOMBARDIER] CRJ700/800/1000 Tail
- Chopper design and manufacturing (IÑUDE)
- Discs for Advanced Neutronic Investigations (DINA)
- Strategic advancements on materials through digital printing (IMPRIME)
- Chopper integration within the overall equipment (neutron optics interfaces, mechanical interfaces, interface with general installations, etc.) (NIZE)

BIG SCIENCE AREAS

ASTRONOMY

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS

CRYOGENICS AND VACUUM

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS DEFENSE SPACE

CERTIFICATIONS

ISO-9001 ISO-14001 AQAP-2210 AQAP-2310

Company name:	**AIMEN TECHNOLOGY CENTRE**
Address:	Polígono Industrial de Cataboi SUR-PPI-2 (Sector 2) Parcela 3. 36418, O Porriño (Pontevedra)
Web:	https://www.aimen.es
Turnover:	23.00 million EUR in year 2024
Employees:	316 in year 2024
SME:	NO
Phone:	[+34] 986 344 000
Email:	aimen@aimen.es

ACTIVITY AND SKILLS

AIMEN Technology Centre, founded in 1967, is a multi-sector Innovation and Technology Centre that develops R&D&i activities and provides technological services to the industry in the fields of materials, advanced manufacturing processes, digitization and sustainability.

58 years in the service of industry, combined with our technical experts' high levels of specialisation and the unique nature and excellence of our facilities, endorse the quality of our multidisciplinary and multi-sectoral technological offer. We carry out our own research, and also partner with companies on R&D projects aimed at developing new technologies and incorporating technological improvements into their products and/or processes, including the development of prototypes and demonstrators. Aligned with a common purpose: to maximise business an dindustrial performance.

Our specialization areas in R&D are: Laser Systems and Applications, Advanced Composites Technology, Smart Systems and Smart Manufacturing and Enviromental Tecnologies. Our specialization areas in Industrial Services are: Simulation and Engineering, Advanced Manufacturing, Smart Industry and Materials Lab. Our laboratories are backed by many official accreditations and recognitions that guarantee our impartiality and technological capabilities.

AIMEN's main capabilities:

- High Performance Materials.
- Flexible Production Processes and Systems.
- Robotics and Automation.
- Micro and High Precision Manufacturing.
- Laser Based Manufacturing.
- Environmental Technology.
- Industrialization.

Advanced manufacturing at AIMEN facilities

Laser applications center at AIMEN

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - EQUIPOS NUCLEARES S.A.] Supply of two machining units for the project OCZ8 - ITER vacuum vessel and port structure welding (2021 - 2021)
- [ESS - EQUIPOS NUCLEARES S.A.] Laser welding of monolith port blocks (2019 - 2020)
- [F4E - IBERDROLA NUCLEAR] Welding of barrel and connection pipes of the full scale prototype of ITER first wall panels (2017 - 2019)
- [F4E - IDOM] Welding study of different welding technologies applied to the manufacture of diagnostic shield module for ITER ports (2017 - 2020)
- [ITER ORGANIZATION - EQUIPOS NUCLEARES S.A.] On-site machining technology development implementing of the project OCZ8 - ITER vacuum vessel and port structure welding (2015 - 2016)
- [ITER ORGANIZATION - EQUIPOS NUCLEARES S.A.] Backing gas system applied in welding process project OCZ8 - ITER vacuum vessel and port structure welding (2014)
- [ITER ORGANIZATION - EQUIPOS NUCLEARES S.A.] Design and development of RT inspection procedures and system for its application in joints welded by ENSA in the project OCZ8 - ITER vacuum vessel and port structure welding (2014)

RELEVANT R&D PROJECTS

- [H2020 – NMBP] Manipulation enhancement through robotic guidance and intelligent novel grippers. H2020-NMBP-FOF-2019, GA 869963 (MERGING)
- [H2020 – ICT] Collaborative Robotics for Assembly and Kitting in Smart Manufacturing. H2020-ICT-24-2015-Robotics, GA 688807 (COLROBOT)
- [H2020 – NMBP] Closed-loop digital pipeline for a flexible and modular manufacturing of large components. H2020-NMBP-TR-IND-2020, GA 958303 (PENELOPE)
- [SMART EUREKA] REdesign of Large MEtal Components oriented to DIgital Manufacturing (REMEDI)
- [H2020 – NMBP] Innovative polymer-based composite systems for high-efficient energy scavenging and storage. LC-NMBP-32-2019, GA 862597 (InComEss)
- [H2020 – NMBP] Implementation of a smart RETROfitting framework in the process industry towards its operation with variable, biobased and circular FEEDstock. H2020-NMBP-ST-IND-2018-2020, GA 869939 (RETROFEED)
- [H2020 – NMBP] Digital Intelligent MOdular FACtories. H2020-NMBP-TR-IND-2018-2020, GA 870092 (DIMOFAC)
- [H2020 – NMBP] An open innovation ecosystem for upscaling production processes of lightweight metal alloys composites. DT-NMBP-01-2018. GA nº: 814552 (LIGHTME)
- [H2020 – NMBP] Intelligent data-driven pipeline for the manufacturing of certified metal parts through Direct Energy Deposition processes. DT-FOF-04-2018, 820776 (INTEGRADDE)
- [H2020 – NMBP] New StOrage Latent and sensible concept for high efficient CSP Plants. NMBP-17-2016. GA nº: 720985 (NEWSOL)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS | ADVANCED MATERIALS AND MANUFACTURING | CONTROL SYSTEMS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-9100 | ISO-45001

Company name: **AIRBUS CRISA**
Address: C/ Torres Quevedo, 9 (PTM Industrial Park). 28760, Tres Cantos (Madrid)
Web: https://crisa.airbus.com
Turnover: 106.10 million EUR in year 2024
Employees: 598 in year 2024
SME: NO
Phone: [+34] 918 068 600
Email: products.trescantos@airbus.com

ACTIVITY AND SKILLS

Airbus Crisa designs and produces state-of-the-art electronic products for space applications that range from satellites, deep space probes and orbital infrastructure to space transportation systems. Motivated by a commitment to continuous innovation, and backed by the strategy of investments in research and development, the company's products continually evolve in response to customer's needs.

Crisa is able to provide reliable electroncis designed for harsh environments like space or fusion under radiation and no-maintenance condition. the company has also a strong knowledge of system engineering and project management.

Manufacturing of space proven electronics

RELEVANT R&D PROJECTS

- [ARTES] Optimized low-cost electronics for Mega Constellations (MEGA) (2022)
  Power Conditioning and Distribution Unit (PCDU) is part of the Main Electronics for Global Access (MEGA) product line providing electrical power capabilities for LEO constellations. Based on flight-proven reliable automotive-grade parts, it features a modular design in a competitive mass and volume envelope. MEGA product is a modular and scalable PCDU, providing unregulated main power bus, with isolated and non-isolated low power buses adapted to DET solar array energy management, able for distribution capabilities adaptable according to mission needs.

- [Horizon Europe, ARTES] Desing, integration and verification of High Voltage elements for satellites Electric Propulsion Systems, covering HET (Hall Effect Thruster), GIT (gridded Ion Thruster) and HEMP (Highly Efficiency Multiusage Plasma Thruster) technologies (MVPPU) (2019)
  Multi-voltage Power Processing Unit is the answer from Airbus Crisa to provide the same performances as the preceding classical PPU but taking into account the highly demanding New Space constraints, thanks to the extensive use of flightworthy COTS parts and fully automated industrial approach. It is built with fully digital control, GaN based power electronics able to provide unpreceded performances at half the volume. Some remarkable features of the MVPPU are Modular and scalable for HET and GIT, Dual mode operation, High voltage technology, Flexibility to accommodate changes in thruster parameters, Fully autonomous failure detection and recovery, Flow Control Unit integrated in the PPU, Compatible with regulated and unregulated power buses.

- [InCubed] High quality and reliability modular Instrument Control Unit (ICU) with flexible architecture (2016)
  Airbus Crisa developed a Generic ICU (Instrument Control Unit), based on two identical core sections operating in cold redundancy plus specific instrument dependent functions. This concept has been successfully implemented in MetOp SG missions (Sentinel-5 ICS, MWS ICU, 3MI ICU, SCA DCU and METimage MCE), and Biomass or SMILE programmes. Airbus Crisa is developing the new generation of ICUs based in ESA ADHA standard, named New Instrument Control Electronics (NICE). The NICE architecture is modular and based on two main groups of functions incorporating a set of core modules which implement basic functions common to all ICUs (processing, Standard general-purpose interfaces, Power conditioning and Thermal Control) and a set of application-specific modules dependant of instruments need.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [NASA] Power Management and distribution (PMAD) for NASA's lunar Gateway (2022)
  Crisa will provide the standard modular power management system of HALO (Habitation and Logistics Outpost) for the Moon-orbiting Gateway, as part of NASA's artemis programme to return to the Moon. The PMAD has four power units and will manage the electricity from the solar panels of the Power and Propulsion Element (PPE). It will distribute the power to onboard equipment and the rest of the station as required, always ensuring the safety of the crew on board. The PMAD will power the life support system, the interior lighting, the communications systems and the scientific experiments.

- [ESA] Electrical Power Subsystem (EPS) for JUICE mission to Jupiter (2016 - 2021)
  ESA's Jupiter Icy Moons Explorer (JUICE) relies on Airbus's Crisa power Subsystem, which is vital for the spacecraft's operation. This Power Subsystem consists of the Power Conditioning and Distribution Unit (PCDU) and the spacecraft batteries. The design of the EPS had to answer to the challenges coming from the need to operate in an extreme environment, for which very high efficiency and electromagnetic cleanliess are key. This mission will make detailed observations of the giant gas planet and its three large ocean-bearing moons (Ganymede, Callisto and Europa).

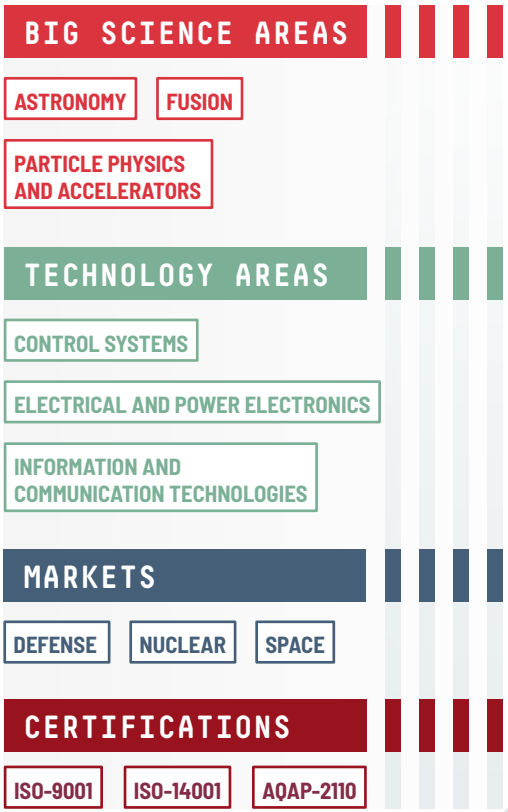
- [ESA] On Board Computer for 2020 ExoMars Rover NASA mission to Mars (2015 - 2020)
  Airbus Crisa develops custom on-board computers and spacecraft management units, answering to the specific needs of our customers. Flagship missions ExoMars have trusted Airbus Crisa the development and production of a system as critical as the Descent Module's OBC (On Board Computer) . This OBC: controls the Carrier Module during the cruise phase and the descent module until the landing in Mars. includes processing through flight application SW, while interfacing with all the spacecraft's systems, providing power distribution and input / output interfaces.

- [ITER ORGANIZATION] CODAC Engineering support Framework contract (2014 - 2020)
  Crisa was awarded an engineering support Framework Contract for Control & Data Acquisition Communication Systems (CODAC) and heating Current Drive division. Contract ref.: ITER/CT/6000000014.

- [ESA] Electric Propulsion Power Processing Unit (PPU) and Power Conditioning and Distribution Unit (PCDU) for BepiColombo mission to Mercury (2009 - 2018)
  BepiColombo is an ESA mission to Mercury intended for a better knowledge of its evolution, structure, vestigial atmosphere and its magnetosphere. The journey to Mercury is expected to last for approximately 6 years. The Power Processing Unit (PPU) was the first 5 kw ever deloped in Europe. It provides the required functionality to power and control the T6 thruster and the Xenon Flow Control Unit For its part, the PCDU is able to support the mission power demand of up to 14kW foreseen in the cruise phase for the Mercury Transfer Module, being the power subsystem based on a 100V bus.

- [ESA] GOCE PCDU & Electric Propulsion IPCDU (2002 - 2008)
  Airbus Crisa developed the PCDU and PPU Gravity Field and Steady-State Ocean Circulation Explorer (GOCE) mission. The Power Processing Unit (PPU) for the Electric Propulsion System was developed for Qinetiq's T5 thruster. This unit is intended for low power missions, mainly for earth observation purposes. The main asset of this unit is the high level of controllability from 0.6 mN to 20 mN with a resolution of 12 µN, with a beam output voltage supply of 1200V.

- [ISS] Electronics for High Energy particle Physics (2001 - 2010)
  Airbus Crisa has been responsible for designing and manufacturing the Cryomagnet Avionics Box (CAB), a challenging electronic unit to power and monitor a superconducting dipole magnet that was built to form part of the Alpha Magnetic Spectrometer (AMS-02), a particle physics detector on board the International Space Station (ISS). The AMS was the first large superconducting magnet in space with application in radiation protection, propulsion system, power generation and energy storage. The project was conducted under the technical supervision of CIEMAT, with funding provided by CIEMAT, CDTI and ETH-Zurich.



Company name:	**AIRBUS DEFENCE AND SPACE SAU.**
Address:	C/ Aviocar,2. 28906, Getafe (Madrid)
Web:	https://www.airbus.com
Turnover:	175.00 million EUR in year 2024
Employees:	523 in year 2024
SME:	NO
Phone:	[+34] 914 433 000
Email:	mktg-space-systems@airbus.com

ACTIVITY AND SKILLS

State-of-the-art space technologies:

- Prime of complete satellite systems, with fully operational in-orbit delivery.
- Microwave instruments and Active Antenna payloads for satellites
- Thermomechanical subsystems for Satellites and Launchers, including structures for very stringent environments, reflector antennas, launcher payload adapters and multi-spacecraft dispensers

CHEOPS Satellite - ESA Mission for the detection of Exoplanets

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA] Land Surface and Temperature Monitoring Copernicus Mission (2020)
- [ARIANESPACE] ARIANE 6 structures (2019)
- [ESA] JUICE structure, shielding and thermal subsystems (2018)
- [NASA-JPL] High Gain Antenna for Curiosity and Perseverance Mars Rovers (2018)
- [ESA] CHEOPS satellite (2017)
  Successfully launched in Dec 2019
- [F4E] Precompresssion Rings for ITER Magnet System (2012)
- [ESA] GAIA active antenna (2012)
- [CERN] Large Hadron Collider Support Posts (2011)
  4600 items delivered
- [CERN] Cylinder for the ATLAS experiment of the LHC (2011)
- [ESA] GAIA satellite structure (2010)
- [ARIANESPACE] ARIANE 5 structures (2000 - 2022)

RELEVANT R&D PROJECTS

- [FP7] European Space Qualified Carbon Fibres and Pre-Impregnated Based Materials (EUCARBON) (2016)

Large Hadron Collider Support Posts - 4.600 units delivered

BIG SCIENCE AREAS

ASTRONOMY

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MECHANICS AND OPTOMECHANICS

MARKETS

SPACE

CERTIFICATIONS

ISO-9001

Company name:	**AIRTIFICIAL AEROSPACE & DEFENSE**
Address:	C/ Juan Olivert, 24. 41300, La Rinconada (Sevilla)
Web:	https://airtificial.com/aerospace-defense/
Turnover:	32.60 million EUR in year 2023
Employees:	407 in year 2023
SME:	NO
Phone:	[+34] 954 189 010
Email:	ad.sales@airtificial.com

ACTIVITY AND SKILLS

Airtificial A&D provides complete (design, prototypes, industrialization, mass production), technological (composites, electronics, mechanics, software, electrical) and flexible (wide range of rates and markets) solutions to different industries.

Airtificial's capabilities covers a wide range of technologies:

- Design and manufacturing of structures in composites materials guiding the customer through the composites integration process including structural redesign, improvement analysis, production cost optimization and integration with other technologies.
- Development of custom electronic equipment including safety critical devices in a highly regulated and challenging industry such as the aerospace.
- Test means and electrical cabinets including power management and distribution, data acquisition and excitation of a wide variety of signals, buses, communication protocols, etc. Also we develop software solution for test systems (simulation, HMIs, SCADA, etc.).
- Robotics and automated processes. This is not about developing commercial robots, this is about developing comprehensive projects that include analyzing the entire process (procedures, means necessary, time spent, etc.) setting measurable targets hand-in-hand with the customer, and developing the automation solution.
- Mechanical design. Airtificial is an expert in mechanical engineering solutions. Its technical office has over 20 years of experience in conceptual and detailed design, as well as structural analysis, applicable to both onboard parts and jigs & tools.
- Engineering Services. Thanks to its team of over 150 experienced manufacturing engineering professionals, Airtificial A&D stands out as an excellent partner to undertake new industrializations that require implementing new processes, restructuring production factories, and developing full production management systems.

HSB01 distribution board

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] Supply of HEBT Distribution Board (2018)

RELEVANT R&D PROJECTS

- [CLEAN SKY] Robotic Test Systems for Active Inceptors (ROSSI) (2021 - 2023)
  This project is focused on the design of a fully automated test bench, able to receive and control a shipset of generic active inceptors

- [MICT - Industria Conectada 4.0] Sensorized composite sutrctures in vacuum environments (HEDIFICA) (2019 - 2021)

- [MICT - Industria Conectada 4.0] Composite processes data capturing sensors for digital twin (MODIERCO) (2019 - 2021)
  With this innovative project we integrate data capture technology for the creation of a digital twin plus the digitization of our product life cycle with the consequent continuous improvement of processes.

- [CLEAN SKY] More Automated Factories (MAF) (2017 - 2020)
  Development of a robotic solution to automate the actuation of the different elements in a cockpit during test execution

Upper part of the HSB01 distribution board including high current distribution devices

BIG SCIENCE AREAS

ASTRONOMY | FUSION

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

ELECTRICAL AND POWER ELECTRONICS

ADVANCED MATERIALS AND MANUFACTURING

REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | DEFENSE

NUCLEAR | AUTOMOTIVE

ENERGY | NAVAL | SPACE

CERTIFICATIONS

ISO-9001 | ISO-9100 | ISO-14001

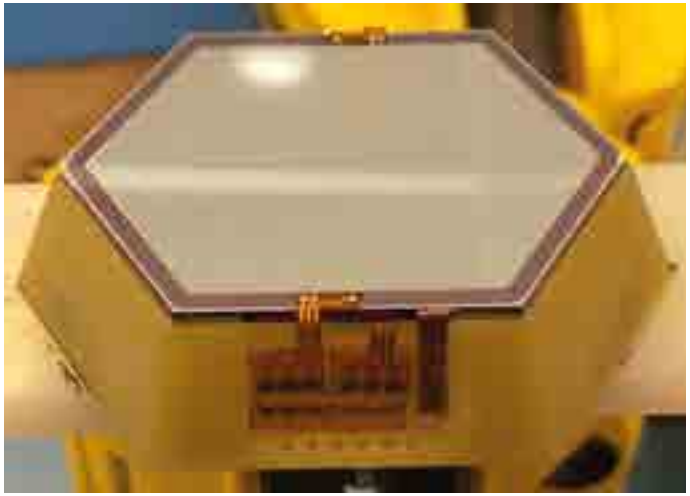
NADCAP | PCAL-AQAP 2120

Company name:	**ALIBAVA SYSTEMS**
Address:	Carrer de Ca n'Alzina 118ª. 08202, Sabadell (Barcelona)
Web:	http://www.alibavasystems.com
Turnover:	0.26 million EUR in year 2023
Employees:	5 in year 2023
SME:	YES
Phone:	[+34] 935 868 832
Email:	info@alibavasystems.com

ACTIVITY AND SKILLS

Our mission is to provide technological products and services to the High Energy and Nuclear Physics research community from readout and characterization electronics, to radiation detector development and fabrication, custom engineering services and full mechanical and electronic system integration.

- Educational Alibava System - EASy is a portable, compact and complete system for microstrip sensor characterization for educational purposes. The system introduces high-energy physics and particle detectors to physics students with hands-on experience. It familiarizes the students with concepts such as MIP, charge deposition, full depletion and interstrip pitch among others.
- Alivata System is a portable and compact readout system for silicon sensor characterization. Alivata is based on the GPn and HDRn ASCIC families of IDEAS and enables the user to read out or characterize each individual volume of silicon micro-dosimeters, silicon strip or pad sensors as well as SiPM based detector systems.
- XRay Beam Intensity & Position Systems: single and 4 quadrants systems to perform intensity and position measurements.
- Vacuum (KF 40), Standard (light shielded housing) and Naked (custom integration) configurations.
- Picoammeter especially suited for applications where multi-channel fast acquisition is a concern, i.e. feedback systems.
- Custom Detector and Electronics Development: we can develop detectors and electronics according with the customer needs.



Custom Silicon detector for nuclear phisics experiment

XRay Transmissive Intensity Monitor for Ultra High Vacuum

CONTRACTS FOR BIG SCIENCE FACILITIES

- [Instituto de Estructura de la Materia] Supply of a Micro-vertex detector for Wasa@FRS experiment (2022)
- [FERMILAB] Supply of an up to 20480 chanels custom acquisition system (2022)
- [CERN] Supply of serveral Front End Cards for Strip Detectors development (2019 - 2022)
- [Centro Nacional de Aceleradores] Supply of customized Dossimetry System for Protons (2019)
- [ESRF] Supply of a 515 nm Laser System for detector development (2019)

RELEVANT R&D PROJECTS

- [MICIN] Development of an automatic control system for radon concentration in buildings (2016)
  Project funded by the Spanish State Research Agency and FEDER funds, Program 2014-2020

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

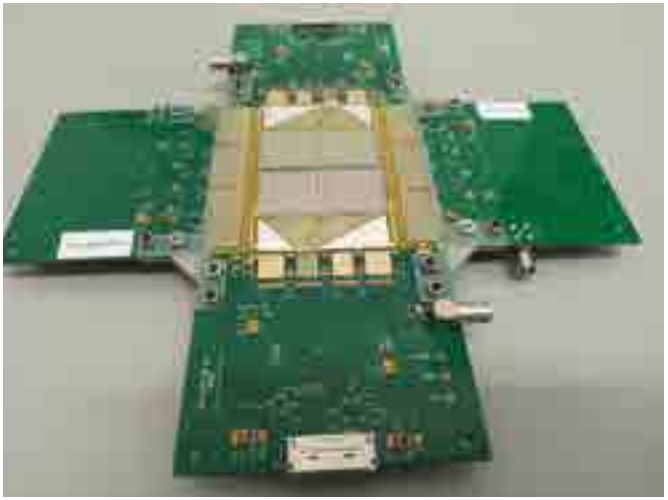
TECHNOLOGY AREAS

CONTROL SYSTEMS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS



Particle Tracking Telescope (plane detail)

Educational Systems for Detector Physics

Company name: **ALTER TECHNOLOGY**
Address: C/ La Majada 3. 28760, Tres Cantos (Madrid)
Web: http://www.altertechnology.com
Turnover: 52.00 million EUR in year 2023
Employees: 450 in year 2023
SME: NO
Phone: [+34] 918 041 893
Email: info@altertechnology.com

ACTIVITY AND SKILLS

ALTER TECHNOLOGY TÜV NORD SAU (hereafter ATN), a member company of TÜV NORD GROUP, is a quality-driven company providing test services, engineering and procurement for electronic systems, equipment and electronics components, within the space and harsh environment markets. ATN works in many markets including, but not limited to, Aerospace, Big Science, Defence & Security, Transport, Energy.

ALTER's activities in Big Science are:

- Project Management as Prime Contractor.
- Specialised testing: EMC, magnetic field, nuclear radiation, thermal, mechanical, electrical, optical, chemical...
- Design and automation of ad-hoc test benches.
- Electronic design and manufacturing.
- Assessment of Compliance with CE marking.

ATN provides engineering services regarding regulatory and product conformity requirements, particularly regulation application and product certification as well as dedicated engineering and testing services for components evaluation for harsh environments, as for the product assurance services: Environmental conditions, reliability/ functional safety analysis, engineering, EMC testing, radiation and magnetics, radio communications and & optical testing.

RELEVANT R&D PROJECTS

- [H2020] New generation of High thErmAl efficiency componenTs PACKages for space (HEATPACK) (2019)
- [H2020] New generation of High thErmAl efficiency componenTs PACKages for space (VIZTA) (2019)
  High speed optical transceivers for space
- [H2020] HgCdte APD Optimization for Lidar Detection Of greeNhouse gases (HOLDON) (2018)
- [R&D ESA Projects] EUCLID, Slogan GaN technology, MTG Meteosat new satellites, MultiPurpose Crew Vehicle (Orion MPCV), etc.. (2014 - 2018)
- [DESY XFEL] Helium vessels inspection (2014)
  ATN has performed the Helium vessels inspection for DESY XFEL (X-Ray Free-Electron Laser) for CIEMAT

Electromagnetic compatibility

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IFMIF-DONES] STUMM-PROTO (2022 - 2024)
  STUMM-PROTO is a prototype of the Start-Up Monitoring Module of the future IFMIF-DONES facility. The goal of STUMM is to characterize and commission the neutron beam generated by the deuterons colliding with the molten Li curtain. STUMM-PROTO consortium is led by ALTER. ESS Bilbao Target team has done the mechanical design of the vessel and Thune Eureka has manufactured it. ALTER has done the measurement electronics and the control system. STUMM-PROTO is a vessel divided in 8 channels, each one populated with a rig that holds a multiplicity of nuclear sensors. The vessel can work between room temperature and 320ºC and between vacuum and 3.5 bar.

- [F4E] Support Services in the Fields of CE Marking and Regulatory Compliance (2021 - 2025)
  Alter is the leader of the Consortium composed of Companies of TÜV NORD Group covering the main industrial CE Marking Directives and Regulations (EMC, LVD, RED, PED, MD, ATEX, CPR). The main tasks of this franmework contract are: 1) analysis of applicability of CE Marking directives (identifying Equipment/Assemblies that require CE Marking based on provided PA Technical specifications and PA Design Documents). 2) review of F4E component/assembly supplier CE Marking approach. 3) review of F4E component/assembly supplier conformity documentation and instruction manuals. 4) support to F4E on EMC and ATEX including on-site inspections. 5) various focused analysis on specific CE Marking and Regulatory Topics.

- [F4E - GTD] Provision of Bespoke Electronic Integration and Manufacturing Services (2021 - 2026)
  Task order 1: Industrialization of Magnetics diagnostics. Alter Technology TüV Nord has been responsible for the design (HW, FW and Mechanical), industrialization and certification of the different electronics modules of the Magnetics Diagnostics System. Including Functional validation, EMC and SMF certification. The procurement of all these parts have also been under Alter Technology responsability including the Manufacturing Control plan and Factory Acceptance Test plans. T03: Bolometers diagnostics As part of the validation process, Alter technology will carry on a preliminary Design Review (including EMC campaign). After this PDR, the designs will be industrialized and certified by Alter Technology prior to the procurement of 725 units to F4E.

- [F4E] Neutron irradiation of ITER bolometer prototypes (2021 - 2023)
  This contract consists of the design and construction of a rig to irradiate the prototypes of bolometer sensore for ITER. The project was lead by ALTER, and the consortium was formed by SCK-CEN (irradiation), ESS Bilbao (design of the rig) and Thune Eureka (manufacturing of the rig).

- [F4E - GTD] Qualification tests on I&C equipment within the frame of Front End Cryogenics Distribution System (FECDS) (2021)

- [ITER ORGANIZATION] CIS and DLIB Integration Engineering Services (2021 - 2023)

- [CERN] EMC and safety tests on CERN power converters (2019 - 2022)

- [NASA, INTA/CAB] Screening and qualification o the ASIC of MEDA (Mars Environmental Dynamics Analyzer) for Mars 2020 mission (2019)

- [F4E - HBM] Gamma radiation tests on vacuum vessel sensors (2019)

- [F4E] Support to develop internal control & compliance procedures for export control and Dual Use components (2015 - 2018)

- [ITER ORGANIZATION] Discharge Loop interface box (DLIB) design (2015 - 2018)

- [F4E] Provision of support to the F4E ITER Department and Project Office Unit in the area of Project Management (F4E-OMF-43), LOT 5, CE marking support (2014 - 2018)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | ELECTRICAL AND POWER ELECTRONICS | ELECTRONICS AND OPTOELECTRONICS | INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS | DEFENSE | NUCLEAR | NAVAL | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-17025 | ISO-17065 | ISO-27001

Company name:	**ANTEC MAGNETS S.L.U.**
Address:	C/ Ramón y Cajal, 74. 48920, Portugalete (Vizcaya)
Web:	http://www.antec-group.com/magnets
Turnover:	0.50 million EUR in year 2024
Employees:	3 in year 2024
SME:	YES
Phone:	[+34] 944 724 164
Email:	magnets@antecsa.com

ACTIVITY AND SKILLS

Resistive and permanent magnet design and manufacture, with water or air cooled windings, and high precission laminated or solid magnetic yokes. Main applications so far include particle accelerators, magnetic separation and nanotechnology, among others. Design and manufacture of superconducting magnets for applications such as particle accelerators, med-tech (protontherapy, MRIs etc.), motors/generators etc. Cryogenic system design. All necessary facilities are avaliable at our workshop, including: winding machines, vacuum-pressure impregnating devices, ovens, yoke manufacturing and assembly areas, testing laboratory and a 250 m^2 clean working area.

Quadrupole magnets for ESRF storage ring

Quadrupole Magnet for the Antiproton Decelerator (AD) - CERN

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Design and manufacturing of a Quadrupole magnet for the AD Target Area (2019 - 2020)
- [CERN] PSB Transfer Line Quadrupole Magnets for the LIU Project (2019 - 2022)
- [CERN] Coil supply for the Q74 L quadrupole magnets East Experimental Area (2018 - 2019)
- [STFC - UK] Design and manufacture of dipolar magnets for the variable bunch compressor (VBC) in the second phase of the CLARA Project at Daresbury (2016 - 2017)
- [CNAO] Corrector Magnets. 250 Kg. Laminated bonded yokes & water cooled coils (2015 - 2016)
- [PSI] Quadrupoles for the Gantry 3 facility at Paul Scherrer Institute (Switzerland). Water-cooled coils wound from hollow copper wire, stacked magnetic yokes, Ø100 mm aperture. 730 kg (2014 - 2015)
- [CERN] Combined horizontal/vertical corrector magnets, for the HIE-ISOLDE project. 50Kg. Solid iron yokes and water-cooled coils wound from hollow copper wire. Stringent dimensional tolerances (2013 - 2014)
- [EUROPEAN XFEL] Combined superconducting magnets (2 dipoles + 1 superferric quadrupole). 103 magnet series (2012 - 2014)
- [ESRF] Engineering design, manufacture and testing of the quadrupole magnets for the storage ring (2009 - 2010)
- [CERN] Manufacturing and testing (magnetic and cold) of 1.600 Corrector Sextupole Magnets for the LHC; rate of 40 units per month (2000 - 2006)
- [CERN] Manufacturing and testing (magnetic and cold) of 200 Twin Corrector Octupole Magnets for the LHC; rate of 10 units per month (2000 - 2006)

RELEVANT R&D PROJECTS

- [EU - CleanSky2] Research and development into new High Temperature Superconductors-based aeronautical electric drives in the frame of a UE-funded project (HIVOMOT)
- Design and manufacture of an electromagnetic system for magnetic alignment of recycled magnetic powder for rare earth permanent magnets manufacture
- Manufacturing design and fabrication of the active part of a Direct Drive Power solution to be used in a wave energy converter
- [CDTI - CENIT] Design and manufacture of a Superconducting compact cyclotron for radioisotope production for PET medical applications
- Design and manufacture of a new concept of a wet basis magnetic separator
- [CERN PCP] Design of a Superconducting 4m long Quadrupole for Hi-Lumi Project (QUACO)

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

ELECTRICAL AND POWER ELECTRONICS

MARKETS

AERONAUTICS

ENERGY

HEALTH

NAVAL

NUCLEAR

CERTIFICATIONS

ISO-9001

Company name: **APPLUS+ LABORATORIES**
Address: Campus UAB, Ronda de la Font del Carme, s/n. E-08193, Bellaterra (Barcelona)
Web: http://www.appluslaboratories.com
Turnover: 254.30 million EUR in year 2023
Employees: 3,000 in year 2023
SME: NO
Phone: [+34] 900 103 067
Email: info@appluslaboratories.com

ACTIVITY AND SKILLS

Applus+ Laboratories is a division of the Applus+ Group that specializes in testing and certification services to enhance product competitiveness and drive innovation. Headquartered in Barcelona, Spain, our global network of multidisciplinary laboratories supports key industries such as aerospace, automotive, railway, medical devices, construction, and renewable energies.

Since 1907, we have been providing advanced testing in materials, electric and electronics, fire safety and cybersecurity, among others. We help clients meet global standards and access new markets.

We offer our customers and partners:

- State-of-the-art multidisciplinary laboratory facilities.
- High-quality services and a solid management systems backed by a large number of international technical approvals and customer recognitions.
- Expertise in participating in challenging projects, including European Funded projects and supporting large organizations in Aerospace, Automotive and Energy sectors.

At Applus+ Laboratories, we test and certify to build trust, foster innovation, and support a more connected, electrified, and sustainable world.

RELEVANT R&D PROJECTS

- Applus+ has more than 200 active research projects and involves more than 800 employees. Applus Laboratories is active in cooperative research programs leading several ones.
  Applus is a trusted partner for various collaborative projects funded by FP7, H2020 and Horizon Europe programs, testing advanced structures and assisting in the validation of hydrogen stock products. Applus offers its state-of-the-art laboratory facilities to evaluate the performance of advanced structures for the aerospace and energy sectors.

Applus Electromagnetic Compatibility Test Facility

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Fatigue Material Testing at high temperature (2024 - 2024)
  High temperature (200ºC) fatigue curve evaluation for duplex material of the Accelearion ring structure.

- [CERN] Cryogenic temperature material test capaign on irradiated specimens (2024 - 2024)
  Irradiated material from the CERN accelerator was made available to Applus for a 77K tensile test campaign.

- [CERN] HL-LHC Cryomagnets: Assembly Tooling (2019 - 2021)
  Applus+ Laboratories was tasked to develop tooling for assembling and disassembling HL-LHC cryomagnets. The challenge was to create a versatile system capable of handling both old and new generation cryomagnets, with Cold Masses weighting up to 24 tons. CERN requested a wheel-free system for precise positioning, adaptable to various cryomagnet sizes. Our experts created an innovative guiding system and synchronized lifting system, comprising: Assembly table for Cold Mass Adjustable table for different Vacuum Vessels Synchronized lifting system Winches for Cold Mass movement Extension rails with low-friction Vesconite pads The tooling can handle 10 cryomagnet variants, operating at two speeds: 100 and 1000 mm/minute. We utilized FEM analysis, structural testing, and validation of key components like Vesconite pads. The design prioritized ergonomics and usability, resulting in an effective, turnkey product adaptable to the LHC's diverse magnet sizes.

- [ITER ORGANIZATION] Contract for the Execution of Mechanical Tests on Intercoil Structures at cryogenic temperatures (2016)
  Applus Laboratories conducted an innovative project evaluating large structures under extreme cryogenic temperatures. The study focused on a 2-ton bolted joint structure, subjected to loads up to 2000 kN at -196°C (77°K). Applus developed a special test setup using their 15 MN Universal Test Machine in Barcelona, complemented by a custom-designed low-temperature chamber with a liquid nitrogen pool. The engineering team overcame challenges including: -Preventing temperature transmission to machines -Electrically isolating the test rig -Ensuring correct high-load transmission to samples -Implementing safety measures for nitrogen handling This project demonstrates Applus Laboratories' expertise in testing materials and structures under extreme conditions and their ability to develop innovative solutions for complex engineering challenges. The work has significant implications for evaluating critical structures where integrity under extreme conditions is crucial.

- [ESA - FLPP] Curved panel structural test for Vega launcher (2016 - 2018)
  Applus carried out an extensive test campaign on an aluminum stiffened curved panel to evaluate the mechanical performance of the Vega launcher. For this test, a specific tooling was designed and implemented on a 15 MN universal testing machine available at the Barcelona laboratory.

- [ESA] Vibration & Shock Test in an Optical System for Euclides project (2015 - 2016)
  An extensive testing campaign of the optical system for the Euclides project has been carried out at Applus Laboratories in Barcelona.

HL-LHC Cryomagnets: Assembly Tooling

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM
ADVANCED MATERIALS AND MANUFACTURING
CIVIL WORKS AND INFRASTRUCTURE
CONTROL SYSTEMS
DIAGNOSTICS, DETECTORS AND INSTRUMENTS
MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-9100 | ISO-17025 | NADCAP

Company name:	**ARCECLIMA SISTEMAS Y APLICACIONES S.L.**
Address:	Parque Empresarial Alvedro, I-17. 15180, Culleredo (A Coruña)
Web:	http://www.arceclima.com
Turnover:	95.13 million EUR in year 2024
Employees:	270 in year 2024
SME:	NO
Phone:	[+34] 674 015 362
Email:	info@arceclima.com

ACTIVITY AND SKILLS

Established In 1994, Arce Clima started a new project to become a leading provider of design, installation and maintenance solutions in the fields of HVAC and Fire Protection.

With proven experience in 18 European countries including UK, Italy, France, Germany and thousands of projects completed, Arce Clima is especially skilled in accomplishing the planning.

Arce Clima has carried out several major projects over 5.000.000 €, some not located in Spain, led by 30 Project Managers, many of them experienced in several different European countries.

Arce Clima has developed its own SCADA systems focused on improving HVAC efficiency. We have expertise in BIM projects.

Diversity of designs and installations: Logistic centers, Data Process Centers, Factories, Power plants, CERN (Industrial), Commercial Centers, Historical buildings.

Cooling pumps - CERN HI LUMI project

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] CONTRACT F808/SCE - Supply, install and commission the heating, ventilation air conditioning and electricity (HVAC E) installations, for a new centralised heating plant in building 776 (2024 - 2026)
  Supply, install and commission the heating, ventilation air conditioning and electricity (HVAC E) installations, for a new centralised heating plant comprising two boilers and one heating pumpin building 776 to feed an existing distric heating net.

- [CERN] F760/EN/HL-LHC - Primary and Demineralized Water Cooling Systems, Sump Raising Systems, Firefighting Network and Pipework for the High Luminosity Project (2021 - 2025)
  Construction, design, supply, installation, testing and commissioning of the primary and demineralized water cooling systems in surface buildings SF, SHM, SD and underground areas, the firefighting network, the sump raising systems, the pipework installation in the shaft PM and the associated electrical and controls systems for the new HL-LHC buildings in Point 1 and in Point 5 of the LHC accelerator.

- [CERN] F738/EN - Design, supply, installation, testing and commissioning of the new HVAC Systems for the Antiproton Decelerator Target Areas (2020 - 2021)
  Design, supply, installation, testing and commissioning of the new ventilation systems for the AD target area and surrounding buildings; the smoke extraction of the AD target area; and the pumping stations of TT6 tunnel and AD target area sumps. The work will be carried out on the French territory of the CERN Meyrin site.

- [CERN] CD8469841 - Ventilation system and process facilities for the NANOLAB Project (2020 - 2021)
  Design, supply, installation, testing and commissioning of the ventilation systems and process facilities for the extension of the MEDICIS class A laboratory, named NANOLAB. The MEDICIS facility is in Building 179 situated on the Swiss part of the CERN Meyrin site and is classified as a radiation area.

- [CERN] CD7980451 - Design, supply, installation, testing and commissioning of the cooling stations for the third generation neutron spallation target of n_TOF facility (2019 - 2020)
  Design, supply, installation, testing and commissioning of the new cooling stations and the associated chilled water production and distribution system for the third generation neutron spallation target of the n_TOF facility. The n_TOF experiment is located on the French part of the Meyrin site and is classified as a radiation area.

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MARKETS

NAVAL | ENERGY | HEALTH | NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**ARQUIMEA**
Address:	C/ Verano, 9. 28850, Torreón de Ardoz (Madrid)
Web:	http://www.arquimea.com
Turnover:	55.00 million EUR in year 2024
Employees:	500 in year 2024
SME:	YES
Phone:	[+34] 916 898 094
Email:	info@arquimea.com

ACTIVITY AND SKILLS

ARQUIMEA is a Spanish technology company that operates globally in technically demanding sectors, such as science, aerospace, defense, biotechnology and fintech.

In the area of science industry, ARQUIMEA collaborates with research centers, public institutions, companies and universities such as IAC, CIEMAT, CSIC, INTA, CTA, ESS, LIPAC, DONES, RAL, ALBA, or European XFEL. The company has participated in the design and manufacture of electromechanical components for the large telescopes of the Canary Islands (GRANTECAN, CTAO - LST&MST) or manufacturing of parts for CAB (INTA &NASA) to Curiosity & Perseverance rovers on Mars.

ARQUIMEA provides solutions in the design, manufacturing and certification of high-performance electromechanical equipment and components for astronomy, fusion and particle physics. In the manufacturing, assembly and Test (MAIT) area, ARQUIMEA is specialized in engineering, in-house manufacturing, assembly and test of short series of prototypes and flight parts and systems with high-precision requirements, complex geometries (mechanized and mechano-welding) and electro-mechanical systems. For the space sector, ARQUIMEA also develops spaceflight equipment for satellites and launchers, thermal control systems, structural panels, Earth observation cameras, hold down and release mechanisms and actuators, and custom rad-hard microelectronics for space applications.

ARQUIMEA owns state-of-the-art manufacturing facilities with last generation machinery, manufacturing robots, 3D pringting machines and clean rooms.

At ARQUIMEA we believe in technology as a driver of development for society. We have R&D and innovation in our DNA.

ARQUIMEA manufacturing facilities for Science

CONTRACTS FOR BIG SCIENCE FACILITIES

- [EUROPEAN XFEL - CIEMAT] Quadrupole Movers Manufacturing and test (2024)
- [IFMIF-DONES] Target System Quick Disconnection System (QDS) (2024)
- [ESS] Bridge Beam Guide Optical Assembly for ESS Lund (2023)
- [CITD] Heat Rejecter prototype testing, for European Solar Telescope (2023)
- [CTAO - IAC] Production, Integration and Validation of the mechanical and electronic elements for the Cameras of Cherenkov Telescope Array (2020 - 2024) *3 units for Large Size Telescope and mechanical elements for 8 units for Medium Size Telescope.*
- [CERN - CIEMAT] Manufacture and supply of collars for the second MCBXFB HL-LHC magnet prototype (2020)
- [LIPAC - Linear IFMIF Prototype Accelerator] Vacuum Chamber to allow the electron beam inside the Particle Accelerator (2019)
- [EUROPEAN XFEL - CIEMAT] Quadrupole Movers Manufacturing and test (50 units) (2013 - 2014)
- [ESRF] Small Angle X-Ray Scattering for ESRF (2009)
- [CMAM (Centro Microanálisis Materiales)] Primary Slits for linear accelerator (2008)
- [ALBA] Magnetic Measure Bench for ALBA Synchrotron (2005)
- [GTC] Primary mirror M1 supports (2002 - 2003) *Segment Support Subcells & Lateral Support Subsystem*
- [Neutron Accelerator Rutherford Appleton Lab] Polarizations exchange Chamber (2000)

Arquimea test facility

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | MECHANICS AND OPTOMECHANICS | ADVANCED MATERIALS AND MANUFACTURING | CIVIL WORKS AND INFRASTRUCTURE | CONTROL SYSTEMS | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | SPACE | AUTOMOTIVE | HEALTH | NAVAL | NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-14100 | ISO-9100

Company name:	**ARRAELA, S.L.**
Address:	Pol. Ind. Vilar do Colo, Rua Peteiro. M3. Cabanas. 15621, A Coruña
Web:	http://www.arraela.com
Turnover:	0.31 million EUR in year 2024
Employees:	3 in year 2024
SME:	YES
Phone:	[+34] 981 396 454
Email:	info@arraela.com

ACTIVITY AND SKILLS

ARRAELA is a technology company located in Galicia, with a strong focus on materials research and subsequent development of systems in two main areas, NUCLEAR and ENERGY.

In the NUCLEAR area we have developed highly efficient, as well as highly competitive, shielding materials and structural capabilities, which position us as leaders in the X-ray, γ and Neutron Radioprotection market. Latest developments have made possible to bring to market a highly effective construction material as a RADON barrier similar to membranes but without the problems of the risk of perforation, among other advantages. In the ENERGY area, developments have focused on the Productive Circle based on the use of energy:

- Energy capture
- Thermal storage
- Transport of stored heat
- Energy extraction and exchange.
- Incorporation into the energy process

In this way, we have achieved good thermal energy capture with a self-developed material with high absorptivity and high conductivity, allowing the delivery of the captured energy.

On the other hand, we have developed excellent materials that allow us a good thermal accumulation of up to 1MWt/m^3 of material, with excellent thermal conductivity in such a way that it allows the use of air as a heating fluid, and working ranges of up to 700ºC, based on Sensible Heat, competitive and simple engineering that allow the transport of the captured and accumulated energy.

Bunker CLPU Salamanca

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS] CONTEK RNH filler (2023 - 2024)
  CONTEK RNH concrete pouring according to the plan and designed volumes for HoV. Neutron shielding with a high concentration of hydrogen and boron.

- [CLPU] Concrete walls, doors and beam dumpers for radiological protection (2015)
  For CLPU Salamanca: design, construction, installation and preventive maintenance of the system consisting of access door to the laboratory and access doors to the interior terrace from the exterior access.

- [ALBA] Radiological protection. Experimental Line (2014 - 2022)
  Supply of CONTEK RFH removable concrete blocks for Photon shielding. Linacs plug's and hutches guillotines

- [CIEMAT] Shielding door for Neutron Pattern Laboratory (2012)
  For CIEMAT Madrid: design, construction, installation and preventive maintenance of the system consisting of: - Access door to the Neutron Patterns Laboratory. - Door inside the Bunker (pool cover).

- [VARIOUS HOSPITALS AND FACILITIES] Design and installation of doors and bunkers for radiotherapy hospital shielding (2009 - 2022)
  We have carried out several projects, both for armoured doors and for the construction of radiotherapy bunkers in various hospitals and facilities. Among others: - Vila Real CHTMAD PORTUGAL - Radiotherapy bunker with concrete bricks. - FUNDACION CHAMPALIMAUD LISBOA - Manufacture and delivery for mobile radiological shielding and concrete bricks - VALL D'HEBRON HOSPITAL - Brachytherapyvault with concrete bricks. - SANTIAGO DE COMPOSTELA UNIVERSITY Manufacture and delivery for mobile radiological shielding of PET laser - CRUCES HOSPITAL - Brachytherapy vault with concrete bricks - JUAN CARLOS I HOSPITAL - Brachytherapy facility room, doors - COIMBRA HOSPITAL - Vault with concrete bricks

RELEVANT R&D PROJECTS

- [POLYPHEM] Development of materials and systems for thermal storage with oil. (POLYPHEM) (2018 - 2022)
  Arraela is involved in the POLYPHEM Project developing materials for thermal storage and insulation.

- Development of construction material as a radon barrier (2018 - 2020)
  Development of a patented barrier under the CONTEK brand, against radon gas leaks inside buildings

Filler for the Cover of the Nuclear Reactor of the The European Spallation Source (ESS)

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MARKETS

ENERGY NUCLEAR

Company name:	**ARTEIXO TELECOM**
Address:	Parque Empresarial de Penapurreira Parcelas B1/B2. 15320, As Pontes (A Coruña)
Web:	https://www.arteixotelecom.com
Turnover:	12.70 million EUR in year 2023
Employees:	80 in year 2023
SME:	YES
Phone:	[+34] 699 463 200
Email:	info@arteixotelecom.com

ACTIVITY AND SKILLS

ARTEIXO TELECOM is dedicated to the development, manufacture and integration of electronic equipment.

Arteixo Telecom was incorporated under its current name in 1996. Since 1972, we have demonstrated capacity to grow and adapt to markets and customers, always giving high added value with our products in all sectors. We work to provide technological and industrial solutions to third parties.

ENGINEERING: comprehensive solutions for each one of the project stages, product optimization /technical documentation, hardware & software solutions

INDUSTRIAL MANUFACTURING: flexibility, adaptation to the client, small/medium and large production series, continuous improvement

MANUFACTURING CAPACITY: 3 smt lines, 180.000 components/hour, from size 01005, 3 aoi, X-RAY, bga rework, tht, light guided assembly, soldering waves, potting, tropicalization, wiring, press-fit

TEST CAPACITY: wiring test, own tooling design, devices recording, climatic test, customer benches, boundary scan, ict, ftc, etc..

Our industrial manufacturing is known for its high standard of quality and commitment to delivery times. Activities cover the entire industrial cycle of numerous products and solutions, from design and creation to manufacture, installation, marketing and post-sales service. Arteixo Telecom has its headquarters in As Pontes de García Rodríguez, where it owns an area of 16,000 m^2 with a factory of 6,000 m^2 and there is also a sales office in Madrid (C/ Goya). The Management, Quality, Planning, Procurement, Finance, Engineering and Manufacturing Departments are made up of highly skilled workers.

ARTEIXO TELECOM operates on 4 continents and in more than 19 countries thanks to our clients who are world leaders in each of their sectors applying standardized work methods across the world.

We have taken part in projects in different areas during our history currently focused on the following sectors: Defense, Security, Aerospace, Railway, Industry, Sanitary, Renewable Energy, Smart Cities.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Contract F803/SY - Supply of power modules for the HL-LHC PROJECT (2024)

TT electronics

Comm. Consol

RELEVANT R&D PROJECTS

- [CIVIL UAV INITIATIVE] MAR-1 (2017 - 2020)
  Reinforcement of the maritime security of the Galician fishing fleet and activity through the use of optionally manned aerial and marine vehicles. Design and construction of an AIS, 4G, TETRA onboard communications concentrator capable of routing signals of the status of people on board through a ZIGBEE bracelet, fishing gear, etc. as well as the location and anomalies in navigation by sending the information to a software platform that, after an alarm is generated, manages the air and maritime resources to coordinate the rescue.

6000 square meters electronic factory

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NAVAL | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | AQAP-2110

Company name:	**ASEA BROWN BOVERI S.A.**
Address:	C/ San Romualdo 13. 28037, Madrid
Web:	https://new.abb.com/es
Turnover:	32.20 million EUR in year 2023
Employees:	105,000 in year 2023
SME:	NO
Phone:	[+34] 915 819 393
Email:	es-comercial.ups@abb.com

ACTIVITY AND SKILLS

ABB is a global technology company specializing in electrification, automation, robotics, and motion solutions. It provides smart electrical systems, renewable energy integration, and energy-efficient equipment for sectors such as construction, industry, and utilities.

ABB is a leader in industrial robotics, offering automation solutions for manufacturing and industrial processes in sectors like automotive and electronics.

The company also develops motors and control systems to enhance the energy efficiency of industrial machinery. Additionally, ABB focuses on digital transformation, integrating AI and IoT to drive smart industry and sustainable energy solutions globally.

ABB is a provider for the pharma sector in terms of Power Protection, for example we have worked with: Glaxo Smithkline, Boehringer Ingelheim's Labs and Eumedica Pharmaceuticals Industries.

Furthermore, ABB is committed to Research and Development and has worked with several noteworthy Universities in Spain like: Universidad Politécnica de Madrid (UPM), Universidad Politécnica de Valencia (UPV), Universidad Politécnica de Catalunya (UPC) and Universidad Autónoma de Madrid (UAM).

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ALBA] 300kW Modular UPS (2023 - 2023)
  ABB Electrification & Power Protection helped ALBA Synchrotron keep their load safe by introducing a 300kW Modular UPS in their plant.

- [OCAN] 60kW Modular UPS and 6-8kW UPS (2022 - 2024)
  ABB Electrification & Power Protection helped Astrophysics Institute in Islas Canarias (IAC) keep their load safe by introducing a 60kW Modular UPS in their plant and various 6-8kW UPS

- [OCAN - Isaac Newton Telescope] 60kW Modular UPS, with 2 x 20kW and 2kVA UPS (Canary Islands, España) (2022 - 2022)
  ABB Electrification & Power Protection helped the Isaac Newton's Telescope in Canarias keep their load safe by introducing a 60kW Modular UPS, with 2 x 20kW, in 2021 and a 2kVA UPS in 2023, in the plant.

- [GTC] 300kW Modular UPS, with 5 x 50kW (2020 - 2020)
  ABB Electrification & Power Protection helped the GranTecan (GTC) keep their load safe by introducing a 300kW Modular UPS, with 5 x 50kW, in the plant.

- [OCAN] 40kW Modular UPS and 20kW UPS (Teide's Observatory in Tenerife) (2020 - 2022)
  ABB Electrification & Power Protection helped Astrophysics Institute in Islas Canarias (IAC) keep their load safe by introducing a 40kW Modular UPS in their plant and a 20kW UPS in their residence.

ABB FE

BIG SCIENCE AREAS

ASTRONOMY

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

MARKETS

ENERGY

Company name:	**ASTURFEITO S.A.**
Address:	C/ Metalúrgicos 14B. 33490, Avilés (Asturias)
Web:	http://www.asturfeito.com
Turnover:	70.00 million EUR in year 2023
Employees:	300 in year 2023
SME:	NO
Phone:	[+34] 985 514 024
Email:	comunicacion@asturfeito.com

ACTIVITY AND SKILLS

Asturfeito is specialized in supply of precision assemblies and turn-key systems for Energy, Marine, Defense, Aerospace, Nuclear and Big Science markets.

With more than 25 years of experience Asturfeito covers the full value chain including engineering, manufacturing, mechanical / hydraulic / electrical assembly, systems integration, FAT testing and site assembly/commissioning.

From our HQ office, using the latest design and simulation software, we provide engineering and design-to-cost support to our clients while our project management and quality teams assure the projects are delivered on-time according to the highest quality requirements.

Our three manufacturing workshops, with a total covered surface of 35.000 m^2, boost a wide range of state-of-the art equipment including:

- Robotic welding up to 15 tn and 8 x 5 m^2.
- Wide range of CNC machining centers – above 30 off - including 10m vertical lathe or 8x15m and150 tn. boring machine.
- Divisible 30x10x10 m^3 blasting & painting cabins.
- Segregated area for stainless steel processing including pickling & passivating and fiberglass blasting cabins.
- Large mechanical assembly area with 25 m under hook and two clean areas for assembly, integration and testing.

Asturfeito location next to Port of Avilés allows the trouble-free delivery of large assemblies in one single piece with no limitation of weight or dimensions.

JT60 SA - Cryostat

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS] CASK-3 for ESS (2023 - 2024)
  Remote Handling equipment.
- [ESS] Design, manufacturing, testing and site installation of Bifrost Cave Roof Hatch (2022 - 2023)
- [ITER ORGANIZATION] Manufacturing and site assembly of Port Cell Mock-Up (2021 - 2021)
- [ESS - ANSALDO] Manufacturing, assembly and testing of ESS Active Cell Floor Valves and Intrabay Doors (2020 - 2021)
- [ESO] Design, manufacturing, testing and site installation of M1 Segment Crane for ELT telescope (2019 - 2024)
- [ESS] Manufacturing, assembly and testing of Monolith Vessel Inner Shielding (2018 - 2022)
- [ILL] Manufacturing, assembly and testing of Monochromator Shielding (2017)
- [ITER ORGANIZATION - REEL] Manufacturing of main girders for 750 tn ITER main assembly hall cranes (2015)
- [LSST - AURA] Telescope Mount Assembly. Including manufacturing engineering, fabrication, mechanical / electrical / hydraulic assembly, testing and site assembly in Chile (2014)
- [CIEMAT] Manufacturing, Assembly and Testing of Cryostat Body for JT-60SA Tokamak (2014)
- [CIEMAT - JT-60 - IDESA] Manufacturing, assembly and testing of Cryostat Base for JT-60SA Tokamak (2012)
- [ESO] Supply of 25 radiotelescopes for ALMA project including manufacturing, mechanical assembly, electrical/hydraulic integration, verification & functional tests (2012)
- [ILL] Engineering and manufacturing of Gel Rack Support Futs for Heavy Water Containers (2012)
- [ESRF] Manufacturing of parts and components for beamline ID 16 (2010)
- [GTC] Manufacturing of side extensions of DEL EMTCS Vacuum Vessels and supports for Osiris Imaging System (2009)

LSST assembly

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | MECHANICS AND OPTOMECHANICS | ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS | ADVANCED MATERIALS AND MANUFACTURING

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-45001 | ASME | RCC-MR

Company name:	**ATS GLOBAL (ANÁLISIS Y SIMULACIÓN, S.L.U.)**
Address:	C/ Leonardo da Vinci, 14, edif PIE, Parque Tecnológico de Álava. 01510, Miñano (Álava)
Web:	https://www.ats-global.com/es/
Turnover:	6.36 million EUR in year 2023
Employees:	69 in year 2023
SME:	YES
Phone:	[+34] 945 296 981
Email:	atses@ats-global.info

ACTIVITY AND SKILLS

ANÁLISIS Y SIMULACIÓN S.L. was founded in 1997. In 2019 we merged with the innovative ATS Applied Tech. Systems B.V. (ATS Global), "The Independent Solution Provider for Smart Digital Transformation". This merger consolidates our leadership in the Spanish market and provides us with complementary tools to lead the Intelligent Digital Transformation market. The union of strengths of both organizations will cover the broad spectrum of Digitalization Technologies for the Manufacturing Companies and offer solutions for the integration of processes for product design and the manufacturing process. This extension of our knowledge positions AyS Group as a center of excellence and world reference of PLM and Manufacturing knowledge. We are working in the business of software implementation and in the business of mechanical engineering services.

In software implementation we are the leading company in Spain to supply and implement cutting edge engineering solutions: Product development and innovation (CAD-structural CAE and CFD) / Manufacturing processes optimization (CAM-manufacturing CAE) / Product Data Management (PDM) – Product Lifecycle Management (PLM) / IT hardware / MES/MOM.

In mechanical engineering we offer services in the fields of numerical simulation (structural, fluid dynamics and manufacturing processes); instrumentation & data acquisition & data analysis; and computer aided manufacturing (CAM) for substractive manufacturing.

Our solutions and services applied to the industrial sector enables us to deliver great value to our customers, in their products and/or processes, reducing costs and improving productivity and competitiveness. We also offer a yearly schedule of "open/standard training courses" and "Ad Hoc training courses" designed to provide exclusive knowledge to companies. Our staff of engineers and technicians has many years of experience and knowledge in the main industries: space, aeronautic, automotive, wind energy, railway, machinery, medical devices, etc.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA - SENER] Onesat mission (2020)
  Mechanical and thermal analysis of telecommunications units.
- [ITER ORGANIZATION - UTE FERROVIAL-VINCI] Big doors 51 & 52 (2018)
  Mechanical analysis.
- [ESA - SENER] Instrumentation and data acquisition in titanium bolts (2018 - 2019)
  Instrumentation with strain gauges of titanium bolts for fixing the cover of EXOMARS spaceship.
- [CERN - AVS] Various calculations and simulations for pipeline fixing parts (2017 - 2018)
  FEM calculations of big flanges for pipeline fixing.
- [ESA - TRYO AEROSPACE] Metop-sg series mission (2016)
  Mechanical and thermal analysis of telecommunications units.
- [ESA - IFAE] Euclid mission (2016)
  Mechanical analysis of scientific instrument.
- [ESA - MIER COMUNICACIONES] Mtg series mission (2014)
  Mechanical and thermal analysis of telecommunications units.
- [ESA - MIER COMUNICACIONES] Smallgeo mission (2011)
  Mechanical and thermal analysis of telecommunications units.
- [ESA - MIER COMUNICACIONES] Galileo mission (2006)
  Mechanical and thermal analysis of telecommunications units.
- [ESA - MIER COMUNICACIONES] Smos mission (2002)
  Mechanical and thermal analysis of telecommunications units.

ESA Liftoff of Ariane flight VA233, carrying four Galileo satellites, from Europe Spaceport in Kourou

RELEVANT R&D PROJECTS

- [MICT - AEI] DIGICEL 4.0 (2023 - 2024)
  Tool for controlling the density and cellular structure of polymeric foams integrated into the production line and in a digitized environment.
- [HAZITEK] ORKESTRA (2023 - 2023)
  Research on Technologies for the Universal Programming of Modular and Reconfigurable Manufacturing Systems.
- [HAZITEK] CORTEX (2022 - 2024)
  Precision in ultra near net shape critical components obtained by 2030 processes.
- [HAZITEK] INFOCUS (2022 - 2024)
  Intelligent and Sustainable Design and Manufacturing of New Products with Surface Processes for Optoelectronic Applications.
- [MISIONES] MHAYA (2022)
  Towards the new industrial ecosystems of 2030, driven by the new generation of cognitive machine tools, capable of learning and acting autonomously and empathetically.
- [HAZITEK] ORKESTRA (2022 - 2022)
  Research on Technologies for the Universal Programming of Modular and Reconfigurable Manufacturing Systems.
- [HAZITEK] ALUJOINT (2020 - 2022)
  New light chassis.
- [HAZITEK] FINT (2020 - 2021)
  Intelligent manufacturing unit for hybrid polymers moulding.
- [HAZITEK] DIGISTIR (2020 - 2021)
  Digital twin Development of a "Friction STIR Welding" manufacturing unit.
- [MINECOR] TOUCHSENSOR 4.0 (2020 - 2021)
  Injection moulded products with touch functionality on a certain area of its surface.

BIG SCIENCE AREAS

ASTRONOMY | FUSION

TECHNOLOGY AREAS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS | DEFENSE | NUCLEAR | NAVAL | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**AUGMENTED REALITY SOFTWARE S.L.**
Address:	Calle del Adaja, 10. 37185, Villamayor (Salamanca)
Web:	https://www.arsoft-company.com
Turnover:	1.00 million EUR in year 2023
Employees:	30 in year 2023
SME:	YES
Phone:	[+34] 923 496 522
Email:	info@arsoft-company.com

ACTIVITY AND SKILLS

ARSOFT is a Spanish company founded in 2013 by Santiago González Izard. With over ten years of experience, ARSOFT has been dedicated to research, innovation, and the development of 3D technologies for sectors such as industry, defense, and medicine.

ARSOFT focuses on two specific areas: Industry, specializing in the Defense sector, and Medicine. Its mission has always been to add value to these sectors by offering innovative solutions in Augmented Reality, Virtual Reality, and Mixed Reality technologies. In this regard, ARSOFT has developed EYEFLOW, a platform that allows industrial companies to create virtual content themselves, reducing the time and cost required to create Virtual Reality simulators, Augmented Reality manuals, and virtual content by more than 90%, making these technologies accessible.

In the field of medicine, ARSOFT has developed LAIA XR, a platform that enables the visualization of medical images such as computed tomography (CT) scans and Magnetic Resonance Imaging (MRI) using 3D vision technologies like Virtual and Mixed Reality. Through proprietary computer vision and artificial intelligence algorithms developed by ARSOFT, 3D recreations of a patient's anatomy can be made, isolating different anatomical regions. This allows surgeons to: (1) study the patient's anatomy, (2) plan surgeries within a safe and precise virtual environment, and (3) consult the surgical plan and 3D recreations during the surgery itself using Mixed Reality.

ARSOFT's continuous innovation and commitment to excelle a leader in digital transformation, offering solutions nce have enabled the company to remain that drive the growth and global competitiveness of its clients.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CLPU] Virtual tour of the Pulsed Laser Center (CLPU) (2021 - 2021)
  Virtual tour of the facilities of the Pulsed Laser Center (CLPU). A unique Scientific and Technological Infrastructure (ICTS) created in 2007 by the Spanish Ministry of Economy and Competitiveness, the Junta de Castilla y León and the University of Salamanca.

ARSOFT has a high performance team specialized in XR technologies (Augmented Reality, Virtual Reality and Mixed Reality) which has allowed ARSOFT to position itself as a reference for companies, individuals and society as a whole.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

AERONAUTICS

DEFENSE

HEALTH

NAVAL

CERTIFICATIONS

ISO-9001

Company name: **AVS. ADDED VALUE INDUSTRIAL ENGINEERING SOLUTIONS S.L.U.**
Address: Pol. Ind. Sigma, c/ Xixilion 2 bajo, Pab. 10. 20870, Elgoibar (Guipúzcoa)
Web: http://www.a-v-s.es
Turnover: 25.00 million EUR in year 2023
Employees: 160 in year 2023
SME: YES
Phone: [+34] 943 821 841
Email: avs@a-v-s.es

ACTIVITY AND SKILLS

AVS is a technological SME, which aims to provide technology-based solutions to innovative and challenging projects. Strongly focused on the development of outstanding devices and instruments, our expertise covers all the steps across the design, manufacturing, assembly, test and delivery under ISO 9001 EN 9100. AVS conceives very demanding instruments performing in harsh environments: radiation, UHV, high magnetic fields and cryogenics fields of Particle Accelerators, Nuclear Fusion, Astrophysics and Space.

AVS' experience in project development for large-scale facilities (RAL-ISIS, ILL, ESRF, ESA, IAC, CERN, ILL, HZB, FAIR, ITER, F4E, etc.) serves as a qualified reference for future projects. AVS' solutions certainly benefit from the cross experiences between such fields, adding value to our developments.

In fusion, main projects include manufacturing of MITICA beamline components, manufacturing design for ITER diagnostic systems (CTS, RNC, WAVS, bolometers, CXRS, DPGs), instrumentation and prototypes for ITER (OVSS sensors, Junction boxes, FOCS, coils, clamps, diagnostics magnetic sensors platforms....).

In the accelerator field AVS has been recently awarded with the design and development of an accelerator injector for hadron-therapy.

Regarding the Space area, we have just launched the LUR-1 mission, which was launched aboard SpaceX's Falcon 9 rocket. LUR-1 was conceived as a 57-kilogram microsatellite, the first of the LUR platform family, incorporating antennas of various bands (UHF, S, and X) and a deployable arm for the solar panels. Additionally, it is equipped with a multispectral camera with seven bands in the visible and near-infrared spectrum, featuring a GSD (Ground Sample Distance) resolution of 1.5m, as well as a Quantum Key Distribution (QKD) communications experiment, developed entirely by AVS. The LUR satellite is equipped with the MICE device, a device that will be installed on all satellites of the Copernicus program to prepare them for deorbiting in the event they cease to function or at the end of their operational life. ESA is promoting the development of such technologies as part of its "Zero Debris 2030" program. This makes LUR-1 the first European satellite to put this technology into orbit. At the end of LUR-1's operational life, it will become a possible target for ESA's future CAT IOD mission, where the possibility of removing space debris will be demonstrated to achieve a more sustainable space environment.

AVS is solidifying its position as a provider of satellite platforms and complete missions. While up until now, the company had worked as a supplier of critical systems or components for major space missions, with the launch of LUR-1 it has managed to lead an entire mission. In other words, AVS now conceives the project, manufactures it, tests it, and once launched into space, it also controls it from Earth, receives the satellite's data, and processes it. With full merit, AVS is now one of the major players in the so-called New Space sector, standing alongside projects driven by NASA and the European Space Agency.


Lur-1 AVS


MEDA Wind Sensor and Supercam CT for Mars2020 mission

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IAC] S-ELF Manufacture of Small ELF (2024)
- [F4E] CXRS Charge-Exchange Recombination Spectrometer (2022)
- [ESS - UKRI] FREIA collimation Vacuum vessel (2022)
- [ESS - CNRS] SKADI Study, manufacturing and supply of the collimator and the detector enclosure for the diffractometer (2022)
- [ESA] CAT, S2P S1-SC-12 Capture bay design and end to end verification of the sign for removal; In orbit servicing (2022)
- [ESS BILBAO] Design, manufacturing and test for the mechanical systems of the secondary spectrometer of MIRACLES instrument (2021)
- [ESS - DTU] BIFROST Spectrometer Vessel and Motion System (2021)
- [ESA - Leonardo] ESA/NASA JPL: STA EE, End Effector for Mars Sample Return (2021)
- [CERN - CSIC-IFIC] Assembly of Carbon Fiber Petals for ATLAS upgrade (2021)
- [ESA - OHB] CHIME FADU, Full Aperture Disffuser Equipment; Calibration mechanism for CHIME (2021)
- [ESS BILBAO] Head of the Vessel (2020)
- [UKRI] - Vulcan Beamline Compressor Chamber (2020)
- [ALBA] Multiple Wiggler for BL31-Faxtor (2019)
- [F4E] Procurement of the Beam Line Components for the MITICA Experiment Stage 2 (2019)
- [ESS - PSI] Carriers for ESTIA Selene guide (2019)
- [ESS BILBAO] Connection Ring manufacturing (2019)
- [ESS - UKRI] Loki Collimator Vessel: Design, manufacturing and assembly (2019)
- [ESS - UKRI] Loki Detector Vacuum Vessel: Design, manufacturing and assembly (2019)
- [F4E] Manufacturing engineering support for the Diagnostic Systems (2019)
- [ESS BILBAO] Lower and Medium Monolith Vessel (2018)
- [IAC] - Detailed design and manufacture of the two cryostats for the QUIJOTE project (2018)
- [ELI - Horia Holubei] LVBVE Extreme Light Infrastructure, Laser Instrument (2018)
- [ESS BILBAO] Design and manufacturing of the Target Drive Unit for ESS (2017)
- [ESA - INTA/CAB] M2020 MEDA Instrument Wind Sensor 2 Structure and Mechanisms PRODEX (2017)

RELEVANT R&D PROJECTS

- [CDTI - MISIONES] -ROAD2DEMO (2022)
- [CDTI - MISIONES] -DONES-EVO (2022)
- [CDTI - MISIONES] -Industrial Research in technologies and processes applied to IFMIF-DONES in order to evolve in the fusion program (2021)
- [CDTI - MISIONES] -New Materials, Technologies and Advanced Processes to contribute to the new energy era of Nuclear Fusion (2020)
- [H2020 - RIA] -Innovative mechanically pumped loop for active antennae -AVS leader (IMPACTA) (2019)
- [CDTI - CIEN] -Accelerators and related technologies for large scale scientific facilities (2017)
- [H2020 - SME INSTRUMENT] -Phase 2: High Heat Rejection Thermal Control System (HEART) (2017)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | ELECTRONICS AND OPTOELECTRONICS | MECHANICS AND OPTOMECHANICS | REMOTE HANDLING AND ROBOTICS | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

ENERGY | NUCLEAR | SPACE | HEALTH

CERTIFICATIONS

ISO-9001

Company name:	**AWGE TECHNOLOGIES, S.L.**
Address:	Avda. de los Castros s/n. CDTUC Fase A, P-209, Santander
Web:	http://www.awge.es
Turnover:	0.67 million EUR in year 2024
Employees:	7 in year 2024
SME:	YES
Phone:	[+34] 942 136 719
Email:	info@awge.es

ACTIVITY AND SKILLS

AWGE Technologies is a technological engineering company that concentrates its activities and skills in two main areas. On the one hand Ultra high Vacuum and Cryogenics mixed with mechanics and on the other, Radiofrequency and Microwaves for Large Research Infrastructures, institutions and private corporations. In both areas AWGE Technologies carries out projects involving design, manufacturing, production and verification.

Our skills includes provision of innovative solutions on engineering design, manufacture, verification and testing in the fields of particle accelerators, astrophysics, space, defence, industry and health sectors.

ESS Shaft rotatory unit

RELEVANT R&D PROJECTS

- [YEBES OBSERVATORY] Supply of filtering, switching, distribution and baseband conversion modules (4-18 Ghz) for the ASTROREC receiver of the 40M radio telescope (2022 - 2023)
  The project included the design and manufacturing of the technical solution adopted to comply the supply of pre-amplification, distribution and frequency conversion to baseband, necessary for the receiver YNART (4-18 GHz) for the Yebes observatory.
- INDRA - RF-ALQ500 modules upgrade. Re-design, manufacture and qualification of different filter banks range 2-18 Ghz (2019)
- INDRA - Design, manufacture, assembly and qualification of a High Power Calibrator Module System (0,5-18 Ghz) (2019)
- [SODERCAN] Design and manufacture of a reconfigurable, ecological and extreme performance cryogenic manipulator (2019 - 2019)
  The purpose of the contract is to supply a laboratory cryostat for conducting tests and measurements that allows the characterization of electronic components at cryogenic temperatures before being integrated into cryogenic receptors of greater complexity. Minimum external dimensions of the dewar without the cover: 340 mm width x 340 mm depth x 115 mm high. The thickness of the bottom of the dewar will be 20 mm and that of its side walls will be 22 mm. The dewar (450 mm x 150 mm) has 12 windows integrated for the manipulation of the samples and its corresponding grooves for vacuum seal. The turbomolecular pump integrated will allow to achieve Ultra High Vacuum conditions.
- INDRA - Design, manufacture, assembly and qualification of intermediate frequency signal conditioner and RF signal conditioners (2018)
- CAF - RF Design and test for signalling and security balises as part of an automatic train protection (ATP) system (2018 - 2018)

HARMONI Test cryostat

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ALBA] Control Unit Interface for Spoke Cryomodules Supply (Design and manufacture) of a radio frequency cavity (2023 - 2024)
- [ESS] Control Unit Interface for Spoke Cryomodules (2023 - 2023)
- [ALBA] Design and manufacturing of a radio frequency cavity (2023 - 2025)
- [Yebes Observatory] Supply of a laboratory cryostat (2021 - 2021)
- [ALBA] Supply of one (1) sample cryogenic system for BL06-XAIRA Beamline at the Alba Synchrotron (2021 - 2021)
- [INTA] Positioning System for Vacuum (2021 - 2021)
- [ESS BILBAO] Detailed Design, manufacture and Supply of the Shaft Rotatory Feedtrough for the ESS Target Station at ESS-ERIC Accelerator (2020 - 2021)
- [IAC] Design, manufacture and supply of a test cryostat for HARMONI preoptics (2020 - 2020)
- [ILL] Detailed study, manufacturing and assembly of the ROC and Detector Support for the Instrument XTREM (2019 - 2019)
- [ILL] Detailed Study, Manufacturing, Procurement, Assembly and Test of the Sample Table Stack for the instrument XTREMED (2019 - 2019)
- [F4E] Supply of Vacuum Flanges for the BPM Feed-throughs on the IFMIF/EVEDA Cryomodule (2019 - 2019)
- [ESS BILBAO] Detailed Design and Supply of the Waveguide Components for the RF Distribution Chains for the RFQ and DTL of the ESS-ERIC Accelerator (Lund, Sweden). Lot 2: Flexible waveguide sections (2019 - 2020)
- [ESS BILBAO] Detailed Design and Supply of the Waveguide Components for the RF Distribution Chains for the RFQ and DTL of the ESS-ERIC Accelerator (Lund, Sweden). Lot 3: "Special" waveguide sections (2019 - 2020)
- [ILL] Study, Fabrication and Assembly of a Radial Oscillating Collimator (ROC) for the Instrument XTREMED (2018 - 2019)
- [ALBA] Machining and verification of different vacuum and UHV mechanical pieces (2018 - 2019)

  Periodical orders for the machining, verification and vacuum test for mechanical spare parts for the different instruments.
- [ESS BILBAO] Detailed design, Technical Support and Manufacture of Proton Beam Window Seal Mock-Up (2017 - 2018)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | ELECTRONICS AND OPTOELECTRONICS | MECHANICS AND OPTOMECHANICS | REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | DEFENSE | NUCLEAR | SPACE

CERTIFICATIONS

ISO-9001

Company name: **AYTANA AEROESPACIO Y DEFENSA, S.L.**
Address: C/ Energía Solar nº1, Campus Palmas Altas. 41014, Sevilla
Web: https://www. aytana.es
Turnover: 8.52 million EUR in year 2023
Employees: 47 in year 2023
SME: YES
Phone: [+34] 954 935 276
Email: info@aytana.es

ACTIVITY AND SKILLS

Aytana is a spin-off of the Cox Group that inherits the talent and projects in defense, hydrogen and aerospace and large scientific facilities with an experience of more than 20 years in defense and hydrogen and, 12 years in space and Big Science activities, developing products and participating in Programs.

Taking advantage of our expertise in the energy and large infrastructures sector, we seek technological synergies between these areas and the space, defence and large scientific facilities sectors to create innovative products that provide solutions to specific applications. We have capabalities for the full development cycle, from hardware, software and thermomechanical design to mass production. Our capacity allows us to produce from prototypes to large recurring series, guaranteeing efficient and customized solutions for each project.

RELEVANT R&D PROJECTS

- [ESA] TDE for a Battery Management System (2019)
  Development of an Active Battery Management system for LEO orbit satellites bringing mature technologies in terrestrial areas (like large energy storage facilities, Electrical Vehicle or Defense power distribution systems) to the space. The development involves the production of a Bread Board of TRL4 that demonstrated the benefits of this technology in space enlarging battery (and satellite mission) lifetime.
- [ESA-ISRU] ISRULAB (2019)
  Development of a Gas Management System for the purification of the oxygen extracted from lunar regolith with the aim of using as fuel or for human consumption.
- [ESA] TRP-LHT "Loop Heat Pipes" (2016)
  This activity analyzed how to improve the efficiency in the energy generation of great installations Loop Heat Pipes using Solar-Dynamic Energy conversion technology.
- [ESA] TRP for Biodegradable Materials for Launchers Systems (2014)
  Analysis of feasibility of using biodegradable material for replacing carbon fibre based materials in european launchers fuselages.

Aytana facilities

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA - AVIO-ARIANE] AVIO-VEGA C (2018)
  Design development and production of 16 units separation boxes and 4 power supplies for the simulation of the VEGA C launcher stages separation. The units comprise electronics and mechanics production, electromechanical assembly and harness (power, telecommand/telemetry, small signal) and was used during hardware in the loop test phase of the launcher.

- [ESA - AVIO] Vega C Upper Composite Special Checkout Equipment (2017 - 2022)
  Automated Special Check-out Equipment (SCOE) for the VEGA-C launcher for the Hardware-in-the-loop and Electromagnetic compatibility (EMC) Tests campaigns that, after qualification, is acting as Factory Acceptance Testing facility for the serial production of the launcher. The SCOE comprises 6 different racks and 3 server/computers that controls and monitor the full Upper Composite of the launcher to verify its correct performance during the qualification/FAT tests campaign. Two units delivered.

- [ESA - ADS] Automated Test Equipment for Ariane 6 CMFU and for QUANTUM RX Antenna and GEO-SCAU Unit for Airbus Defence and Space (2016)
  Design, development, testing and validation (CE) of 10 Test Benches for different flight electronic units of Arian6 launcher, Vega C launcher and Quantum+ELSA Antenna satellite.

- [ESO - ASIAA] Production and verification of Bias Modules for Band 1 of ALMA (2016)
  Manufacturing, integration and testing of 150 electronic cards (biasing) for the Band 1 Electronics of ALMA Radiotelescope for the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) of Taiwan.

- [ITER ORGANIZATION - ITER] Supply of ITER nuclear Safety I&C system SCS-N (2016)
  Participating in the SCS-N cubicles design, manufacturing and test including HMI and operator safety desks. Also in the FAT and product qualification (functional and environmental).

- [ESO] Production and verification of Bias Modules and Cartridge Power Distribution Cards for Band 5 of ALMA (2014)
  Manufacturing, integration and testing of 160 electronic cards (biasing) of the 80 BIAS module cartridges electronics) and 80 CPDS ultra-low noise power distribution units for the Band 5 Electronics of ALMA Radiotelescope.

- [ESO] Design, Production and validation of Automated Test Equipment for Bias Modules and Cartridge Power Distribution Cards for Band 5 of ALMA (2014)
  Definition (based on the test strategy), design, production and Validation of 2 Automated Test Equipment for the BIAS (biasing electronics) and the CPDS cards (ultra-low noise power distribution units). Those portable ATEs performs the validation, factory acceptance testing of the BIAS modules and CPDS cards. After the production they support the maintenance activities, calibration and field activities of these units delivered for ALMA radiotelescope band 5 (ESO) and band 1 (ASIAA).

- [ESA - ASD] Automated Test Bench for Ariane 5 Launcher Electronics Airbus Defence and Space (2014)and Test Bench for Meteosat Third Generation (MTG) Power Distribution Unit for Airbus Defence and Space (2013)
  Desing, development, testing and production of more than 100 Electronic cards for the emulation of power user demands in sattelites and launcher operation during qualification test campaigns. Electronics developed under a High Adaptative Architecture that allow to be integrated with different building blocks for Electrical Ground Support Equipment of flight units.

- [CERN] DO-27885 and DO-27770 project (2013) (2013)
  Design, Manufacturing, Prototype production, Test, Qualification and series production of Power Supplies.

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE
ELECTRICAL AND POWER ELECTRONICS
ELECTRONICS AND OPTOELECTRONICS
REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NAVAL | NUCLEAR | AUTOMOTIVE | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | UNE-166002 | OHSAS 18001 | PCAL-AQAP 2120

Company name:	**BEN TRADE CABLES IBERICA SA**
Address:	Polígono Industrial Centrovía, C/ San Francisco Nº9. 50198, La Muela (Zaragoza)
Web:	https://btciberica.com/
Turnover:	18.20 million EUR in year 2023
Employees:	44 in year 2023
SME:	YES
Phone:	[+34] 976 149 149
Email:	sales@btciberica.com

BEN TRADE CABLES IBÉRICA, S.A.

ACTIVITY AND SKILLS

BTC Ibérica is a low voltage instrumentation, control, power and special cables factory for petrochemical, offshore, marine industry, refining, steel works, nuclear power plants, general industrial operations and special applications.

Our factory located in Zaragoza (Spain), was established in 2003. We export worldwide more than 95% of our production through the Sales Departments in Aberdeen (Scotland, UK) and Zaragoza (Aragón, Spain).

In BTC Ibérica, we are cable instrumentation leaders in the UK and Europe and we distribute worldwide through the mayor suppliers of electrical equipment.

We are suppliers of the largest oil & gas and engineering companies in the petrochemical industry, installing our cables in several projects around the world.

BTC Ibérica cable

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Supply of Cables (2023 - 2023)
- [ITER ORGANIZATION] Supply of Cables for the Plant Systems in the Tokamak Complex of the ITER Facility (2021)
- [ITER ORGANIZATION] Supply contract for cabling supply on demand (2018 - 2021)

RELEVANT R&D PROJECTS

- [ITER] Desing and production of radiation resistance cable according to ITER requirements (2021)
  Instrumentation, control and low voltage power cables. Individual and overall screens with tinned copper wire braid. Halogen free, flame retardant as per IEC 60332-3-23 and radiation resistance as per IEC 60544-2

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

MARKETS

NAVAL

NUCLEAR

OIL & GAS

ENERGY

CERTIFICATIONS

ISO-9001

ISO-14001

Company name:	**BROAD TELECOM S.A.**
Address:	C/ Margarita Salas, 22. Parque Leganés Tecnológico. 28918, Leganés (Madrid)
Web:	https://www.btesa.com
Turnover:	13.00 million EUR in year 2023
Employees:	79 in year 2023
SME:	YES
Phone:	[+34] 913 274 363
Email:	info@btesa.com

BTESA
BROAD TELECOM

ACTIVITY AND SKILLS

BTESA is a leading technological group with long experience in the design, manufacturing and installation of radiofrequency equipment.

BTESA is the Spanish leading provider of high power SSPA amplifier systems. Founded in 1995 and headquartered in Madrid, we have a long experience in the desing and manufacturing of radiofrequency equipment since our beginnings in the broadcast business.

The key to our successful record of RF equipment delivered all over the world is our powerful R&D department: 30% of BTESA staff, with specialization in all systems related with Solid state RF power amplifiers:

- Radiofrequency: experience for reliable transistor circuits.
- Software: for internal logic control system and remote control.
- Electrical: we design our own power supplies, with special care for surge protection.
- Mechanical: careful cooling extends lifetime.

The skill of our R&D team to design any RF product, together with the flexibility of the System Engineering department to adapt to any project, allowed BTESA to easily jump in 2014 into the Industrial, Scientific and Medical Applications, complying with their highest quality standars.

BTESA is your partner for power amplifier systems, either for design and manufacture of customize Solid State high power Amplifiers and drivers, or for a complete turn-key project, as well as for any manufacturing and testing requirement.

350kW liquid cooled SSPA for CERN

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] Supply of the Solid-State Power Amplifier for Radio Frequency Quadrupole of the Linear IFMIF Prototype Accelerator (2022 - 2027)
- [CERN] Design and manufacture of 2x RF Solid state power amplifiers 350kW pulsed power @ 101MHz (2020 - 2023)
- [ESRF] Design and manufacture of 3x Driver 250W c.w. @ 352MHz 3RU (2020 - 2020)
- [ESS BILBAO] Design and manufacture of 3x RF Solid state power amplifiers 30kW pulsed power @352MHz (2019 - 2022)
- [Nevis Laboratories, Columbia University] ILS - Design and manufacture of RF Solid state power amplifier 156kW pulsed power @ 200MHz (2019 - 2020)
- [ESS BILBAO] Design and manufacture of 7x Driver pulsed 500W @ 352MHz 3RU (2019 - 2020)
- [F4E] Supply of 16 liquid cooled loads of 200kW c.w. power (2018 - 2019)
- [ADAM / Advanced Oncotherapy] Design and manufacture of 5x Driver pulsed power 2kW @ 750MHz 4RU (2018 - 2018)
- [ALBA] Design and manufacture of 3x 600W driver @ 500MHz (2017 - 2017)
- [ESS] Design and manufacture of 2x 200W driver @ 704MHz (2017 - 2017)
- [ALBA] Manufacture, supply and installation of sixteen (16) 80kW IOTs tubes at 499,654MHz and ten (10) trolleys with its auxiliaries for the ALBA Storage Ring RF transmitters (2016 - 2018)
- [ALBA] Design, manufacture, supply and installation of one 50kW RF high power transmitter based on Solid State Amplifiers @ 500MHz for the ALBA Booster synchrotron (SSA) (2016 - 2018)
- [CERN] Manufacture and test of 180 Solid-State Power Radio Frequency (RF) Ampllifiers 3kW @ 17MHz for the PS (Proton Synchrotron Accelerator) (2016 - 2017)
- [CERN] Design and manufacture of 11 drivers 1200W @ 704MHz pulsed Solid State RF Amplifiers for the MB-IOT test bench system for ESS (2016 - 2016)
- [EUROPEAN XFEL - UPM] Manufacture and supply of 250 power supplies dor the superconducting magnets of the European X-Ray Free Electron Laser (2015 - 2016)
- [CIEMAT] Design, Manufacturing and supply of 2x 16kW RF Solid State Power amplifiers at 175 MHz, for the Buncher cavities of the MEBT of the IFMIF/EVEDA Accelerator Prototype (LIPAc), presently under construction in Rokkasho (Japan) (2014 - 2017)
- [ALBA] Manufacture, supply and installation of 1 prototype and series of 4 units of 80kW IOT tubes at 499,654MHz, with all their accessories, for the storage ring RF transmitters of ALBA synchrotron Light Source (2014 - 2015)

RELEVANT R&D PROJECTS

- [CDTI-MISIONES] Industrial research in technologies and processes applied to IFMIF-DONES in order to evolve in the Fusion Program (DONES-EVO) (2022 - 2024)
  Industrial R&D CDTI funded project, consortium of seven companies
- [CDTI-CIEN] Acclerators and related technologies for Large Scientific Facilities (ACTECA) (2017 - 2021)
  Industrial R&D CDTI funded project, in a consortium of seven companies

50kWcw SSA for ALBA

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

CERTIFICATIONS

ISO-9001

Company name:	**BURDINBERRI S.L.U.**
Address:	C/ Zorrostea, 4. 01010, Vitoria-Gasteiz
Web:	https://www.burdinberri.com
Turnover:	17.30 million EUR in year 2023
Employees:	64 in year 2023
SME:	YES
Phone:	[+34] 945 242 300
Email:	burdinberri@burdinberri.com

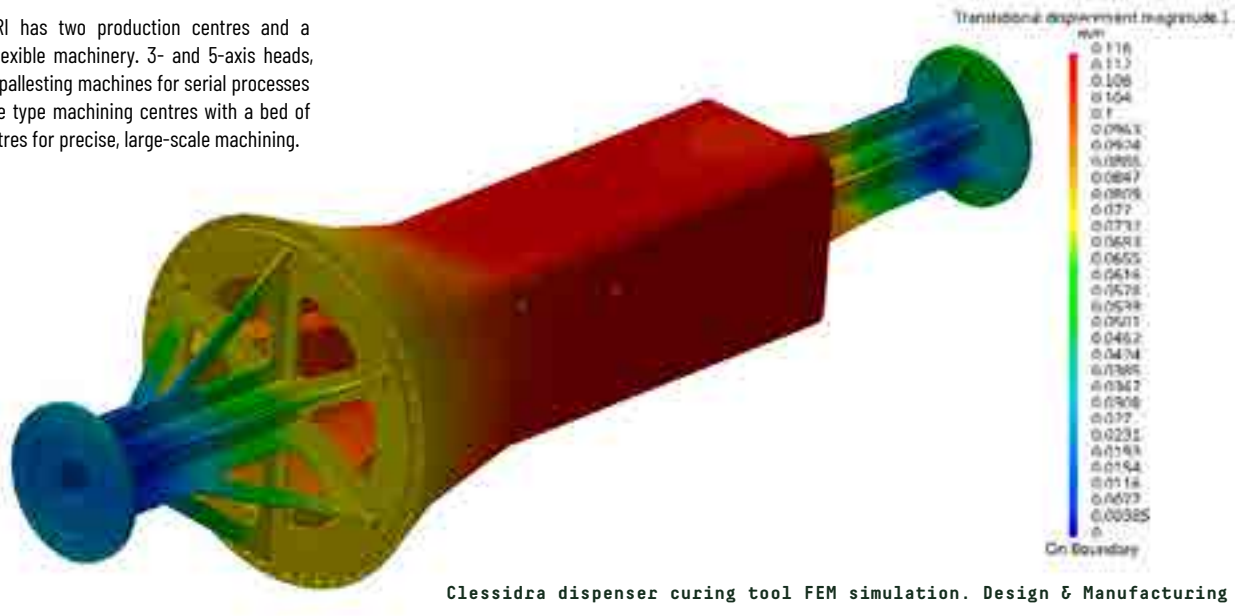
ACTIVITY AND SKILLS

BURDINBERRI is dedicated to high-quality machining and specialises mainly in the engineering, development and fine-tuning of metal tools for companies in sectors where technology is in great demand, such as aerospace, the automotive industry, nuclear energy, railways and the naval sector among others.

BURDINBERRI has modern facilities, the most advanced design programs and the latest computer equipment to design and develop its products, which allows it to cover a wide range of products, including design and manufacture.

BURDINBERRI has two production centres and a variety of flexible machinery. 3- and 5-axis heads, high-speed pallesting machines for serial processes and a bridge type machining centres with a bed of up to 25 metres for precise, large-scale machining.

Onesat curing tool



Clessidra dispenser curing tool FEM simulation. Design & Manufacturing

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - AVS] Machining and dimensional control refrigeration panels (2022)
- [ITER ORGANIZATION - AVS] Machining and dimensional control of stainless steel (304L) spacers (2022)
- [AIRBUS] Tooling for manufacturing composite elementary parts (2021)
- [ITER ORGANIZATION - ENSA] Machining of feed water distribution rings (2021)
- [ITER ORGANIZATION - ENSA] Machining and NDT (VT, PT & DT) after reeverse engineering of plugs as per drawings, step 2,3 and 9 (2021)
- [ITER ORGANIZATION - ENSA] Cutting, machining and NDE of 3 spray box spray plates, items 14.004, 14.007 and 20.004 for pressurisers units 1 and 2 (2021)
- [ITER ORGANIZATION - ENSA] 2CP38, 3CP38 and 9CP38 Machining and internal dimensional control of back plate (2019)
- [ITER ORGANIZATION - ENSA] 2CP34, 3CP34 and 9CP34 Machining and internal dimensional control of back plate (2019)
- [ITER ORGANIZATION - ENSA] 2CP64, 3CP64 and 9CP64 Machining and NDE (2019)
- [AIRBUS] Manufacture of automated assembly mandrels (2018 - 2019)
- [ITER ORGANIZATION - ENSA] Pre-machining, dimensional control and NDE of TSs (2018)

RELEVANT R&D PROJECTS

- Development and machining of moulds fir super plastic forming of titanium rings (MOLDITAN) (2021)
- [ALAVA INNOVA] Feasibility study on the process for manufacturing Invar36 steel tools using laser technology (2021)
- Methodology for manufacturing carbon fibre ducts using a modular system (MOLDDUCTOS) (2020)

LVA curing tool

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NAVAL | NUCLEAR | AUTOMOTIVE | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-45001 | ISO-9100

Company name:	**CADINOX**
Address:	C/ Okobio 32. 20491, Belauntza (Gipuzkoa)
Web:	https://www.cadinox.com
Turnover:	21.00 million EUR in year 2024
Employees:	89 in year 2024
SME:	YES
Phone:	[+34] 688 678 433
Email:	cadinox@cadinox.com

ACTIVITY AND SKILLS

Since 1996, CADINOX is specialized in the detail design, manufacturing, machining, testing and assembly of integral mechano-welded products.

CADINOX has a large experience manufacturing complex equipments in Stainless steel, Aluminium and Carbon steel.

CADINOX has many references in taylor made High Vacuum Chambers, Cryostat and large and complex structures.

CERN DTL tank

ILL flight vacuum chamber for H12 Panther

CONTRACTS FOR BIG SCIENCE FACILITIES

- [APOLLON] LULI - Vacuum chamber (2022 - 2023)
- [ESS - AVS] T-REX instrument (2022 - 2024)
- [ESS - AVS] Connection ring (2022 - 2023)
- [ESS - AVS] Monolith vessel cover (2022 - 2023)
- [OTHER - APOLLON] LULI - Vacuum chamber (2021 - 2022)
- [ESS - AVS] T-Rex Vacuum chamber (2021)
- [ESS BILBAO - AVS] MIRACLES instrument (2021)
- [ESS - AVS] LOKI instument (detector vacuum chamber & colllimator) (2020)
- [ESS - AVS] Monolith vessel (2020)
- [ELI - AVS] 2 aluminium vacuum vessel with optical table (2020)
- [ILL] Flight vacuum chamber for WASP (2018)
- [ILL] Flight vacuum chamber for H12 Panther (2018)
- [CIEMAT] IFMIF - Beam dump structure + inside & outside cones (2018)
- [CERN] Cryostat 11T prototype (2017)
- [ELI] Laser experiment chamber (2017)
- [CLPU] Laser compressor and experimental chamber (2015 - 2016)
- [CERN] DTL tank and girder (2014)
- [CERN] NA 62 rich vessel (2014)
- [CERN] NA 62 straw stations (2014)
- [ESRF] Small angle scattering beamline (SAXS) (2014)
- [HZB] Neat detection chamber (2014)
- [ESS] DTL tank (2014)
- [CERN] HIE-SOLDE cryomodules (2013 - 2015)
- [ILL] IN16B vacuum chamber (2011)
- [ILL] IN16B deflector chamber (2011)
- [GTC] High precision Nasmyth rotators (2005)

RELEVANT R&D PROJECTS

- [CDTI - MISIONES] DONES NEXT (2021 - 2024)
  Industrial R&D project oriented to gathering knowledge and key experience for the design, manufacturing, testing and on site installation of the Test Cell of IFMIF DONES facility.

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | ELECTRONICS AND OPTOELECTRONICS | MECHANICS AND OPTOMECHANICS | REMOTE HANDLING AND ROBOTICS

MARKETS

NUCLEAR | OIL & GAS | ENERGY | AERONAUTICS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-3834

Company name:	**CEIT**
Address:	Paseo Manuel Lardizabal 15. 20018, Donostia-San Sebastián
Web:	https://www.ceit.es
Turnover:	25.50 million EUR in year 2023
Employees:	280 in year 2023
SME:	NO
Phone:	[+34] 943 212 800
Email:	infoceit@ceit.es

ACTIVITY AND SKILLS

Ceit is a nonprofit private research center with the mission to serve the industrial sector, carrying out projects of applied research and technological development. Ceit is a multidisciplinary center, whose work is oriented to different sectors: railway, aeronautical, automotive, health, manufacturing, energy, environment and ICT.

Ceit's capabilities and interest with regard to large scientific facilities are:

- Development of materials and components for extreme environments: graphitic materials, self-passivating W alloys, ODS Steels, EUROFER, CuCrZr, porous silicon carbon with tailored porosity.
- Design, production and processing of powders. Equipment with metal/gas atomizer to produce tailored metallic powders for Additive Manufacturing or (Near) Net Shape technologies. From 1 kg up to 250 kg of powder with composition within ITER/EUROfusion specifications: ODS Steels, EUROFER, CuCrZr, Cu-OHF.
- HIP. Consolidation of ceramic and metallic powders encapsulated in cannisters, removal of residual porosity in castings or components obtained by Additive Manufacturing.
- Additive Manufacturing: PBF-LB (powder bed fusion laser beam), BJ (Binder Jetting), wire and powder DED-L (laser beam directed energy deposition).
- High precision Femtosecond Laser surface processing.
- Solid state diffusion bonding of Cu, CuCrZr, AISI 316L, EUROFER, ODS steels and tungsten.
- Failure analysis. Identification of failure mechanism (mechanical and thermomechanical fatigue, fractography analysis...). Advanced techniques for residual stresses measurement.
- Electronic and magnetic NDT for microstructural characterization and identification of defects and cracks.
- Thermal Physical, mechanical and microstructural characterization (SEM, TEM, AFM).
- Remote handling: haptic devices (mechatronics background), control engineering (teleoperation, mobile cobots, low latency communication systems like 5G), own XR technology for remote asistance, 2D and 3D vision for metrology, quality inspection and perception.
- AI applied technologies: machine learning, generative AI, NeRF, Deep Learning...
- Cybersecurity.

RELEVANT R&D PROJECTS

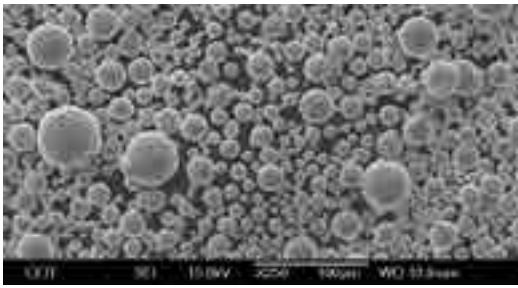
- [CDTI & AEI - TRANSMISIONES] Development of advanced manufacturing technologies to produce large-scale components to enhance the competitiveness of the Spanish industrial sector in Fusion (RODAS) (2025)
- [Elkartek] Development of more sustainable, digital and intelligent metallic AM technologies (EDISON) (2022 - 2023)
- [CDTI - MISIONES] Advanced Manufacturing for the Development of Critical Technologies for the Construction of DEMO and the Advancement of the Fusion Roadmap, Based on Challenges Identified During the Design and Construction of ITER (ROAD2DEMO) (2022 - 2024)
- [CDTI - MISIONES] Industrial research in critical technologies for the operation and maintenance of large scientific facilities applied to IFMIF-DONES (NEURON-DONES) (2022 - 2024)
- [CDTI] Strategic program for excellence qualification in Additive Manufacturing of metallic materials (CEFAM) for highly demanding sectors, like Large Scientific Facilities, Aerospace or energy. (2020 - 2023)

RELEVANT R&D PROJECTS [cont.]

- [EUROfusion] Manufacturing and testing of SiC-based Flow Channel Inserts for the high temperature DCLL blanket (2019 - 2021)
- [EUROfusion] Additive Manufacturing of CuCrZr perts by Electron Beam Melting (EBM) (2019 - 2023)
- [EUROfusion] Self-passivating tungsten alloys (2019 - 2023)
- [EUROfusion] ODS ferritic steels fabrication and characterization (STARS route) (2019 - 2023)
- [F4E] Material Characterization at room and elevated temperatures (2016 - 2018)
- [CDTI - HEDISA and Leading Metalmechanic Solutions] Solid state diffusion bonding of titanium alloys and develpment of complex stainless components following (Near) Net Shapetechnology, by powder metallurgy and HIP consolidation of powders (2016 - 2018)

Gas atomizer plant for spherical metallic powders production

- [F4E - Leading Matelmechanical Sollutions] Supply of Full Scale Prototypes (FSP) of ITER Normal Heat Flux (NHF) FW Panels (2015 - 2017)
- [ESS-Bilbao] Assessment of the candidate tungsten bricks of the ESS target suppliers according to the test protocol provided by ESS-Bilbao (2015 - 2019)
- [EUROfusion] Manufacturing and testing of SiC-based ceramics for Flow Channel Inserts in DCLL blankets (2015 - 2017)
- [CompITER, Government of Cantabria - Leading Metalmechanic Solutions] Development of a simplified 10-fingers prototype to desing proper cutting strategies of the fingers of the FWP of ITER to mitigate distortions in the final component (2015 - 2016)
- [EUROfusion] Self-passivating tungsten alloys (2014 - 2018)
- [EUROfusion] ODS ferritic steels fabrication and characterzation (STARS route) (2014 - 2018)
- [F4E - Leading Metalmechanic Solutions] Fabrication of a standard semi-prototype of the ITER NHF First Wall Panels (2013 - 2014)
- [F4E - Tecnalia] Material characterization at room and elevated temperatures (2012 - 2014)
- [CDTI - Leading Metalmechanic Solutions] Diffusion bonding of Be and CuCrZr by HIP, and microstructural characterization to evaluate quality of joints (2012 - 2013)
- [Spanish Ministry for Science and Innovation] Fusion Technologies Programme: Development and characterization of porous SiC and SiCf/SiC for application as Flow Channel Inserts in Dual Coolant Lead-Lithium Blankets (2009 - 2014)



Atomized powder

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

REMOTE HANDLING AND ROBOTICS

ADVANCED MATERIALS AND MANUFACTURING

ELECTRONICS AND OPTOELECTRONICS

MARKETS

AERONAUTICS AUTOMOTIVE

ENERGY OIL & GAS SPACE

CERTIFICATIONS

ISO-9001 UNE-166002

Company name:	**CELESTIA TTI**
Address:	C/ Albert Einstein 14. 39011, Santander
Web:	http://www.ttinorte.es
Turnover:	13.81 million EUR in year 2024
Employees:	90 in year 2024
SME:	YES
Phone:	[+34] 942 291 212
Email:	innovacion@ttinorte.es

ACTIVITY AND SKILLS

Celestia TTI is a high technology innovative company in Radiofrequency, Antennas and Ground Stations. Celestia TTI works in the technological forefronts of telecom, radio-astronomy, aerospace, defence and science sectors. Celestia TTI provides fully integrated solutions, from design to manufacture and testing.

Radio-astronomy, Deep Space Stations and Satellite Ground Stations main areas of expertise:

- Cryogenic Low Noise Amplifiers (Cryo LNAs) and Warm LNAs, providing very low noise figure, cutting edge performance, and extremely stable and high reliable products.
- Passive RF Components: Feeders, Polarisers, OMTs and Diplexers.
- High power Solid State Power Amplifiers (SSPAs). Modular solutions based on GaN technology, with graceful degradation, low power consumption and highly reliable.
- Laboratory Cryostats & Cryogenic Receivers: down to 4 K.
- RF electronics.
- Turn key ground stations.
- M&C (Monitoring & Control) Infrastructures.

Particle Physics main areas of expertise:

- High-power Solid-State Power Amplifiers (SSPAs): based on GaN technology, from drivers of hundreds of Watts to finals of tens of Kilowatts, for a wide range of frequency bands.

GaN SSPA 5kW C band

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IAC] Development, installation, tests and training of a M&C system for a satellite ground station - IAC (2023 - 2023)
- [YEBES OBSERVATORY] Supply of filtering, switching, distribution, and baseband conversion modules for the ASTROREC receiver of the 40m radiotelescope (2023 - 2024)
- [YEBES OBSERVATORY] Construction, installation, and commissioning of Satellite Laser Ranging under YDALGO project (2020 - 2022)
- [VIRAC (Ventspils International Radio Astronomy Centre)] Development, installation, tests and training of receiver systems for radio-telescopes RT-16 & RT-32 (2018)
- [ESA - ESOC] Frame Contract for FEC (Front-end Controller), CSMC (Central Station M&C system) and PPIU (Power Plant Interface Unit) in ESA's Ground Stations. SEC (Site Equipment Controller) for SSA-NEO Telescopes (2017)
- [INTA] Deployment and maintenance of FEC (Front-end Controller) and CSMC (Central Station M&C system) in INTA's Ground Stations (VIL-1/2, MSP, TRN) (2017)
- [ESA - ESOC] Ka band SSPA 100W for ESA Deep Space Stations (2017)
- [CERN] Driver amplifiers (Qty 312) of the new power amplifier for the SPS 200 MHz RF system (2016 - 2018)
- [ALBA] Driver SSPAs - Different supplies of narrowband SSPA drivers at 500Mhz (500W) and 3GHz (350W). (2015 - 2021)
- [ESO] Cryogenic and warm LNAs for ALMA observatory bands 1, 5, 7 and 9 (2007 - 2019)

RELEVANT R&D PROJECTS

- [ESA] Re-design of the ESA Deep Space Antennas feed system for future Moon missions (2020)
- [CDTI-INNOGLOBAL] Band 5 cryogenic LNAs for SKA0 (2017)
- [CDTI] Innovative developments of low-cost high-power amplifiers for scientific installations (2015)

Cryogenic LNAs (up)
and Pulsed SSPA 350W at 3GHz

BIG SCIENCE AREAS

ASTRONOMY | FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS | SPACE | DEFENSE

CERTIFICATIONS

ISO-9001

Company name:	**CEN SOLUTIONS (CUADROS ELÉCTRICOS NAZARENOS, S.L.)**
Address:	Bulevar Agustín Núñez llano 5 (Parque empresarial MegaPark). 41703, Dos Hermanas (Sevilla)
Web:	https://www.censolutions.es
Turnover:	120.19 million EUR in year 2024
Employees:	254 in year 2024
SME:	YES
Phone:	[+34] 955 675 128
Email:	censolutions@censolutions.es

ACTIVITY AND SKILLS

CEN Solutions (Cuadros Eléctricos Nazarenos S.L.) was founded in 1994 to provide services to industrial and energy generation facilities, specializing in the desing, manufacturing and services associated with:

- Low and medium voltage electrical equipment, modular electrical rooms.
- Energy storge systems and equipment for all types of power facilities, petrochemical and industrial installations.
- Retrofitting services, modifications and preventive/corrective maintenance of existing equipment.

Company activities are focused on the following main markets: energy generation (fossil, nuclear and renewables), oil&gas, industries and electrical substations, water treatment plants, maritime sector, defense and aeronautical.

The Services activity, associated with the industry and water business lines, provides electro-mechanical and automation solutions for processes, high value-added production lines and the water sector, providing immediate response, improvements, services and solutions to the costumer's production processes and targeted to aeronautical facilities and water treatment plants.

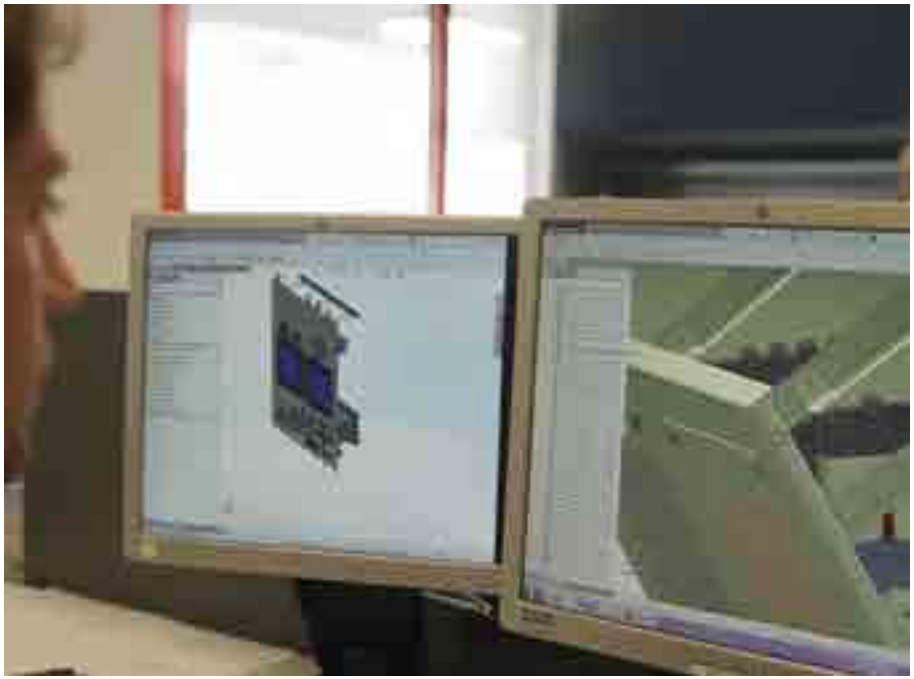
We are currently erecting one of the largest facilities in Spain dedicated to the manufacture of electrical equipment, with total of 30,100 m^2 and increasing the company capacities by 40%.

Production Center

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Supply Contract for TCWS Medium Voltage Safety Important Class Switchgear (2024)
- [ITER ORGANIZATION] PBS26 TCWS SIC SIGNAL CONDITIONS CUBICLES (2022)
- [ITER ORGANIZATION] Qualification Program and Supply of 6 SIC SCC Cubicles (2022 - 2023)
- [ITER ORGANIZATION] Design and manufacturing SCS-N system (2013)
- [CERN] DC Power Supply 0-5.400A, 1800V (1993) (2000)
- [CERN] DC Power Supply 0-20.000A, 17V (1991) (2000)
- [CERN] 2 DC Power Supply 0-24.000A. 17V (1991) (2000)
- [CERN] DC Commuted Power Supply -10 -> +10V, 2.000 -> +2.000A (1991) (2000)
- [CERN] DC Power Supply 0-20.000A, 25V (1990) (2000)
- [CERN] 40 AC Voltage Regulator 0-1.000A, 1500kW (1987) (2000)

Collaboration with CERN started in the first stages of the LHC, working together during the engineering phase prior to starting manufacturing processes at our production center in Seville.



Mechanical Engineering

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | ELECTRICAL AND POWER ELECTRONICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-9001 | ISO-14001 | UNE-73401

Company name:	**CENTRO TECNOLÓGICO CTC**
Address:	Calle Isabel Torres 1, PCTCAN. 39011, Santander (Cantabria)
Web:	https://centrotecnologicoctc.com
Turnover:	1.40 million EUR in year 2023
Employees:	36 in year 2023
SME:	YES
Phone:	[+34] 942 766 976
Email:	info@centrotecnologicoctc.com

ACTIVITY AND SKILLS

CTC Technological Centre was founded in the year 2000 as a private non-profit-making foundation. It has been recognized as a Technological Centre by the Ministry since 2008 under entry nº 79. Ever since then it has been the only technological center in Cantabria region (Spain) to have been awarded this distinction, which recognizes non-profit-making entities with the major objective of improving the competitiveness of companies by means of the generation of technological knowledge and which carry out Industrial R&D activities and develop their application.

The mission of the Technological Centre CTC is to enhance companies by means of the application of Science and Technology, designing practical advanced solutions for industry. CTC intends to establish a close relationship with companies to develop innovative processes of technological transfer to increase the competitiveness of the industrial fabrication and facilitate the companies' access to international markets.

CTC is a multisectorial institution and includes three knoledge areas where it developes its R&I projects: Advanced Materials & Nanomaterials, Industry&Energy and Navigation&Robotics.

The areas of specialization of interest for Large Scientific Infrastructures include:

- Engineering and Numerical Simulation. FEM&CFD Structural, thermal and fluid-dynamics calculation.
- Coatings and material/electronics shielding.
- IA aplications on time series and prediction systems.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - Leading Metal Mechanic Solutions, S.L.] ITERCAST (2015 - 2017)
  Casting simulation of process of "Central Beam Support", part of the ITER Experimental Fusion Reactor.
- [ITER ORGANIZATION - ENSA] ITER Mock-up (2014 - 2015)
  Analysis of frames to test ITER welds. Beam strength analysis by finite element method. Analysis of welded and bolted joints. Buckling analysis. Rollover stability analysis. Analysis of lifting lugs. Proposals for correction of invalid parts.
- [ITER ORGANIZATION - ENSA] Fabrication process viability study of VV-ITER (2007 - 2007)
  Feasibility study of the manufacture of VV-ITER by ENSA. Planning and study of manufacturing route, necessary equipment, applicable procedures and possible subcontracted parts.

CTC Headquarters

Steam tube cleaner unit

RELEVANT R&D PROJECTS

- [ESA E/0901-01-K-33-01 Technology Development Element] Methodology development to accelerate the innovation cycle of Li-Ion COTS cells (METHOD) (2022 - 2024)
  New methodology for the space battery cells innovation cycle. It is based on the innovative units emerging from lithium-ion COTS cells used in terrestrial applications. This new methodology will be implemented and compared with the traditional one currently used, in order to define benefits for space applications.

- [CDTI - MISIONES] Numerical modelling of guided waves in structural components of the nuclear fusion industry (FUSION FUTURE) (2021 - 2023)
  Advanced numerical modeling tasks to improve the durability and use of sensors in nuclear fusion applications. CTC worked in the following tasks: • Definition of specifications regarding numerical modeling of guided wave propagation for non-destructive analysis. • Modelling and mitigation of environmental effect to improve sensor encapsulation. • Modelling of guided waves in structural components. • Structural integrity assessment based on NDT measurements. CTC was subcontracted by INNERSPEC TECHNOLOGIES.

- [MICIN Retos Colaboración] Artificial intelligence applied to corrosion management in water cooling systems (I-COR) (2020 - 2023)
  Development of a 4.0 corrosion management system in an industrial plant, based on online data analysis, aimed at industrial water cooling circuits with carbon steel piping to optimize productivity while reducing environmental and safety risks. An online parameter monitoring system has been developed to obtain large-scale dataset, which is processed using neural networks and artificial intelligence to generate an evolving model and a tool for predicting corrosion rates. Project carried out with IDONIAL and Arcelor Mittal.

- [INNOVA (Regional programme)] Useful tube plate cleaning (2019 - 2021)
  Design and construction of the prototype of a tool for cleaning holes of steam generator tube plates. The objective of the project is to carry out the mechanical design and construction of a prototype of a tool for cleaning holes of steam generator tube plates plus the mechanical design of the bench necessary to test it against a sample of tube plate. The prototype of the cleaning tool allows the functionality of the final tool to be tested and its possibility of incorporation into a larger machine. Project leader: ENSA

- [INNOVA (Regional programme)] Adhesives for the nuclear sector (2013 - 2018)
  Selection and validation of the performance of adhesives under operating conditions for use in maintenance operations in the nuclear sector (nuclear power plant pools). Project Leader: ENSA

- [CDTI - EEA GRANTS] Nanomaterials for nuclear applications (2013 - 2013)
  Study, experimentation and analysis of nanomaterials applications in the nuclear sector, aimed at the attenuation of ionizing radiation and the elimination of radioactive isotopes in contaminated waters. Project Leader: ENSA

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

INFORMATION AND COMMUNICATION TECHNOLOGIES

MECHANICS AND OPTOMECHANICS

MARKETS

ENERGY | NAVAL | NUCLEAR

OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**CIC CONSULTING INFORMÁTICO**
Address:	C/ Isabel Torres 3. 39011, Santander (Cantabria)
Web:	https://www.cic.es/
Turnover:	18.00 million EUR in year 2023
Employees:	327 in year 2023
SME:	NO
Phone:	[+34] 942 269 017
Email:	idi@cic.es

ACTIVITY AND SKILLS

CIC Consulting Informático (CIC) is a global IT services and software development firm specializing in digital transformation solutions. With a presence in over 40 countries, CIC offers tailored services to various industries, including energy, utilities, telecommunications, and enterprise.

CIC is at the forefront of advanced digital technologies, data analytics, communication networks, artificial intelligence and cybersecurity, providing a comprehensive set of heterogeneous services and a portfolio of proprietary solutions.

Our R&D activities are focused on delivering tangible outcomes that enhance our products and create novel solutions to meet market needs. CIC participates in public-funded projects and collaborates with public entities, research centers, and industry leaders to drive innovation and shape the future of technology.

CIC is an ICT expert specializing in advanced data analytics and machine learning solutions for Big Science facilities:

- Real-time Big Data monitoring and analysis of diverse data sources: Leveraging AI and machine learning, we provide actionable insights from heterogenous data streams, including energy usage, production data, spatial information, network performance, and sensor readings.
- Advanced data analytics for proactive risk management: early detection of anomalies, vulnerabilities, and security threats, ensuring the integrity and resilience of critical infrastructure.
- Customized dashboards for data-driven decision-making: design and implementation of intuitive dashboards that visualize complex data, facilitating informed decision-making and rapid response to critical events.
- Comprehensive alarm and event management: Our robust event management systems identify, categorize, and prioritize threats, ensuring timely alerts and effective escalation procedures.
- Tailored IT services for Big Science facilities: Our experienced team provides comprehensive IT services, including planning, implementation, systems integration, and pilot deployments.

Dashboards for data-driven decision-making, Complex data visualization, Real-time monitoring

RELEVANT R&D PROJECTS

- [CDTI - TRANSMISIONES] Integrated Management System for the Prevention and Extinction of Forest Fires and the Subsequent Reforestation (GAIA) (2024)
  - Massive data integration and processing: Advanced data-fusion techniques to collect and integrate diverse data sources, including LiDAR, forest inventory data, fuel models, digital terrain models, meteorological data, satellite imagery, field sensor readings, and aerial system data. - Enhanced Data Visualization: Employ geographic information systems to represent collected data, facilitating in-depth spatial analysis, providing a user-friendly and visual reference for all relevant information. - Advanced Data Analytics Models: Employ geographic information systems to effectively represent and map collected data, facilitating in-depth spatial analysis of factors like land use, climatic conditions, and topography.

- [Cybersecurity pre-commercial procurement - INCIBE (Spanish national cybersecurity competence center)] Global solution for assets management, vulnerability management and threat detection to work in a cybersecurity operations center for the electrical distribution sector (VULCANO) (2023)
  Research topics (particularly relevant to Big Science Critical Infrastructures due to their complex interconnectedness of IT and OT systems, the need for robust security measures, and the importance of understanding the geographical distribution of assets and potential threats): • Real time assets modelling and IT/OT convergence. Passive self-discovery processes of new assets, active self-discovery procedures and vulnerability management. • Cyber assets risk assessment: Employing deep learning techniques to assess cyber asset risk based on vulnerabilities, network position, health status, and related asset events. • Advanced network behavior analysis: Leveraging machine learning algorithms to manage and correlate events for anomaly detection in network traffic.

- [PERTE in Renewable Energies -Institute for the Diversification and Saving of Energy (IDAE)] An innovative fuel generation system in the form of hydrogen and ammonia, using floating solar energy (BAHIA H2 OFFSHORE) (2023)
  CIC is responsible for developing an intelligent platform for automated, efficient, and safe management of the entire renewable energy-based production process. This platform will incorporate: • Comprehensive Data Integration: Integrate diverse data sources, including electrolyzer signals, water purification equipment signals, Haber-Bosch simulation data, and external heterogeneous data. • Advanced Data Analytics: Employ big data processing techniques and automated detection models to enable data-driven decision-making, model validation, testing, and experimentation.

- [Cybersecurity pre-commercial procurement - INCIBE (Spanish national cybersecurity competence center)] Integrated solution for cybersecurity anomalies management in a manufacturing industry sector (RABEL) (2023)
  Research topics (relevant to Big Science Critical Infrastructures due to their complex interconnectedness of IT and OT systems, the need for robust security measures, and the importance of understanding the behavior of assets and processes to prevent disruptions and ensure optimal performance): • Asset Modeling and Industrial process data Management. Comprehensive modeling of all assets in the production chain. Mechanisms to identify deviations from expected asset behavior, potentially indicating security threats or operational issues. • Anomaly detection. Monitoring and detection of anomalous behavior in industrial processes using machine learning techniques. • Advanced events and alarms management. Multivariable alarm management system to prioritize alarms based on their severity.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

ENERGY | AUTOMOTIVE

NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-27001

ISO-45001 | CMMI

Company name:	**CITD ENGINEERING & TECHNOLOGIES, S.L.**
Address:	Avda. Leonardo da Vinci, 15. Edificio B, 2ª planta. 28906, Getafe (Madrid)
Web:	https://www.citd.eu
Turnover:	2.33 million EUR in year 2023
Employees:	48 in year 2023
SME:	YES
Phone:	[+34] 912 079 300
Email:	info@citd.eu

ACTIVITY AND SKILLS

CiTD, the former ITD, is a company headquartered in Getafe, close to Madrid, with presence in the market for more than 20 years. Its experience is largely related to aerospace/aeronautics programs, being one of the leading engineering companies in the Spanish Industry. Its expertise embraces most of the engineering and desining technologies also applicable for the development of Big Science Organizations.

As an engineering company, with a core business in Electrical & Mechanical Systems, Stuctural Desing & Analysis, and instrumentation, its added value is based on the transnational management capabilities and the long experience in the development of international projects in highly technological environments.

Since 2017, its portfolio is being open to infrastructure and digital transformation (Industry 4.0) thru Digital Twin and BIM technologies as well as offering final products involving turnkey services/projects via one-stop-shop concept thru a consolidated supply chain scheme. In this line CiTD is boosting metal additice manufacturing technologies on flyable certifies parts for aerospace, supported by topological optimization engineering and R&D projects. It is also offering supply capabilities for: electrical harnesses, tooling and parts in general for a wide spectra applications, especially in composites (monolithic or sandwich).

CiTD brings its best value to costumers and partners in terms of innovative solutions, cost efficiency and quality assurance.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [EST - IAC] Heat Rejecter Preliminary Desing for the European Solar Telescope (2022 - 2023)
- [F4E] Framework Services Contract in Cascade for the provision of CADdesign support services (2021 - 2024)
- [F4E] Framework Services Contract in Cascade for the Provision in the field of General Mechaninal Engineering Design Analysis (2018 - 2021)
- [CERN] Framework contract for the Provision of Mechanical Design On and Off the CERN Site (2013 - 2018)
  Relevant works: - CiTD premises: Dipoles and quadrupoles magnets for ELENA ring, Support structure for beam stopper on LINAC4 accelerator; Cold Cathode Assembly; Vertical and horizontal gonios - On site: LHC Interconnections; Magnets, Vacuum chambers and tooling for several lines
- [F4E] Competitive Muliple Framework Service Contract: Provision of CAD Design Support for General Mechanical Desing (2013 - 2016)
  Relevant works: - ITER Vacuum Vessel 3D design for manufacturing (CiTD premises) - NHF FW Panels detailed design of main and minor (On site)
- [F4E] Industrial Cost Evaluation and Scheduling of the Cooling Plant for PRIMA (MITICA and SPIDER Experiments) (2010)

Composite bulkhead

RELEVANT R&D PROJECTS

- [CDTI-MISIONES] WAAM technology laser-assisted for SENSOrized multimaterial COMponents (COMSENSO) (2022 - 2024)
- [PTA] Technologies for a Zero Emission aiRcraft Operation (ZERO) (2022 - 2023)
- [ESA-GSTP] Additive Manufacturing For the Spanish Space Industry (AM4ALL) (2021 - 2022)
- [CDTI-PID] New Integrated COMpisite manufacturing process for Electric Aucraft (COMPIAE) (2020 - 2021)
- [AMable OC4-H2020] Cubesat Additive manufacturing and Metalization best practice application experiment (CUBAM) (2020 - 2021)
- [AMable OC3-H2020] WAAM Engine Mount Feastability Study (WAAMEM) (2020 - 2021)
- [Clean Sky 2] Anaerobic plant in air transport for on-board waste treatment (DIGESTAIR) (2019 - 2021)
- [ESA-GSTP] Novel structural components for launchers/satellites applications using additive manufacturing technologies (2019)
- [H2020] Personalized Additive Manufactured Implants for Scoliosis treatment (PAMIS) (2018)
- [Retos-Colaboración, MICINN] Additive manufacturing for Space Sector (FASE) (2018 - 2021)

ESA-AM bionspired satellite bracket

BIG SCIENCE AREAS

ASTRONOMY | FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

MARKETS

AERONAUTICS | DEFENSE

NAVAL | NUCLEAR

OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-9100

Company name: **COMMTIA SYSTEMS, S.A.**
Address: Av. Generalitat, 70. 08530, La Garriga (Barcelona)
Web: https://www.commtia.com
Turnover: 3.00 million EUR in year 2024
Employees: 35 in year 2024
SME: YES
Phone: [+34] 938 605 470
Email: info@commtia.com

ACTIVITY AND SKILLS

COMMTIA Systems, with over seventy years of industrial tradition, specializes in the design, development, manufacturing, supply, and installation of advanced equipment and systems for the most professional and demanding customers worldwide, across sectors such as Defense & Security, Science, Timing & Synchronization, Broadcast, and other niche markets.

In the scientific sector, COMMTIA develops and supplies innovative radiofrequency solutions that have been implemented in particle accelerator facilities and fusion research centers. COMMTIA's goal in this sector is to continue providing pioneering technological solutions tailored to its clients' needs, drawing on the company's expertise in developing RF equipment and professional electronics systems and upholding its commitment to excellence in each of its products and services.

175MHz CW & pulsed SSPAs

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IFMIF DONES - CIEMAT] 175 MHz CW SSPAs for IFMIF-DONES RF System (2023 - 2024)
  Design, manufacturing, and supply of Solid-State Power Amplifiers (SSPAs) operating at 175 MHz CW for the IFMIF-DONES (International Fusion Materials Irradiation Facility DEMO Oriented Neutron Source) Radiofrequency System, as part of the WPENS (Work Package Early Neutron Source), which will operate with multiple RF stations with power levels ranging from 20kW to 200kW.
- [ALBA] 1.5 GHz CW SSPA for ALBA Storage Ring (2021 - 2022)
  Design, manufacturing, supply, and installation of CW 1.5 GHz RF Solid State Power Amplifiers (SSPA) for the 3rd harmonic RF system of the ALBA storage ring in CELL's facility, with future scalability up to 20 kW, enhancing beam stability and optimizing the longitudinal beam distribution to improve the overall efficiency and performance of the synchrotron light source.
- [ALBA] 500 MHz CW SSPA for ALBA RF system (2021 - 2022)
  Design, manufacturing, and supply of CW 500MHz Solid State Power Amplifier (SSPA) for the ALBA synchrotron RF system.

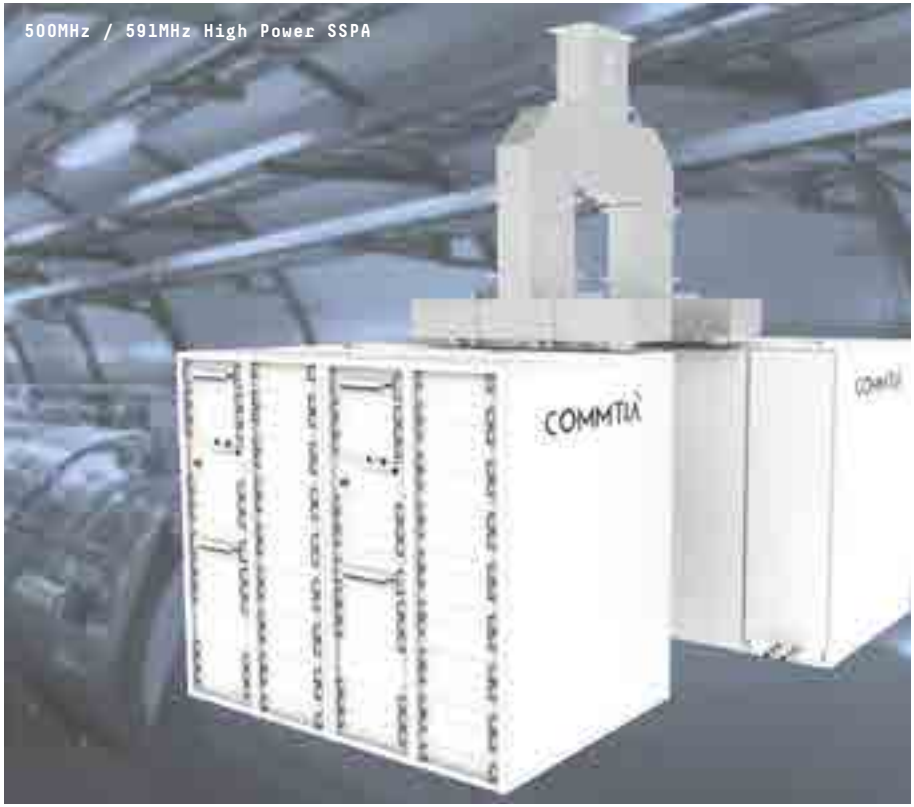
COMMTIA facilities

RELEVANT R&D PROJECTS

- [HORIZON EUROPE] RF2.0 Research Facility (2024)
  It is a collaborative initiative with partners such as KIT, ALBA, CERN, DESY, HZB, MAX IV, and others, aiming to design, develop, and validate novel solutions for transforming particle accelerators into more sustainable and energy-efficient infrastructures. The project focuses on developing highly-efficient components, integrating AI-assisted power management, low carbon technologies, and flexible power consumption approaches. These solutions will be validated through four demonstrator projects, with a goal of reducing the environmental impact and optimizing energy use in research facilities (2024-2027).

- [CDTI] HP-SSPA-AC (Very High-Power Solid-State Power Amplifiers for Scientific Applications) (2016 - 2019)
  This R&D project aims to research, design, develop, and validate a new range of very high-power solid-state amplifiers for scientific applications, offering a modular, scalable solution with high built-in redundancy that significantly enhances service availability in case of amplifier element failure, while also substantially reducing the total cost of ownership (TCO) compared to traditional IOT systems.

1,5GHz CW SSPA



BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

ELECTRICAL AND POWER ELECTRONICS

MARKETS

DEFENSE

NUCLEAR

ENERGY

SPACE

CERTIFICATIONS

ISO-9001

ISO-14001

Company name:	**COMPOXI**
Address:	Carrer Pic de Peguera, 9. 17003, Girona
Web:	http://www.compoxi.com
Turnover:	4.60 million EUR in year 2024
Employees:	40 in year 2024
SME:	YES
Phone:	[+34] 972 183 283
Email:	sales@compoxi.com

ACTIVITY AND SKILLS

Compoxi is a company committed to the development of advanced composite and composite-metal structures by contributing to each project with its expertise and know-how acquired through more than a decade involved in the development, design, analysis, qualification and manufacturing of composite structures and components in space, aeronautics and industrial markets.

Compoxi has skills for designing and manufacturing advanced structures with specific scientific features such as lightweighting, reflectivity/radiotransparency, heat shielding or "zero-cte" for ultra-stable optical benches and/or telescopes. Compoxi has participated in many scientifc programs from ESA, SKA and other main scientific institutions.

Compoxi aims to become a reference for the development of advanced composite material structures in the south of Europe by offering an integral solution of design and manufacturing under the envelope of an easy, open and transparent relation with our client, we strictly manage our projects from the early cooperative concept design to the final serial production.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA] POLYHEAT (2024 - 2025)
  Development of polymer for nozzle extension applications, to whitstand high temperature exposure (>1500ºC)
- [SKAO - EOSOL] SKA Subreflectors (2024 - 2026)
  Co-engineering and Manufacturing of SKA MID Subreflectors for SKAO radiotelescope in South Africa
- [ESA - LEITAT] HEDGE (2018 - 2021)
  High sErvice temperature aDhesives and composites for thermal shieldinG in atmospheric Entry

Workshop

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS

DEFENSE

SPACE

HEALTH

CERTIFICATIONS

ISO-9001

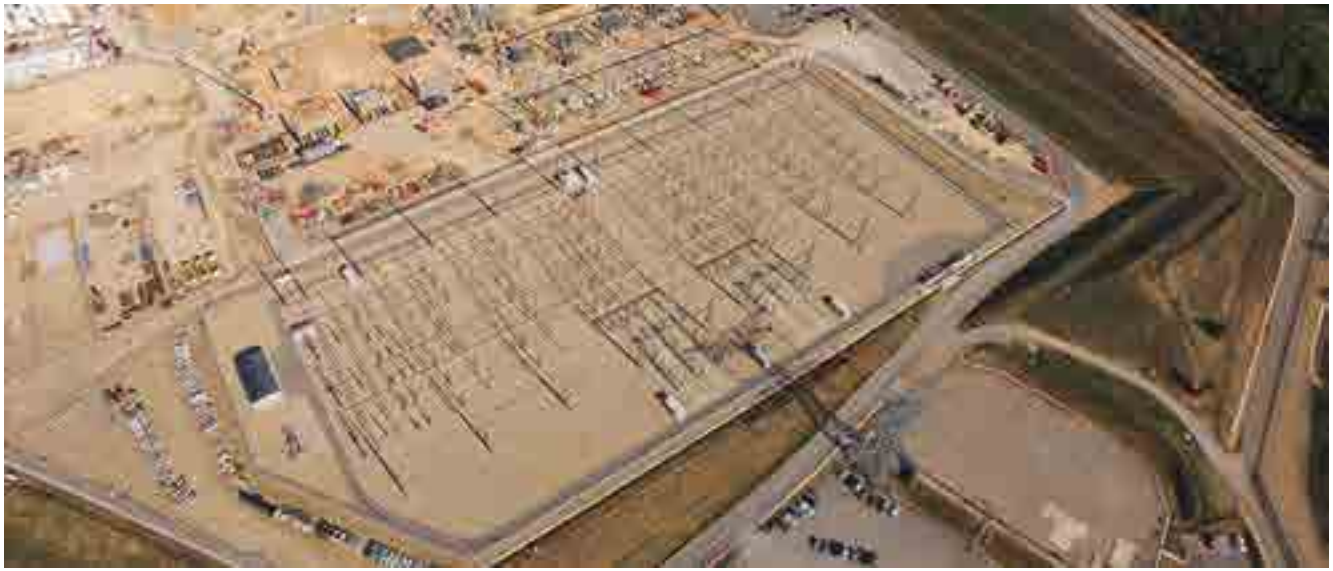
Company name:	**CT INGENIEROS AAI S.L.**
Address:	Avda. Leonardo da Vinci, 22. Parque Empresarial La Carpetania. 28906, Getafe (Madrid)
Web:	https://www.ctengineeringgroup.com/
Turnover:	77.00 million EUR in year 2023
Employees:	2,000 in year 2023
SME:	NO
Phone:	[+34] 916 832 030
Email:	plataformas@ctengineeringgroup.com

CT ENGINEERING DRIVEN PEOPLE

ACTIVITY AND SKILLS

CT is all about technology and innovation. We love challenges and see obstacles as new opportunities. Working closely with our customers we satisfy their most demanding requirements with agile, tailored services. The satisfaction of our customers has led us to become a preferred engineering partner in their most ambitious programs, working throughout the complete product lifecycle. For more than 35 years, our mission has been to provide innovative services and technological solutions that help our clients be more effective and competitive. Today, CT´s success is driven by 2.000+ engineers in seven countries providing end-to-end expert support to leading customers in the aeronautical, space, naval, automotive, railway, energy and industrial plant sectors.

Over the past decade, CT has been a key player in several high-profile projects within the nuclear sector, dedicating over 100,000 hours to initiatives such as ITER, East Anglia, CERN, and Fusion for Energy. CT's collaborative innovation model enables us to harness the expertise of both internal and external talent, creating more efficient and sustainable engineering solutions. Our alliances with research centers, universities, startups, and other companies, make us stronger and bring us further.



The very high voltage electrical substation on the south side of the platform (Photo IO EJF Richie)

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] CAD & Engineering Activities in the Plant Area (2021)

- [Scottish Power] Saint Brieuc Offshore Project (2020)
  Complete design for the SCADA and Communication System of the project, including basic and detailed engineering, FAT and SAT, and customer support during onshore and offshore commisioning processes.

- [ITER ORGANIZATION - Consortium Leader] Diagnostics Port Integration Engineering (2020)
  - Electrical, power electronics, electromechanical and RF systems. - Diagnostics and detectors, sensors, optics and instruments. - Information and communication technologies. - Material technologies and advanced manufacturing techniques. - High precision and large mechanical components. - Automation, Control and Remote handling systems. - Cryogenics, vacuum and leak detection technologies. - Systems Integration.

- [SABIC] Field Planner and Reliability Engineering Services at SABIC plant in Cartagena (2019)
  Product Support Engineering to perform maintenance, planning and monitoring activities at SABIC's plant, inclusding collaboration on Reliability Engineering Services for all the Maintenance 4.0 activities.

- [Iberdrola] EAST ANGLIA ONE Project (2017 - 2020)
  Engineering services during the commissioning process of the offshore substation. Collection of information of the different systems by using SCADA system as well as the control and functional tests performed during both onshore and offshore commissioning processses.

RELEVANT R&D PROJECTS

- [MINETAD – RED.ES – 2021] IADGENOL- Research on Deep Learning Control for AWES (2023)
  Research automatic control for airborne energy systems based on the application of neural networks for dynamics and atmosphere prediction trained with experimental and simulated data.

- [EDF-2021-DIGIT-R-2] KOIOS - Knowledge Extraction, Machine Learning and other AI approaches for secure, robust, frugal and explainable solutions in Defence Applications (2022)
  Development of new AI-methods that are trustworthy (under human control and explainable), robust (resilient to attacks), and frugal in the use of resources (data, computing capabilities, energy), to be applied in specific military use cases.

- [CDTI – CIEN 2021] KAIROS - Intelligent and Automated Manufacturing 4.0. of Large Composite Naval Parts (2021)
  Research into cutting-edge technologies for composite manufacturing, Industry 4.0, and digital twins, with the aim of developing a solution to efficiently manufacture large parts in composite material for the naval sector with a high degree of automation, as well as quality and cost optimization.

- [CLEAN SKY 2 – 2019, JTI-CS2-2017-CFP07-LPA-02-22] MULTIFAL - Multifunctional Automation System for Fuselage Assembly Line (2019 - 2024)
  Design, develop, and manufacture an automated plant system for joining thermoplastic fuselage shells, considering three different design use-cases and the assembly system at the existing facilities.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM

MECHANICS AND OPTOMECHANICS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

NAVAL

NUCLEAR

OIL & GAS

SPACE

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-27001

OSHAS 45001

ISO-9100

Company name:	**D+T MICROELECTRÓNICA A.I.E.**
Address:	C/ Til.lers, UAB Campus, Cerdanyola del Vallès. 08193, Barcelona
Web:	https://www.dtm.es
Turnover:	1.39 million EUR in year 2024
Employees:	20 in year 2024
SME:	NO
Phone:	[+34] 935 947 700
Email:	info@dtm.es

D+T Microelectrónica, A.I.E.

ACTIVITY AND SKILLS

D+T Microelectrónica A.I.E. is an Assosiation of Economic Interest in charge of the commercial explotation of IMB-CNM's Micro-nano fabrication Clean Room. Its mission is to provide industry and scientific research with turnkey solutions based on microelectronics technology.

We put our facilities and our expertise at your service. We can run single processes in order to test and optimize your technologies, fabricate and characterize prototypes to study feastibility of your new ideas or manage pilot series and/or final production of your devices.

Our experience spreads in different markets, from industrial and quality control to healthcare and medical technology, from Big Science experiments to space applications.

Our activity in Big Science Organizations mainly focuses in radiation detectors for High energy Physics and Synchrotron applications and SiC power devices for satellites and other harsh environments (radiation and temperature).

We are a radioactive facility licenced company.

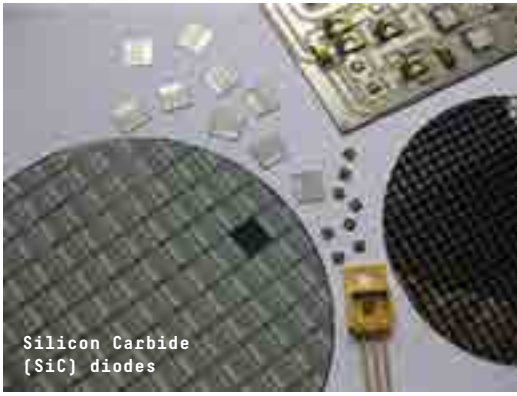
RELEVANT R&D PROJECTS

- [DESY] Cooperation Agreement (2022 - 2024)
- [CERN RD50] Development of Gallium doped LGAD sensors (2020 - 2021)
- [DESY] Cooperation Agreement (2020 - 2022)
- [CERN RD50] Investigation of acceptor removal in boron doped silicon wafers (2017 - 2019)
- [CERN RD50] Development of Gallium doped LGAD (2016 - 2018)

ESA BepiColombo satellite with the solar panels unfolded

CONTRACTS FOR BIG SCIENCE FACILITIES

- [FRIB - Facility for Rare Isotope Beams - Michigan State University] Position sensitive particle detectors with resistive electrode (2024 - 2024)
- [CERN] Fabrication of CMS ETL Si dummies (2023 - 2024)
- [SOLEIL synchrotron radiation source] Sample suports based on Si3N4 membranes (2023 - 2023)
- [ALBA] Sample suports based on Si3N4 membranes (2022 - 2022)
- [SLAC National Accelerator Laboratory] Processing of 30 Microstrip Detectors (2022 - 2023)
- [ALBA] Silicon detector fabrication (2021 - 2021)
- [CERN] Fabrication of Si dummy chips, dummy sensors and silicon heaters (2021 - 2022)
- [SLAC National Accelerator Laboratory] Fabrication of Microstrip Detectors. 15 p-on-n wafers 200um thick (2021 - 2022)
- [CERN] Fabrication of Si dummy chips/sensors (2020 - 2020)
- [CERN] Silicon Heaters. Fabrication of 18 wafers (2020 - 2020)
- [SLAC National Accelerator Laboratory] Processing of Microstrip Detectors (2020 - 2020)
- [ESA] Custom test bench to stress test components ("MOSFET reliability test system") (2019 - 2020)
- [CERN - DESY] Fabrication of dummy pieces of the ABC130 chip for the ITk Collaboration (2017 - 2019)
- [SLAC National Accelerator Laboratory] Prototype radiation detectors with microstip patterns (2017 - 2018)
- [CERN] Strip sensors made of N-rich Silicon (2016 - 2017)
- [DESY] Radiation detector fabrication (2016 - 2017)
- [ESRF] Processing of SiC wafers (2016 - 2017)
- [CERN] Fabrication of dummy pieces of the ABC130 chip for the ITk Collaboration (2014 - 2015)
- [CERN] Fabrication of 3D ATLAS FE-I4 detectors. (2013 - 2014)
- [ESA - Astrium Satellites] SiC diodes for the BepiColombo satellite solar panels (2013 - 2014)
- [ESA - Astrium Satellites] SiC diodes for the BepiColombo satellite solar panels (2012 - 2013)
- [CERN] Particle detector fabrication for ATLAS experiment (2012 - 2013)
- [CERN] Fabrication of shielding boxes for power supplies (2012 - 2012)
- [DESY] Particle detector prototype fabrication (28 wafers) (2012 - 2014)
- [CERN] Fabrication of 3D ATLAS FE-I4 detectors (2011 - 2013)
- [ESA - Astrium Satellites] SiC diodes for the BepiColombo satellite solar panels (2010 - 2011)
- [CERN] Thin-glass fan-in fabrication (2009 - 2011)
- [ESA - Thales Alenia Space] Solar Array HT SiC Blocking Diodes (2007 - 2009)
- [ESA - Thales Alenia Space] Power and thermal management of wide bandgap semiconductors (2007 - 2009)
- [ESA - Thales Alenia Space] Packaging of SiC-Schottky and SiC-JBS diodes (2007 - 2009)
- [CERN] Fanin (Pich adapters) procurement for ATLAS SCT (2006 - 2008)


Silicon Carbide (SiC) diodes

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRONICS AND OPTOELECTRONICS

MARKETS

NUCLEAR

SPACE

HEALTH

ENERGY

CERTIFICATIONS

ISO-9001

Company name: **DAS PHOTONICS**
Address: Camino de Vera, s/n, Edificio 8F. 2ªPlanta. 46022, Valencia
Web: https://www.dasphotonics.com
Turnover: 3.40 million EUR in year 2023
Employees: 67 in year 2023
SME: YES
Phone: [+34] 963 556 150
Email: das@dasphotonics.com

ACTIVITY AND SKILLS

DAS PHOTONICS was created in 2005 as a spin-off company from the Nanophotonic Technology Centre (NTC - Polytechnic University of Valencia, (http://www.ntc.upv.es/), focused on the development of innovative value-adding products based on our proprietary photoncs technology. Our products are at the forefront of R&D in Photonics for Space, Defence and Aeronautics. DAS is recognized internationally as a leading company in the field of RF-photonics for Defense and Space applications. The company exploits the advantages of photonics technology to offer solutions with improved bandwidth, mass and power consumption, compared with electronic/RF implementations.

For Space, DAS develops solutions for both, ground segment and on-board systems, exploiting the benefits provided by photonic technology, such as significant mass, size and power consumption reduction, instantaneous bandwidth (from near DC to above 40 Ghz) phase stability, long transmission distance as well as EM immunity. The current applications developed by DAS Photonics are in the line of photonics links for digital and anologue signals remoting, multi-frequency conversion and antenna beamforming.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA] KaBs (2020 - 2023)
  Electro-Photonic Transceiver BB for Ground Stations Application.
- [ESA] 4000120740/17/NL/AI 2017 Optical Harness for Future L-band Radiometer (2017)
- [ESA] 4000122614/17/NL/FG Single String Photonic Payload (SSPP) and Multi String Photonic Payload (MSPP) (2017)
- [ESA - INTA] Exomars Proposal for the development of the RAMAN laser unit (2013)
- [ESA] AO/1-6034/09/F/MOS - Future Architecture of ESA Deep Space Stations for Enhanced Mission Support. Reference: GRST-SYST-GST-SOW-1002-OPS-GSS (2009)
- [ESO] Front End Integration Centre Local Oscillator Photonic Reference Systhesizer Test Module (LOTRM) (2008)
  Generation of mm-Wave LO by using photonic harmonic conversion techniques (27.3 GHz till 124.34 GHz) in order to be used as test equipment for validating the ALMA radiotelescope front-ends (Atacama, Chile) - Reference 19766/ESO/08/17259/ YWE

RF optical delay line

RELEVANT R&D PROJECTS

- [HORIZON-CL4-2022-RESILIENCE-01] Materials for a next-generation (nano-)opto-electro-mechanical systems (MAGNIFIC) (2022)
  Establish a new Nano-Opto-Electro-Mechanical (NOEMS) technology platform based on nanocrystalline silicon and piezoelectric materials. Validate such NOEMS technology in relevant applications such as 5G and satellite communication in the GHz frequency range. The objective is to realise fully packaged device units that can be tested in a relevant environment to demonstrate the TRL5 of the technology.

- [AVI] Next generation smart metasurfaces based on additive manufacturing for strategic applications in telecommunications and biomedicine (METASMART) (2022)
  Development of new production processes based on additive manufacturing techniques to provide innovative solutions to several technological challenges such as the development of new non-invasive surgical techniques or the optimisation of wireless data communication without energy consumption for the best performance in the Internet of Things-IoT (TRL4).

- [HORIZON-EIC-2022-PATHFINDEROPEN-01] On-chip tomographic microscopy: a paraDIgm Shift for RevolUtionizing lab-on-a-chiP bioimaging technology (DISRUPT) (2022)
  DISRUPT aims to revolutionise the field of biomedical imaging by developing a radically new lab-on-chip technology: integrated tomographic microscopy. It will be made possible by leveraging the science of photonics and wireless tomography on-chip, in combination with microfluidics and artificial intelligence (TRL4).

- [CDTI] Broadband integrated system for spectral monitoring and countermeasurement of communication and RF signals (STAMINA) (2021 - 2023)

- [EDIDP-SME-2020-82] Photonics-bAsed SIGINT payloaD for Class II RPAS (SIGNAL) (2021)

- [CDTI - MISIONES] Quantum computing and its application to strategic industries (CUCO) (2021)

- [H2020-SPACE-2018-2020] Photo-Digital Channelizer for Flexible Digital High Throughput Satellites (PhLEXSAT) (2020 - 2023)

- [CDTI] Interferometer with broadband frequency hopping tracking (HOFER) (2018 - 2020)

- [CDTI] Development of broadband electro-optical devices (DEOBA) (2018 - 2021)

- [H2020-SPACE-2018-2020] Sofware Defined Space Optical Data Highway (SODaH) (2018 - 2021)

- [CLEAN SKY] Combustion species Imaging Diagnostics for Aero-engine Research (CIDAR) (2018 - 2021)

- [H2020-SPACE-2018-2020] Miniaturised Photonics Enabled Next Generation SAR (RETINA) (2018 - 2022)

- [H2020-FETOPEN-2018-2020] SIlicon Optomechanical optoellectronic Microwave Oscillator (SIOMO) (2018)

- [ESA] ARTES 5.1. AO/1-5395/07/NL/EM –2012- Optical Multi-Frequency Conversion Unit for Broadband Transparent Analogue Repeaters

- [ESA] ARTES 5.2 & ARTES 3.4. -2011 -IoV - Optical RF distribution Flight Demonstrator

- [ESA] ARTES 5.1. -2011 - Opto-Microwave Wideband Reconfigurable Reciever

- [ESA] TRP AO/5809/08/NL/CP - 2009 - electro-photonic ADC

Rack mounted photonic RF analogue link up to 40 GHz

BIG SCIENCE AREAS

ASTRONOMY | FUSION

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS

MARKETS

AERONAUTICS | DEFENSE | SPACE

CERTIFICATIONS

ISO-9001 | ISO-9100 | AQAP-2110

Company name:	**DEM BARCELONA**
Address:	C/ Puigmal, 94-96 , Polígon Industrial Sant Isidre. E-08272, Sant Fruitós de Bages (Barcelona)
Web:	https://www.dem-barcelona.com/en
Turnover:	9.50 million EUR in year 2023
Employees:	86 in year 2023
SME:	YES
Phone:	[+34] 938 773 181
Email:	dem@dem-barcelona.com

ACTIVITY AND SKILLS

DEM Barcelona is a company specialized in High Precision Machining Processes for Copper, Aluminum and Stainless Steel customized projects. Our 30 years of experience give us a wide know-how in copper machining, bending and deep drilling. From 2017, DEM has been involved as a subcontractor in different Big Science projects for ITER, and also CERN or ALBA. DEM also produces items for other sectors such as automotive, railway, particle accelerators, medical, aerospace, etc. Our main markets are Germany, Spain, France and US.

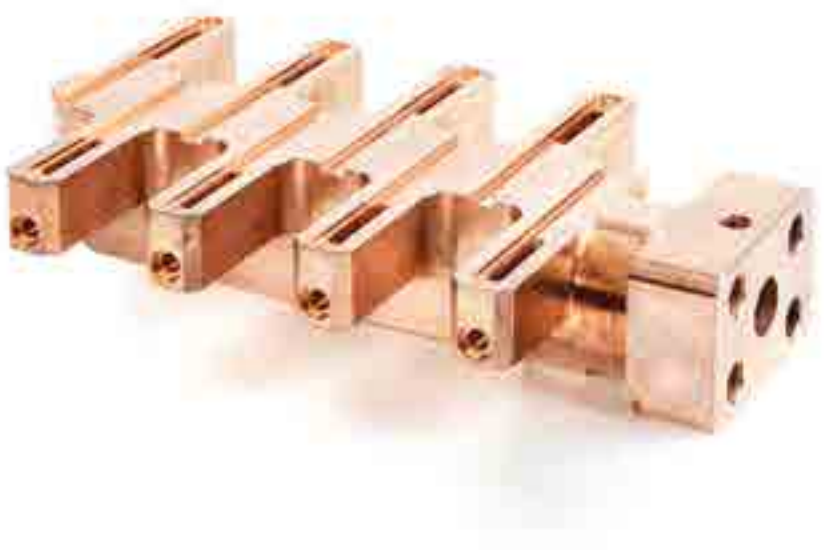
Dem has two production plants, one in Barcelona, and another in Mexico. Dem Barcelona offers our services thanks to our facilities of 3000 m^2 with more than 30 machines: Machining Centers and Turning CNC machines, five axis CNC for parts up to three meters long, deep drilling machines for parts up to two meters long, bending machines...

Dem deals directly with Copper Manufacturers, and we have around 200Tn Stock of Copper in different alloys. Traceability is essential for any single project, and we take care of all special specs requested for any kind of copper alloy. We do also offer project management follow up for special copper short series productions.

Our Project Management Engineering Team follows up every single project from beginning to delivery, to achieve the demanding tolerances, technical requirements and material alloy specifications of our customers.

Our Quality Policy in DEM is a Must, with a strict production. Verification processes are made by a wide range of equipment, including Three-Dimensional Control Machines (two stables and three portables, one of them to verify pieces up to three mts long), a Roughness Meter device, portable durometers, ultrasound machine, etc.

Our expertise in Dem allows us to be your production partner for your customized copper needs.



High Precision Machining for Custom Copper parts

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - AVS] MITICA Beamline Components (2020 - 2022)
  Copper/CuCrZr raw material, machining activities for residual dump stoppers

RELEVANT R&D PROJECTS

- [CDTI MISIONES] Industrial Technological Investigation Aimed at Improving the Efficiency of a Large Scientific Fusion Installation like IFMIF-DONES (DONESFLUX) (2022 - 2024)
  This is a collaborative R&D project, introducing a novel approach to the analysis and optimization of large infrastructures, particularly in the realm of scientific fusion. This methodology applies flow analysis in an innovative way. Regarding DEM's responsibility in this project, it is involved in improving the flow of deuterons by increasing the level of industrialization in the RFQ manufacturing processes. This enhances the repeatability and quality of the manufacturing process. The surface quality of the RFQ and the stringent geometric requirements are fundamental for proper beam transmission. Therefore, optimizing these aspects results in reduced energy consumption and beam losses, which also mitigates other harmful effects, such as RFQ deterioration and the production of undesirable isotopes.


Equipment to verify pieces up to 3 mts

BIG SCIENCE AREAS

ASTRONOMY | FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

ADVANCED MATERIALS AND MANUFACTURING

MARKETS

AERONAUTICS | AUTOMOTIVE

DEFENSE | ENERGY | HEALTH

NUCLEAR | SPACE

CERTIFICATIONS

ISO-9001 | AQAP-2110

Company name:	**DRAGADOS S.A.**
Address:	Avenida del Camino de Santiago, 50. 28050, Madrid
Web:	https://www.dragados.com
Turnover:	6.04 million EUR in year 2023
Employees:	11,195 in year 2023
SME:	NO
Phone:	[+34] 917 038 379
Email:	estudiosnotificaciones@dragados.com

DRAGADOS

ACTIVITY AND SKILLS

Dragados and its group of companies belong to the Engineering and Construction Division of ACS Group.

With an annual turnover of 35,738 million euros and a workforce of 133,890 people worldwide in 2023, ACS Group has been ranked by "Engineering News-Record" (ENR) magazine as the 1st -2nd top International contractor since 2018.

Dragados, created in the first half of the 20th century, has become stronger as a global leading actor in the construction sector, executing more than 8,300 kilometres of highways, 3,750 kilometres of roads, 2,000 bridges, 1,500 kilometres of tunnels, 600 marine works, 260 dams and hydroelectric power stations, 235 water treatment plants, 2,750 kilometres of railways, rail transport and railway facilities, 40 airports and 94.5 million square metres of several kinds of buildings such as airports, hospitals, museums, high-rise buildings and residential complexes. Additionally, it is one of the largest public-private partnership (PPP) contractors, having designed and built more than 100 worldwide concession projects.

Dragados, besides its strength and own ability, has its Spanish specialised subsidiaries Vías, Tecsa, Electren and Drace-Geocisa. Outside the national market, it has developed major infrastructure projects in other European countries like United Kingdom, Ireland, Poland (through its subsidiary Polaqua in the latter case) and Norway. In the last few years United States and Canada have become the main markets for Dragados due to the strong growth of its subsidiaries Schiavone, Pulice, John P. Picone, Prince and J.F.White, in addition to Dragados USA and Dragados Canada subsidiaries. It is also located in Latin America, with a track record of more than fifty years performing construction projects, especially in Chile.

Its corporate philosophy starting up business in countries with a highly-stable presence enables it to face the immediate future with confidence. Its excellent position in the North American market allows Dragados to be placed in an extraordinary situation regarding the important investments in infrastructure announced by the Federal Government. Strong construction contracts are also expected in Europe with the collaboration of the European RTRP Funds. Dragados continues believing Spain as a key market in which it is the construction leader, having successfully adapted to the changing scenario over the last decade.

Dragados global future strategy is focused on strengthening its presence in traditional markets trying to reduce contract risks by means of modern procurement procedures with a balanced risk distribution. In addition it also aims to expand into new high-growth markets in the technology, innovation and sustainability fields, willing to invest in markets such as gigafactory batteries, data centres, high-tech laboratories, green hydrogen plants, etc.

Therefore, in summary, Dragados feels proud of its successful history, enjoys an unrivalled health and looks ahead with optimism to future expectations

Regarding contracts for Big Science facilities, Dragados recent experience is shown below. However in the last forty years, the Company has built some other important nuclear facilities such as the following:

- Ascó Nuclear Power Plant Units I and II / Refrigeration and Water Discharge Enlargement in Ascó, Tarragona (Spain) / Ascó Nuclear Association.
- Nuclear Power Plant in Trillo, Guadalajara (Spain) Unión Fenosa.
- Vandellós Nuclear Power Plant Group II Civil Works in Vandellós, Tarragona (Spain). / Ascó-Vandellós II Nuclear Association.
- Refrigeration Towers (Natural flow) for Trillo Nuclear Power Plant Group I in Trillo, Guadalajara (Spain). / Unión Fenosa.
- Almaraz Nuclear Power Plant Civil Works in Almaraz, Cáceres (Spain). / Almaraz Nuclear Power Plant.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [PERE VIRGILI HEALTH COMPLEX] Proton Therapy Building at Pere Virgili Health Complex. (Barcelona, Spain) (2024 - 2027)
- [UNIVERSITY HOSPITAL OF FUENLABRADA] Proton Therapy Unit at the University Hospital of Fuenlabrada (Madrid, Spain) (2024 - 2025)
- [UNIVERSITY HOSPITAL OF MARQUES DE VALDECILLA] Construction of a Proton Therapy Unit at the University Hospital of Marqués de Valdecilla, Santander (Cantabria, Spain) (2024)
- [ARROYO CULEBRO GREEN HYDROGEN PLANT] Green Hydrogen Plant at Arroyo Culebro, Pinto (Madrid), Spain (2023 - 2027)
- [INIA-CISA/CSIC] Biological Containment Level 4 (NCB4) Laboratory dedicated to the National Animal Health Research Center of the INIA-CISA in Valdeolmos- Alalpardo (Madrid,Spain) (2023 - 2025)
- [ISCIII] Level 4 Biological Containment Laboratory, P4, on the campus of ISCIII in Majadahonda (Madrid,Spain) (2023)
- [CERN] LHC Civil Engineering Construction, Package 2 - Contract T053/ST/LHC at Point 5 (CMS), Cessy (France) (2000 - 2005)

RELEVANT R&D PROJECTS

- [FP VII] Portable, Exhaustive, Reliable, Flexible and Optimized appRoach to Monitoring and Evaluation of building eneRgy performance (PERFORMER) (2013 - 2017)
- [FP VII] Novel Indicators for identifying critical INFRAstructure at RISK from natural hazards (INFRARISK) (2013 - 2016)
- [CENIT] Clean, efficient and environmentally friendly construction (CLEAM) (2007 - 2010)
- [PROFIT] Development of environmental intelligence services and energy management services (DOMOTICA) (2007 - 2008)
- [FP VI] Robots in Collaborative Working Environments (ROBOT@CWE) (2006 - 2009)
- [PSE] Bioclimatic architecture and solar cooling (ARFRISOL) (2005 - 2011)
- [PSE] Development of new technologies in materials and manufacturing processes for components aimed at their integration into buildings (HABITAT 2030) (2005 - 2008)

LHC - CERN

Trillo nuclear power plant

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

ADVANCED MATERIALS AND MANUFACTURING | CONTROL SYSTEMS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MECHANICS AND OPTOMECHANICS

MARKETS

ENERGY | HEALTH | NUCLEAR

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-45001

OSHAS 45001 | ISO-50001

Company name:	**EGILE MECHANICS**
Address:	Pol. Ind. Kurutz Gain, 12-13. 20850, Mendaro (Guipuzcoa)
Web:	https://www.egile.es
Turnover:	26.00 million EUR in year 2023
Employees:	270 in year 2023
SME:	NO
Phone:	[+34] 943 757 205
Email:	egile@egile.es

Radiofrequency quadrupole

ACTIVITY AND SKILLS

- Extreme Precise machining of copper components and systems for accelerating structures and associated devices (RFQs, discs, pets, yokes, extraction systems...).
- Additive manufacturing applied for magnet components (spacers, heat exchangers, etc...).
- Collaborative projects for design, manufacturing, assembly and test of RFQ, cyclotrons, nano-movers, positioning systems...
- Cryo-mechanisms and free from optics for space or ground optical instruments.
- Actuation, positioning, power and accesory transmission systems.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS BILBAO] RFQ manufacturing and assembly (2021 - 2024)
- [CIEMAT] Accelerating structure for CLIC (2019)
- [ESA - AIRBUS DS] Reflectors for METOP mission (2018)
- [CIEMAT] Cyclotron for medical application (2016)
- [ESA - CEA] Cryomechanism for EUCLID mission (2016)
- [CIEMAT] Buncher IFMIF (2015)
- [EUROPEAN XFEL - CIEMAT] Movers XFEL (2014)

RELEVANT R&D PROJECTS

- [IKERTU] Technology for heavy ion linear accelerator manufacturing (RFQ) (2018 - 2023)

  Mechanical design, machining, measuriong, brazing welding. (Leader Egile, partners Tecnalia, CIEMAT, CERN)
- [UPV-EHU] Technology development for compact linear accelerator manufacturing (RFQ) (LINAC7) (2018 - 2024)

  Machining, measuring, assembly (Leader UPV-EHU, partners Tekniker, Egile)
- [CDTI] Design, Manufacturing and Testing of a Technological Demostrator of a Linear Collider Accelerating Structure based on the quadrant or half shape concepts (4ACCEL CDTI) (2010)

  Leader DMP, partners CERN-CIEMAT

Disc (CERN)

BIG SCIENCE AREAS

ASTRONOMY | FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ADVANCED MATERIALS AND MANUFACTURING

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name: **EIIT - A CONTROLAR COMPANY**
Address: Camino Robledo de Chavela, 9-B, Puertas 1-8. 28210, Valdemorillo (Madrid)
Web: https://www.controlar.com/es/eiit
Turnover: 14.10 million EUR in year 2024
Employees: 151 in year 2024
SME: YES
Phone: [+34] 918 904 614
Email: info@es.controlar.com

ACTIVITY AND SKILLS

EIIT - A Controlar company is a leading company in the design, manufacture and commissioning of test equipment and automation systems for all fields of industry, supplying our customers with innovative and technologically advanced turnkey solutions.

EIIT is part of the Controlar Group which operates through a global network of production units and companies, local offices and partners working together in countries such as Spain, Portugal, Mexico, Germany, India, Malaysia, China and USA.

We expand our knowledge and experience to different areas such as: aeronautics, automation and electronic test engineering. All of them focused on developing and managing cutting-edge projects to ensure that each product is manufactured in compliance with all quality and safety standards.

In 2016 EIIT started working together with Big Sciece facilities on several projects for ITER, which are still improving today.

Recently, we reached a partnership with Beckhoff Automation, a global leader in automation technology. This collaboration reinforces our commitment to deliver innovative and high quality solutions in the fields of electronic test engineering, robotics and industrial automation.

This company breakthrough has led us to develop large projects for major aerospace and defence companies in several countries.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Desing and manufacturing of one APS cubicle (2024 - 2024)
  Desing of mechanical and electrical docuemntation of one APS cubicle. Manufacturing of the cubicle accordig to the documentation. Power On tests.
- [ITER ORGANIZATION] Update of cubicles documentation (2024 - 2024)
  Update of wiring and mechanical documentation according to new requirements for 10 CIS server cubicles (around 400 wiring diagrams and 50 mechanical diagrams).
- [ITER ORGANIZATION] Engineering support (2023 - 2023)
  Generation of electrical documentation in See Electrical of interconnections between cubicles of the SMF test facility developed from high level interconnection diagrams and excel files.
- [ESA - Thales] SPACEMTG – METEOSAT 3rd GEN (2021 - 2021)
  PXI-based system for the validation of communication buses with speeds of up to 1.5 Gbit/s.
- [ITER ORGANIZATION - Alter Technology] Cubicle Hardware Upgrade and Cubicle Power on Testing (2021 - 2022)
  Update of wiring and mechanical documentation according to new requirements for 10 CIS server cubicles. Upgrade the hardware and wiring of the above cubicles acoording to the new documentation. Power on tests of the above cublicles.
- [ITER ORGANIZATION] Interlock Discharge Loop Interface Boxes (DLIB) CUBICLE (2019 - 2022)
  Design, supply and testing of 2 cubicles housing 30 Discharge Loop Interface Boxes (DLIB) and Bypass Loop Interface Boxes (BLIB) (15 per cubicle).
- [ITER ORGANIZATION] Interlock Discharge Loop Interface Boxes (Dlib) Fuctional Tester (2017)
  The test systems will include up to 12 DLIB's with the possibility of making loops from 2 DLIBS up to 12 DLIBS.
- [ITER ORGANIZATION] Industrialisation and Procurement of the ITER Interlock Discharge Loop Interface Boxes (DLIB) (2015-2017)
  The interlock current loops are hardwired connections between the different equipment involved on the protection of the ITER superconducting coils and associated systems. This includes the quench detectors, fast discharge units, protective make switches and AC/DC converters.

RELEVANT R&D PROJECTS

- CILS-1500 LED Calibration System
  With features like multiple parallel work heads, optical microspheres, linear power supplies, and independent LIN buses, the CILS-1500 ensures precise correction of color and intensity variations among LEDs during production. The NI TestStand software architecture and MS SQL server traceability provide reliable performance and easy integration with your existing systems.
- Automatic Test and Calibration System
  This is a complete and functional test system that reflects some of the capabilities and competencies of EIIT, specially its proven experience in Process Automation and Electronic Testing.
- Validation Sysyem for Logoprojection
  EIIT has developed a new Logo Projector validation system for the automotive industry with a cycle time of less than 14 seconds. The system features a 4-nest rotary table with clearly differentiated functions to ensure high accuracy and repeatability at all times. The loading of the station is done manually but it could be automated with a robot.
- XILS - In-Line Handling Solutions
  Designed to cover a large number of test points, with long panels for future expansion, the XILS series of Handlers, PCB test systems in the line of EIIT - Innovative Engineering Solutions, is ready for the most demanding applications.. Controlar / EIIT's in-line handling solutions were developed to meet the high standards of the automotive industry for testing a wide range of PCBs. These systems are also suitable for other industries, such as consumer and industrial electronics. Solutions to different electronic test technologies
- In-Line Packaging Station
  This station is an automated in-line system designed to meet the specific needs of each customer. With advanced technology and quality materials, it provides reliable performance, improving efficiency and productivity across various production lines.

Test Systems by EIIT - A Controlar company

Automated in-line system for packaging

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

SPACE

CERTIFICATIONS

ISO-9001

ISO-9100

CEFRI

Company name: **ELYTT ENERGY, S.L.**
Address: C/ Orense 11, 2º B. 28020, Madrid
Web: http://www.elytt.com/
Turnover: 6.00 million EUR in year 2023
Employees: 65 in year 2023
SME: YES
Phone: [+34] 914 110 963
Email: postmaster@elytt.com

ELYTT ENERGY

ACTIVITY AND SKILLS

Elytt Energy is an innovative Spanish company working in high technology projects, solving the needs of our clients in the field of the energy, fusion and particle accelerators. We currently have projects in Germany, USA, France, Italy and Switzerland.

Elytt Designs and manufactures fusion reactor structural systems, superconducting magnets for material characterization, TF and PF coils.

Elytt designs and manufactures resistive and superconducting electromagnets for particle accelerators of all types and current regulated power supplies with high stability, low noise and reliability used in accelerators and research laboratories. The company provides a complete electromagnetic engineering, design, manufacture, and test service.

The company also designs standard and custom-built resistive magnets, reaching from small correctors, to very large magnets, 2D and 3D is used for magnetic field modeling.

Our workshop has all manufacturing facilities necessary, winding machines, vacuum system, oven, inert gas oven and all measurement equipment including magnetic masurement.

Elytt Energy offers complete magnet systems including vacuum chambers, supporting stands and matching power supplies.

We specialise in Dipole magnets, Quadrupole magnets, Multipole magnets, Spectrometer systems, Kickers, Septums and Bumper magnets, Scanning magnets.

Also, the following related services are available: FEM Mechanical – Electromagnetic calculation, Beam optical calculations, Vacuum calculation and design, Cryogenics calculation and diseign, On-site Installation.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [Lawrence Berkeley National Laboratory (LBNL)] Manufacture of 108 dipoles for Advanced Light Source (ALS) (2024)
  Types A, B, and C, with CoFe pole pieces
- [Lawrence Berkeley National Laboratory (LBNL)] Manufacture of 52 sextupoles for Advanced Light Source (ALS) (2024)
  Laminated SHA type sextupoles and SHBSHA type sextupoles, of CoFe laminations
- [PPPL] Manufacture of one TF bundle and OH solenoid for National Spherical Torus Experiment at Princeton Plasma Physics Laboratory (2022)
  The TF coil consists of 36 conductors. Elytt first assembles four quadrants of nine conductors each. The conductors are wrapped in fiberglass tape and bind the quadrant together using a process called vacuum pressure impregnation. Each quadrant is placed in a mold inside a vacuum chamber, filled with a resin and baked at a high temperature until it creates one unit. After the four quadrants are completed, the process is repeated to assemble all four quadrants into one circular magnet. Elytt has been perfecting this process at each step by creating models of the quadrants and the assembled coil and then dissecting them to ensure that the resin has permeated each area of the magnet.

Toroidal Field Coils for ITER F4E

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ALS-U] Manufacture of 130 normal conducting quadrupoles and sextupoles for ALS-U project at Berkeley (2021 - 2023)
  There are five families: three quadrupoles and two of sextupoles, the yokes of the quadrupoles are manufactured of solid steel and the sextupoles from laminations.
- [FAIR] Supply of 21 Superferric dipole magnets for the Super Fragment Separator (2019)
  The scope is the design and construction of 3 dipole magnets type 2 and 18 dipole magnets type 3, including one subframe per dipole.
- [CBETA] Design and Manufacture of 132 magnets for the Energy Recovery Linear Accelerator CBETA Project CORNELL UNIVERSITY at USA (2017 - 2019)
  Elytt was awarded by Cornell University in USA the calculation, manufacturing engineering, manufacturing, FAT and delivery of 36 dipoles (two different types), 64 quadrupoles (two different types) and 32 correctors (two different types).
- [SARAF] Design and Manufacture of 16 superconducting solenoid packages for CEA SARAF project & supply of 8 superconducting solenoids (2017 - 2022)
  Delivery of the 20 Superconducting Solenoid packages of the SARAF (Soreq Applied Research Accelarator Facility) Superconducting Linac (SCL). Design validation and manufacturing studies, manufacturing of the SP prototype and series.
- [ITER ORGANIZATION] Supply of 400 Outer Vessel Coils (OVCs) (2017 - 2018)
- [CERN] Design and Manufacture of the superconductor quadruple magnet (QUACO) for the HL LHC (2016 - 2021)
  The QUACO project is a part of the IR magnets in HL-LHC at CERN and has as objective the production of the first two First-of-a-kind HL-LHC two-in-one quadrupoles magnets
- [ITER ORGANIZATION] Supply of the handling and impregnation tooling required for the production of the PF coil magnets (2015 - 2021)
  The scope was to design, engineering and manufacture the impregnation tooling and additional tooling for ITER poloidal field coil system consisting of six horizontal coils placed outside the toroidal magnet structure. The outer diameters of the PF2-PF5 coils are between 17 and 25 meters and their weights range between 208 and 384 tons.
- [CERN] Design and manufacture of permanent magnet quadrupoles for the LINAC drift tube for CERN, BRAC and INFN Legnaro for ESS Lund (2014 - 2018)
  ELYTT manufactured the Permanent Magnets Quadrupoles to be used as focusing elements in the LINAC drift tube, for the following projects, LINAC 4 at CERN, LEHIPA at BARC, Mumbai, European Spallation Source (ESS) at Lund
- [CERN] Supply of a Vacuum Impregnation system (2014 - 2015)
  Design, construction, tests, installation and commissioning of a Vacuum Impregnation System, to impregnate superconducting coils made of Nb3Sn based conductor with radiation hard resin.
- [ITER ORGANIZATION] Ten winding packs for ITER toroidal field coils (2010 - 2021)
  ELYTT Energy is member of an international consortium responsible for the manufacture of 10 Winding Packs for the Toroidal field coils. One TF WP is a coil of approx. 9 m wide and 15 m length with an approx. weight of 110 tons. Each WP is obtained stacking 7 Double Pancakes (DP), with each DP manufactured with a fibre glass and Kapton insulated Cable In Conduit (CICC) Nb3Sn superconductor, inserted in a stainless steel radial plate and ground insulated. Once insulated, the DP is VPIed and then 7 DP are stacked, ground insulated and VPIed.

Quadrupole Magnets

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

CRYOGENICS AND VACUUM

MARKETS

ENERGY

CERTIFICATIONS

ISO-9001

ASME

Company name:	**EMBEDDED INSTRUMENTS AND SYSTEMS S.L.**
Address:	Parque Científico UMH, Avda. de la Universidad S/N. 03202, Elche (Alicante)
Web:	http://www.emxys.com/
Turnover:	0.40 million EUR in year 2023
Employees:	10 in year 2023
SME:	YES
Phone:	[+34] 966 442 304
Email:	purchases@emxys.com

ACTIVITY AND SKILLS

Electronic design of sensors and actuators for space, including high speed electronics, for operation in harsh evironments: extedded temperature range, radiation and vacuum. FMECA, Part Stress, Worst Case and Reliability analysis.

Smallsat integration in EMXys clean room facility"

Electrical Ground Support Equipment for testing scientific equipment IR and UV cameras

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA - GomSpace] ESA Contract No. 4000131864/20/NL/GLC] Development of a gravimeter for the Juventas Cubesat within HERA mission (2021 - 2024)
  Very low EMC noise 36W power converter for Point of Load Scientific Applications
- [ESA] Reduction of Electromagnetic Interferences from Power Converters and Filters (2021 - 2022)
  Very low EMC noise 36W power converter for Point of Load Scientific Applications
- [ESA] Low Cost Low Resolution Position Sensor (LRPS) (2019 - 2021)
  Angular sensor with no contact parts between the moving elements for low resolutions of up 10-12 bits to be used ion harsh environments (vacuum, radiation and extreme temperatures) and low cost
- [ESA] Electrically Coupled Angular Encoder for Long-Life Mechanisms (2019)
  Angular sensor with no contact parts between the moving elements for medium resolutions of up to 16 bits to be used ion harsh environments (vacuum, radiation and extreme temperatures).
- [CSIC] Design and validation of the electronics module for ultraviolet spectrometers (2017 - 2019)
  Electronic system to drive an ultraviolet spectrometer to be deployed into low Earth orbit to look for anthropogenic gases that contribute to greenhouse effect.
- [ESA - Royal Observatory of Belgium] Asteroid Impact Mission (AIM) Cubesat Opportunity Payloads (2015 - 2016)
  Project to study the possibility of a Cubesats mission accompanying the maiden spacecraft to the asteroid Dydimos after the impact of the NASA DART impactor. EMXYS participated as subcontractor of the Royal Belgium Observatory to propose a lander to study the gravity and surface properties of the asteroid.

RELEVANT R&D PROJECTS

- Small platform for space scientific applications (ODALISS) (2021 - 2022)
  Satellite platform for space constellations.
- Space free optical transceptor for satellite communications (ODALISS) (2020 - 2022)
  Optical transceptor for free space communications of up to 100Mbps.
- On board computer for the control of a fibre optics transceptor (ODALISS - OBC) (2019 - 2022)
  Computer to control an optical transceiver for free space communications.

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | DEFENSE | SPACE

CERTIFICATIONS

ISO-9001 | ISO-9100

Company name:	**EMITE INGENIERÍA S.L.**
Address:	Parcela 2.3R. Parque Tec. de Fuente Álamo. Ctra. El Estrecho-Lobosillo km 2.5. E-30320, Fuente Álamo (Murcia)
Web:	https://www.emite-ing.com/
Turnover:	1.50 million EUR in year 2024
Employees:	17 in year 2024
SME:	YES
Phone:	[+34] 968 100 181
Email:	sales@emite-ing.com

ACTIVITY AND SKILLS

EMITE is a high-tech company which spun out of the Technical University of Carthagene (Spain) in December 2006. Founded by David A. Sánchez-Hernández, Professor and Head of the Microwave, Radiocommunications and Electromagnetism (GIMRE) Research Group, its birth took place right after the second i-patentes prize to innovation and technology transfer in the Region of Murcia (Spain) was awarded to the company founder research group.

The knowledge, experience, know-how and hands-on EMITE personnel has the origin in the first works that begun in 1992 by designing and implementing an X-Band radar under the sponsorship of the Ministry of Industry in Spain. Since then EMITE personnel has taken part in more than 150 projects and designed, fabricated and tested more than 600 prototypes, being part of several national and international telecommunications committees. Complementary knowledge on microwave and RF heating and mobile communications led to the first EMITE patent on reverberation chambers for wireless communications testing being granted in 2008.

With the help of the natural technology under the cuttlefish-eye and with the motto of making MIMO measurements simple, EMITE is the manufacturer of unique multicavity mode-stirred source-stirred anechoic-chamber-convertible reverberation chambers (RC) for research, design, development, compliance and performance Over-The-Air testing for wireless and cellular communications devices and systems including SISO, MIMO, WLAN, W-IoT, MTC, short-range, wearables, EMC, pre-5G and antennas. Covering all wireless and cellular technologies up to 16x16 MIMO and up to 2m-large devices under test, the EMITE PT-, I-, E- and F-Series Chambers provide unheard-off capabilities and automation, making your wireless test wishes a reality. EMITE is today a Test System Integrator delivering single-point-of-contact OTA Test Solutions, which are present at major Test Labs, Carriers, Antenna and Original Equipment Manufacturers (OEMs) worldwide, representing the state-of-the-art for RC/AC MIMO OTA testing.

With headquarters at the Mediterranean sea-sided Fuente Alamo High Tech Park in Murcia Region, Spain, the company has personnel, distributors and offices in the US, Canada, Brazil, The European Union, Scandinavia (Denmark, Sweden and Norway), Israel, Japan, South Korea, China, Taiwan, India, Australia, New Zealand, Singapore, Malaysia, Indonesia, Philippines, Thailand, Vietnam, Myanmar, Saudi Arabia and United Arab Emirates.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [SKAO] Design, manufacture and supply of Reverberation Chamber for the SKAO-Low Telescope (2023 - 2024)
  EMITE designed, manufactured and supplied the reverberation chamber for the SKA-Low telescope. This chamber is used to undertake the emissions compliance testing of SKA-Low telescope systems and associated hardware. Any technology used on the SKA-Low telescope site has to meet the most stringent radio interference standards ever achieved. The reverberation chamber is used to characterize the emissions from unshielded technologies and devices, and provide the detailed information needed to determine shielding requirements.

F-Series General


F-series Reverberation Chamber SKAO


F-series Commissioning

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AUTOMOTIVE DEFENSE SPACE

Company name:	**EMPRESARIOS AGRUPADOS INTERNACIONAL, S.A.**
Address:	Calle Magallanes, 3. 28015, Madrid
Web:	http://www.empresariosagrupados.es/
Turnover:	104.62 million EUR in year 2023
Employees:	1,272 (trainees included) in year 2023
SME:	NO
Phone:	[+34] 913 098 022
Email:	empresarios@empre.es

EMPRESARIOS AGRUPADOS

ACTIVITY AND SKILLS

Empresarios Agrupados Internacional, S.A. is an engineering consultant/ architect-engineering company founded in 1971. EA is a leading organisation with significant experience worldwide. It provides complete solutions in the fields of consultancy, project management, engineering and design, procurement, manufacturing, installation, construction management, testing planning, nuclear safety support, quality assurance, as well as support to operation in the following areas and industrial sectors:

EA works in the following areas: nuclear fission power plants (new built and support to NPPs in operation), SMRs fission power plants engineering (all technologies), large infrastructures and scientific research installations (ITER, CERN, ESS), innovative nuclear systems and research reactors for fission and fusion technologies, conventional power generation (coil and gas), aerospace, defence and civil aviation, IT, decommissioning and radioactive waste management, including design of low and intermediate level waste treatment and spent fuel storage facilities.

EA has carried out several nuclear projects for international institutions and research and development programmes of the European Union, the World Bank and the European Bank for Reconstruction and Development. In fission technology, EA has participated in more than 20 EURATOM projects.

In fusion technology, EA has more than 20 years of experience in the field of nuclear fusion technology development, starting with the ITER Engineering and Design Phase (EDA) through contracts with EFDA (EU) (1994-2004), followed by the ITER Realization Phase since 2004, through contracts with IO, F4E and CIEMATt. In support of fusion technology, EA has carried out contracts with Eurofusion and with EU for development of DONES and DEMO.

In SMR technologies, EA has more than 20 years' experience in all technologies (molten salt, gas cooled and liquid metals cooled).

RELEVANT R&D PROJECTS

- [CDTI - MISIONES] MIG-20201051 – Fusion for Future (2021)
- [CDTI - MISIONES] MIG-20211066 – Industrial research in technologies and processes applied to IFMIF-DONES in order to evolve in the fusion programme (DONES-EVO) (2021)

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] NHF Supply of Normal Heat Flux Elements for JT-60SA divertor (2023)
  In the frame of the agreement between the EU and Japan, F4E must supply the Divertor, located in the bottom of the Vacuum Vessel of the JT-60SA that is divided into 36 almost identical units. Each Divertor unit has vertical targets, a dome, baffles and cover plates, all installed on a stainless-steel (SS) cassette. The targets, dome, baffles and target plates are collectively referred to as Plasma Facing Components (PFCs). The PFCs are exposed to the heat flux from the plasma, which is then transferred to the cooling water flowing in pipes running underneath their surface.

- [F4E - ENGAGE] Architect Engineering Services for ITER Building – Construction Design (2022)
  It is in this context that EAI intervenes, with their partners Assystem, Atkins and Iosis, to ensure the industrial project management on behalf of "F4E" of the construction and development of the buildings and the site as Architect Engineer, of the ITER project.

- [ITER ORGANIZATION] Tokamak Cooling Water System (TCWS) – Engineering Work Packages (2021)
  This contract covers engineering support services for ITER Tokamak Cooling Water System design. The tasks perfomed include the Thermo-hydraulic steady state and transient analyses, sizing calculations for the TCWS sub-systems components, water hammer analyses, design of overpressure protection systems, TCWS valves design, RAMI analyses and fire protection optimization in DTR for TCWS and VVPSS.

- [ITER ORGANIZATION] Central Safety System Nuclear (SCS-N) – TCWS cubicles (2021)
  The scope of the contract includes the design, qualification, procurement, installation and commissioning of the ITER CSS-N. Within this contract, EAI is the Consortium leader and is in charge of the design, qualification, test and commissioning of the system.

- [ThorCon International] Architect Engineering Services for the molten salt reactor TMSR500 (2021)
  The TMRS-500 (ThorCon Molten Salt Reactor 500) is a pasive small nuclear reactor (SMR) based on molten salt reactor technology, with an electrical power of 500 MWe. The plant is constructed over a floating sea platform that is transported to the site. Within this project, EAI, as Architect Engineer, supports ThorCon across a broad range of activities, including project management, document control, code compliance, site preparation, pre-construction activities and licensing agreements. Additionally, the company will also provide engineering services to ThorCon throughout the lifecycle of the project, from design engineering to construction, operation and eventual decommissioning.

- [CIEMAT] ITER Diagnostics – TS (2021)

- [F4E] ITER First Wall Pannel Series Manufacturing (2020)

- [ITER ORGANIZATION] ITER Installation contract of safety pipes - TCC2 (2020)

- [SCK.CEN/MYRRHA] Implementation of the *innovative MYRRHA research reactor (2019)*

- [CIEMAT] 2019 Dones-PreP (ESFRI) Support for the *preparatory phase for the DEMO Orientated Early Neutron Source IFMIF/DONES (2019)*

- [ABEN] MODELING AND SIMULATION STUDY *FOR RADIOPHARMACEUTICAL DISTRIBUTION LOGISTICS (2019)*

- [ITER ORGANIZATION] Final design of the Connection *Pipes for the Test Blanket System Contract (TBS-CP) (2016)*

- [CIEMAT] DONES (DEMO-Oriented Neutron Source) *(2016)*

- [CIEMAT] Test Blanket Modules (TBM) Systems – TCWS *system (2015 - 2021)*

BIG SCIENCE AREAS

ASTRONOMY | FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING | CONTROL SYSTEMS

ELECTRICAL AND POWER ELECTRONICS | ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS | CIVIL WORKS AND INFRASTRUCTURE

MARKETS

DEFENSE | ENERGY | NUCLEAR

OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name: **ENUSA INDUSTRIAS AVANZADAS S.A., S.M.E.**
Address: C/ Santiago Rusiñol, 12. 28040, Madrid
Web: https://www.enusa.es/
Turnover: 339.00 million EUR in year 2024
Employees: 585 in year 2024
SME: NO
Phone: [+34] 913 474 200
Email: comunicacion@enusa.es

ACTIVITY AND SKILLS

NUCLEAR BUSINESS. Currently the company focuses its nuclear business on the first part of the fuel cycle that it markets both nationally and internationally. Our business areas include uranium and supply, design and engineering, manufacturing, services at the plant, dismantling and radioactive waste management.

a. **Uranium Supply:** we manage the enriched uranium supply to the electric companies that own the Spanish nuclear power plants. We carry out the procurement of supplies with major global suppliers and maintain contracts with main global suppliers of uranium concentrates, conversion services, and enrichment services. Our portfolio of suppliers allows us to maintain a policy of diversification of sources, flexibility, security of supply and very demanding prices. We also carry out the logistics management.

b. **Design and Engineering:** from conceptual development and introduction to storage and transport. We have the latest technological advances through transfer agreements with our partners and licensors Westinghouse and General Electric (GE). This allows us to cover the design, manufacture and supply of fuel to domestic and foreign nuclear power plants, as well as all engineering services related to the management and optimization of fuel use in the reactor. The fuel engineering developed at ENUSA covers all technical aspects of the nuclear fuel lifetime.

   In ENUSA, engineering is supported by powerful R&D&I, cooperating with Spanish universities through collaboration projects or participation in training activities, and in the promotion of and/or participation in national and international projects on key technical aspects of fuel.

c. **Manufacturing:** we manufacture for Spanish and European nuclear power plants, integrating the most innovative technology and the latest advances on the market. The manufacture of fuel assemblies is divided into two processes: ceramic process and mechanical process. The fuel assemblies are manufactured in our factory in Juzbado (Salamanca): PWR (Pressurised water reactors, under license from Westinghouse), BWR (Boiling Water Reactors, General Electric) and VVER (Pressurised water reactors, in collaboration with Westinghouse).

   We develop the necessary equipment and processes in-house to manufacture the different products with the highest safety, quality and efficiency. The development and optimisation of the inspection and manufacturing equipment we use, places ENUSA in a privileged position to supply highly advanced equipment for nuclear fuel factories, a line of business in which we have been working for several years, either individually or in collaboration with other partners such as Tecnatom.

d. **Services at the Plant:** We coordinate handling, inspection and repair campaigns in line with refuelling programmes, performing fresh fuel reception and irradiated fuel handling services, supervising the process during refuelling outages. As a result of all this experience, at ENUSA we are also prepared to carry out the necessary activities for the management of irradiated fuel.

e. **Dismantling and Radioactive Waste Management:** We work in nuclear facility decommissioning and radioactive waste management on solutions that allow us to automate radiological characterization of walls, land and waste, with the consequent reduction of doses for workers, optimization of execution times and reduction of the volume of waste generated during the dismantling of nuclear power plants. From an operational point of view, we are aware of the importance of minimizing the volume of waste. In this line, we are making a great effort in the technological development of projects, installations and solutions for the decontamination of waste and surfaces, the reduction of the volume occupied by the waste generated, and the reduction of the volume of waste generated and the declassification of materials for their revaluation or storage as conventional waste. The technological component and innovation, linked to the qualification of personnel and process automation, are a fundamental part of the work we do, which is why ENUSA is building an Equipment Technology and Maintenance Centre as an operations centre for the development of these activities.

LOGISTICS BUSINESS. ETSA Global Logistics, S.A.U., S.M.E., a subsidiary of the ENUSA Group, is a global multimodal transport operator (land, sea and air) of dangerous goods of all kinds, specializing in radioactive and nuclear goods. It also transports chemical products, biofuels, hazardous and non-hazardous waste.

ENVIRONMENTAL BUSINESS. it focuses on services for environmental conservation and energy efficiency. Through our subsidiary EMGRISA we carry out the treatment and management of all types of waste, characterisation and treatment of contaminated soil and water, environmental engineering and consultancy and radiological studies. EMGRISA collects, transports and manages hazardous and non-hazardous industrial waste, prioritising reuse and recovery actions.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] Provision of nuclear analysis services for the ITER project and beyond (e.g., JT60-SA, IFMIF-DONES) (2025 - 2029)
  The scope of the contract is the provision of *services in the area of nuclear analysis within F4E activities related to the ITER project and beyond (e.g., JT60-SA, IFMIF-DONES). Services to be provided include the creation of computer models for radiation transport simulations, radiation transport calculations, activation calculations, determination of nuclear responses (such as heat, damage, gas production, dose and others), assessment of solution convergence and result uncertainty, and technical reporting of all the above. Other support activities in the area of nuclear analysis are also envisaged.*

- [LSC] Design of the ventilation system to reduce the level of radon in the facilities of the HYPER-KAMIOKANDE detector (2023 - 2024)
  Contract between ENUSA Industrias Avanzadas S.A., SM.E. and the Canfranc Underground Laboratory (LSC). The objective of this project is the design of the dilution ventilation system to control the radon level at the HyperKamiokande detector facilities in Japan within the framework of the Recovery, Resilience and Transformation and Plan.


ENUSA factory in Salamanca

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

REMOTE HANDLING AND ROBOTICS

MARKETS

ENERGY

NUCLEAR

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-17025

UNE-73401

ASME

NRC USA

Company name:	**EOSOL**
Address:	Calle Camino de Labiano 45A. 31192, Mutilva (Navarra)
Web:	http://www.grupoeosol.com/
Turnover:	60.00 million EUR in year 2024
Employees:	720 in year 2024
SME:	NO
Phone:	[+34] 948 245 456
Email:	aero@eosolgroup.com

ACTIVITY AND SKILLS

EOSOL is a privately owned engineering services group with international presence. Founded in 2008, the company has offices in 12 countries and develops projects in more than 40 countres. EOSOL offers engineering services, solutions and products in strategic sectors such as energy, chemical, telecommunications, science, defense or space. EOSOL is commited to the future through clean energy. We protect the environment developing sustainable technology and renewable energy projects. Innovation is a core part of our strategy, driving the development of new business models and the evolution of existing ones.

EOSOL is divided in 3 different divisions:

TECH

Expertise in software development, Cloud and On-Premise IT systems, data analytics, programming and industrial automation.

- Automation: High reliable monitoring solutions based on EMPRO® (a powerful and scalable monitoring system tool to control machines, plants and processes) and OSIRIS® (Artificial intelligence platform focused on advanced data and image analytics, behavioral modelling and predictive maintenance).
- Aerospace: Experts in radiofrequency and antennas engineering (design, manufacturing, assembly and verification) for the scientific, aeronautical, defense and space sectors.
- Helix North: Specialized in drone solutions for industry applications.

ENGINEERING

A comprehensive service covering all phases of a project. The division provides different technical services in different phases of the project.

- Energy: Photovoltaic, Eolic, BESS storage.
- Transmission&Distribution: Substations, Overhard and Subway HV lines.
- Water: Dams and large hydraulic works, water planning, CFD models, treatment and desalination.
- City & territory: Territorial plans, land and infrastructure, building and BIM, urban design and smart Growth.
- Industry: Bio-waste, energy efficiency, CFD models for ventilation and air conditioning.

SERVICES

- Solutions: Technical assistance in the areas of design, quality, manufacturing engineering, industrialization and logistics.
- O&M services: Specialized in the renewable energy sector. We provide operation and maintenance services to ensure plants are in the best possible conditions to maximize energy production.
- FTS services: Specialized maintenance services in industrial and energy sectors.

According to Big Science capabilities, the following applies:

- EOSOL Aerospace team has proven technical, quality and management capacity to accomplish complex and challenging projects related to antennas, feeds and radiofrequency components (OMT, polarizers, filters or diplexers) operating in different frequency bands from VHF up to THz frequencies. During these years our team has been in charge of different national and European projects leading different consortiums as prime contractor as well as participating as subcontractor. In terms of technical skills, our engineering team accomplish the complete life cycle of the project from feasibility study up to delivery of qualified products. We accomplish the following tasks during the process: 1) RF and mechanical design and analysis, 2) Manufacturing and test plan generation, 3) Manufacturing and assembly of parts, 4) Test and qualification of components or sub-systems. We are prime contractor for European Space Agency and SKA Telescope.
- EOSOL Tech has deep knowledge in software development, infrastructure and Cloud and On-Premise IT systems, data analytics, programming and industrial automation, as well as telecommunications and networks. Including tailor environmental solutions based on satellite imagery (Copernicus).
- EOSOL Engineering has experience and capability in the development of singular infrastructures for industry, civil and scientific facilities.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [SKAO] Design, Manufacture, Commissioning and Testing to Deliver Forty-Four (44) Sub-Reflectors for the SKA1 MID antennas (2024 - 2026)
  Includes acceptance tests and on-site support to the Dish Structure supplier. This is the largest contract awarded to a Spanish company by SKAO. Contract ref: T01-CON-M030
- [ESA] Wifi/LTE/5G Antenna for Lunar Assets (2024 - 2025)
  Design, manufacture and test of a thermal and mechanical representative EM antenna for Lunar assets local link surface communications. Contract ref: 4000143516/23/NL/AS
- [ESA] Low-Frequency and Wide-Band Reflector Antenna Feed for Future Earth Observation Radiometers (2022 - 2024)
  Design, manufacture and test of a thermal and mechanical representative EM antenna for Lunar assets local link surface communications. Contract ref: 4000143516/23/NL/AS
- [ESA] Sub Millimeter Wave VAlidation Standard ((sub) mmVAST) Antenna (2022 - 2024)
  Design, breadboard and test a wideband, circularly polarised feed chain that operates from 0.4 – 2 GHz. Application: Ultra wideband feed for future Earth Explorer mission CRYOSAT. Contract ref: 4000132342/20/NL/AS
- [ESA - COMET Ingeniería] Deployable Reflector Antenna for Cubesat Missions (2021 - 2023)
  Development of a well-characterised, mechanically and thermally stable multi-frequency reflector VAlidation STandard antenna for range qualification at sub mm-wave frequencies ((sub)mm-VAST) with a focal plane of six channels: 89 GHz, 118 GHz, 182 GHz, 325 GHz, 664 GHz and 1.2 THz. Contract Ref: 4000133733/21/NL/CT

RELEVANT R&D PROJECTS

- [Gob. Navarra - Becas tecnólogos I+D] Design of feed chains for future large radio telescopes. (SKA Feeds) (2022 - 2023)
- [Gob. Navarra - Proyectos I+D] Design and validation of a feeding system for satellite antennas based on two dual-band radiating chains. (ICIM) (2020 - 2022)
- [CDTI - PID] Development of a monitoring and control system for photovoltaic power plants and industrial assets. (INTELVOLTAIC) (2019 - 2022)


SKA_MID-DISH_Render

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

CONTROL SYSTEMS

INFORMATION AND COMMUNICATION TECHNOLOGIES

ADVANCED MATERIALS AND MANUFACTURING

CIVIL WORKS AND INFRASTRUCTURE

CRYOGENICS AND VACUUM

REMOTE HANDLING AND ROBOTICS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

MARKETS

AERONAUTICS

DEFENSE

ENERGY

SPACE

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-45001

OSHAS 45001

ISO-50001

Company name:	**EQUIPOS NUCLEARES S.A. S.M.E S.A.**
Address:	Avda. Juan Carlos I, nº8. 39600, Maliaño (Cantabria)
Web:	http://www.ensa.es/
Turnover:	90.18 million EUR in year 2024
Employees:	535 in year 2024
SME:	NO
Phone:	[+34] 942 200 101
Email:	comercialdn@ensa.es

ACTIVITY AND SKILLS

ENSA (Equipos Nucleares S.A.,S.M.E.) was created in 1973 to design, build and operate an industrial plant to undertake the manufacturing of primary components of Nuclear Steam Supply Systems of any type of reactors.

Over the years ENSA has delivered different heavy components (reactor pressure vessels, steam generators, pressurizers, core structures) in collaboration with the main international reactor vendors for nuclear power plants all over the world.

ENSA is also supplying owned and other designs of spent fuel storage and transportation systems as racks and casks. A Services Division was launched in 1980 to offer special capacities in the areas of maintenance, site repairs, modifications, retrofits, installation works, waste treatment, conditioning area and high experience in the market of decommissioning and dismantling nuclear and radioactive facilities.

- Nuclear Components: Reactor pressure vessels, steam generators, pressurizers, core structures, main coolant piping, supports, tanks of different types, fuel element hardware, etc.
- Elements for spent fuel storage and/or transport: Owned tailor-made design and license solutions for high density racks for wet storage, spent fuel transport and storage casks, spent fuel storage canister and overpacks, handling casks systems at site.
- Other products: Components for research centers and development programs.
- Technology Services: Analytical engineering, special projects, robotic applications, laboratory services.

SERVICES AREA

- Plant Maintenance: Nuclear and conventional plant maintenance.
- Radwaste Treatment-Conditioning and Decommissioning of nuclear and radioactive installations: Supply of equipment and services, cutting and disassembly of equipments, decontamination, treatment and conditioning of waste.

ITER vacuum vessel welding mockup

ENSA's Advanced Technology Center

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS] Manufacturing and installation of Monolith Portblocks for ESS (2021)
- [ASTRID] Steam Generator Manufacturability + Tubing Mock Up for ASTRID Project (2019)
- [JHR] In Consortium with Empresarios Agrupados, delivery and instalation of 3 Hx for the Jules Horowitz Experimental Reactor (CEA + CIEMAT) in Cadarache (France) (2019)
- [ITER ORGANIZATION] Contract of the 2º part of anks for the Water Detriation System for F4E-ITER (2016)
  It includes the supply of 2 Holding Tanks (7m³) and 2 Feeding Tanks (12m³) for tritiated water.
- [ITER ORGANIZATION] Contract of Final design & *Manufacturing of Triated* Water Holding Tanks and Emergency Tanks of Water Detriation System (2013)
  It was manufactured and supplied of 4 holding tanks (20 m3) and 2 emergency tanks (100 m3) for tritiated water and it was succesfully delivered on 2015 in Cadarache.
- [ITER ORGANIZATION] Contract for the Impact of narrow distance between welds and weld overlapping (2013)
- [ITER ORGANIZATION] First project stage: Development Phase where Ensa team studied all the techniques that will be used during the production phase in Cadarache (2013)
- [ITER ORGANIZATION] Contract for the Vacuum Vessel and Port the Assembly (2012)
  The scope of this contract awarded in 2012 by ITER Organization is the assembly at site of the Vacuum Vessel Sectors and its ports. This work required the development of many qualifications, processes (welding, control, testing, etc.) and associated devicesand tools.
- [ITER ORGANIZATION] Advance Distortion Simulation Techniques during the manufacturing of structures for large plants (2008)
- [ITER ORGANIZATION] Feasibility Study for the Vacuum Vessel ITER project (2007)
- [ITER ORGANIZATION] Feasibility Study for the development and manufacturing of European test modules for ITER project (EU-TBM) (2007)

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

MECHANICS AND OPTOMECHANICS

REMOTE HANDLING AND ROBOTICS

MARKETS

NUCLEAR

CERTIFICATIONS

ISO-3834 ISO-9001 ISO-14001

ISO-17025 UNE-166002 ASME

CEFRI RCC-MR ISO-27001

OHSAS 18001

Company name:	**ERREKA**
Address:	B. Ibarreta s/n. 20577, Antzuola (Gipuzkoa)
Web:	https://www.erreka.com/
Turnover:	75.00 million EUR in year 2024
Employees:	500 in year 2024
SME:	NO
Phone:	[+34] 943 786 009
Email:	contact@erreka.com

ACTIVITY AND SKILLS

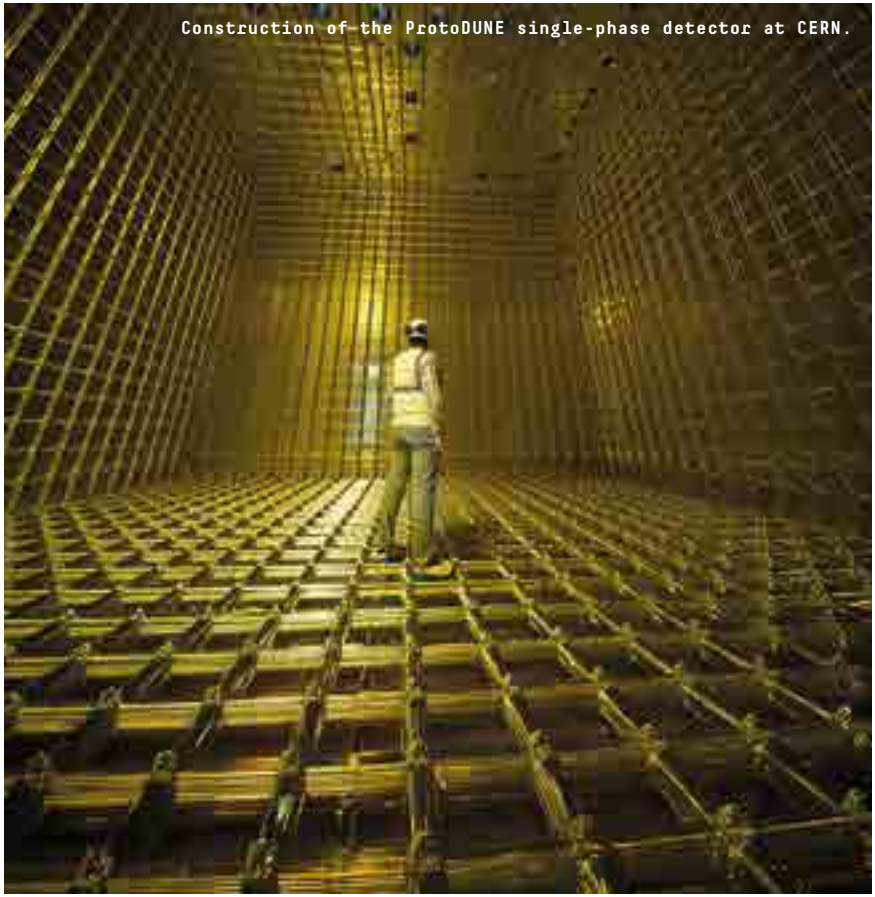
ERREKA today is a leader supplier in advanced design, engineering and manufacturability for a range of industries, such as renewable energies, critical infrastructures, mining, aeronautics, automotive, health, access control, people mobility, among others. It has a diversified range of products and services, basing its diversification strategy on open innovation.

Erreka forms part of the MONDRAGON Corporation federation of worker cooperatives, the leading business group in the Basque Country. It has 6 production plants on 3 continents, and exports over 70% of its sales.

Erreka Smart Fastening business provides products and engineering services for the world of critical joints. We design, manufacture, installation and monitoring, everything under one roof, with more than 60 years of knowleage. Erreka is leader in quality, flexibility and technological know-how as a supplier of fastening products of high standard level, reliability and safety. Erreka provides standard and special fasteners from M14 until M100.

Erreka's vision as a supplier goes beyond simply offering product solutions by developing the additional technological tools that optimise bolt life cycle from manufacturing, installation and service.

The use of EDB (Erreka Digital Bolt) load monitoring technology makes it possible to read and monitor the bolt load both during and after the assembly process, thus ensuring a reliable, fully optimised joint.



Construction of the ProtoDUNE single-phase detector at CERN.

EDB technology bolt: Bolt load measurement throughout the whole life cycle.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN - DUNE] DUNE project- Bolting supply and tightening strategy design for cryostat structure. (2023 - 2025)
  The Deep Underground Neutrino Experiment (DUNE) is an international experiment for neutrino science. Discoveries over the past half-century have put neutrinos, the most abundant matter particles in the universe, in the spotlight for further research into several fundamental questions about the nature of matter and the evolution of the universe — questions that DUNE will seek to answer. DUNE will consist of two neutrino detectors placed in the world's most intense neutrino beam. One detector will record particle interactions near the source of the beam, at the Fermi National Accelerator Laboratory in Batavia, Illinois. A second, much larger, detector will be installed more than a kilometer underground at the Sanford Underground Research Laboratory in Lead, South Dakota — 1,300 kilometers downstream of the source. These detectors will enable scientists to search for new subatomic phenomena and potentially transform our understanding of neutrinos and their role in the universe.

RELEVANT R&D PROJECTS

- [HORIZON EUROPE] Non-Destructive Inspection Services for Digitally Enhanced Zero Waste Manufacturing (ZDZW) (2022 - 2025)
  ZDZW excels in offering a catalogue of IoT based non-destructive inspection technologies, providing an accurate inline evaluation of key product parameters that have an effect in quality requirements within different technical areas, such as: Part Integrity, Visual Requirements and Thermal Process efficiency. The ZDZW Inspection Solutions follow the concept of Inspection as a service, guaranteeing its cost effectiveness and improved return of investment, offering different types of subscription and pay-per-use models depending on the offered functionalities.
- [HAZITEK] New solutions and technologies for Monopile-type Foundations, Transition Piece, and Connection Systems between both in Offshore Wind Turbines +15 MW. (MEGAWIND) (2022 - 2024)
- [HAZITEK] Experimental Development for the Transport and Logistics of Hydrogen generated in Offshore Wind Farms (HYSHORE) (2021 - 2023)
  Development of new technological solutions (materials, manufacturing processes, components and systems), for applications in the transport and logistics of Hydrogen generated in offshore wind farms, contemplating 2 ways: pipeline and naval.
- [CDTI - PID] Development of a New Line of High-Reliability Sensorized Elements for High-Performance Critical Structures (μBOLT) (2020 - 2022)
- [CDTI - Integral projects] Critical Condition Resistant Stainless Steels for the Energy Sector (IMAI) (2010 - 2012)

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CIVIL WORKS AND INFRASTRUCTURE

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | ENERGY | HEALTH | OIL & GAS

CERTIFICATIONS

ISO-50001 | ISO-9001 | ISO-13485 | ISO-14001 | ISO-27001 | ISO-45001

Company name: **ESTEYCO S. A.**
Address: Avenida de Burgos, 12B-Bajo I. 28036, Madrid
Web: http://www.esteyco.com/
Turnover: 28.00 million EUR in year 2023
Employees: 240 in year 2023
SME: YES
Phone: [+34] 913 597 878
Email: mechanics@esteyco.com

ESTEYCO

ACTIVITY AND SKILLS

Esteyco is an independent engineering and consulting firm with 250 employees and more than 50 years of experience all over the world.

Activities in Big Science cover the design, analysis, manufacturing, assembly, testing and commissioning of complex structures and mechanical systems. This is implemented through either an integrated approach, spanning the whole development cycle, or specialized consultancy services at different stages of the project.

Esteyco's focus is on non-conventional developments with stringent thermal and/or mechanical constraints that require going beyond what is common practice in structural and mechanical engineering. In-depth knowledge of engineering principles and state-of-the-art capabilities are applied by Esteyco to ensure compliance with requirements. Main Esteyco assets include:

- Large experience in the design and manufacturing of complex and one-of-a-kind mechanical systems.
- Advanced analysis capabilities and sound engineering judgement in an extremely wide range of disciplines.
- Familiarity with main design and construction codes.
- Combined and strongly coupled civil-mechanical engineering approach, essential for those developments involving large components and complex interfaces.
- Expertise in instrumentation and state-of-the-art developments in the engineering oriented interpretation of experimental data.
- Mechatronics.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Development of ITER Tokamak Systems Monitoring. IO/20/CT/6000000312 (2020)
- [F4E] Engineering support in the area of seismic, dynamic and structural analyses of ITER buildings and mechanical components F4E OMF-1023-01 (2020)
- [F4E] Preliminary and pre-final design of the HCPB TBM set including a part of the prelimminary design for the WCLL TBM set – Analyses and design validation F4E-0950-01 (2019)
- [UKAEA] STEP WP5 - Fusion Power Plant - Breeder Blanket Design Challenge UKAEA T/VT087/19 (2019 - 2020)
- [ITER ORGANIZATION] Design Finalization and Development of Reconstruction Algorithms for the Operational Instrumentation of the Internal Components (Blanket Modules & Divertor) IO/17/CT/4300001624 (2018)
- [ITER ORGANIZATION] Cryostat Analysis and Structural Integrity Assessment IO/CT/16/4300001322 (2016 - 2020)
- [ITER ORGANIZATION] Vacuum Vessel Pressure Suppression System (VVPSS) Analysis and Structural Integrity Assessment IO/CT/16/4300001330 (2016 - 2018)
- [F4E] Framework service contract for the provision of engineering support in the area of seismic, dynamic and structural analyses of ITER buildings and mechanical components F4E-0503 (2015 - 2019)

European Solar Telescope

RELEVANT R&D PROJECTS

- [CDTI - TRANSMISIONES] Research, design, study and testing of components subjected to extreme environments for industrial validation of regenerative envelope technologies associated with the development of magnetic fusion reactors (MIG-20242101) (E4XTREM) (2025)
  The main objective for ESTEYCO in the project E4XTREM is the design, construction, integration, commissioning and testing of a novel facility (FASTER) which will enable testing of various plasma-facing components subjected to relevant simultaenous loading (e.g., thermal, magnetic, mechanical, etc.) before their installation in a fusion reactor. This facility will provide an invaluable tool to minimize the risk associated to these new technologies before they may be integrated in a fully operational fusion reactor.

- [HORIZON EUROPE] Wind Hybrid Esteyco Evolution for Low-Carbon Solutions (Grant Agreement number 101084409) (WHEEL) (2023)
  The overall objective of the WHEEL project is to fully demonstrate and bring to a precommercial Technology Readiness Level (TRL) a revolutionary floating wind technology excellently suited for deep water locations, effective industrialization strategies, breakthrough cost reduction and minimized carbon footprint. This shall enable a radical step forward for LCoE reduction, whilst also addressing scalability, harbour infrastructure suitability and availability, and the sustainability & circularity of floating offshore wind. The WHEEL prototype is a "spar"-type floating platform that has been developed to achieve an unprecedented reduction in the size of the floater, the depth of the port, the use of materials and the carbon footprint. The specific demonstration of ©WHEEL will be completed in 2025 with support from the Horizon Europe initiative, with a fully operational ©WHEEL FLOATER to be tested out at sea on a 6 MW turbine.

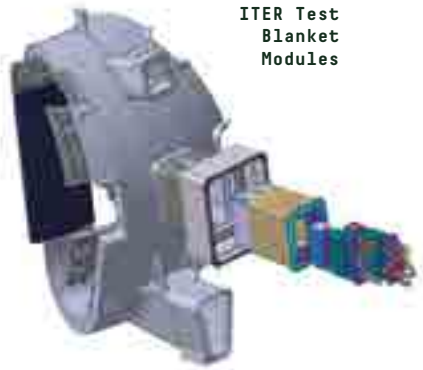
- [CDTI - MISIONES] Industrial Research in Neutron EXposed Technologies (Neutron EXposed Technologies) in application to the IFMIF-DONES Test Cell (MIP-2021104) (DONES-NEXT) (2021 - 2024)
  DONES-NEXT is an ambitious industrial research project of 27-month length. Its general objective is to acquire new knowledge and key skills to carry out successfully the design, construction, installation, and maintenance of the Test Cell in the IFMIF-DONES facility. Its general objective is to acquire new knowledge and key skills to carry out successfully the design, construction, installation, and maintenance of the Test Cell in the IFMIF-DONES facility. To respond to this objective, the consortium has identified a series of critical needs, which constitute the specific objectives of the project The DONES-NEXT project consortium is made up of three Spanish companies – ESTEYCO, CADINOX and NIPROMA –, leaders in their fields and experienced in unique environments that require unconventional solutions as the IFMIF-DONES scientific facility – and specifically the Test Cell – is.

- [CDTI - MISIONES] Spanish leadership for the advancement of floating wind power (MIP-20201009) (LEAF) (2021 - 2023)

- [CDTI - MISIONES] Augmented Reflectance Thermo-Electric Storage (MIP-20201003) (ALTERA) (2021 - 2023)
  Design, construction, prototyping, testing and development of a novel concept of thermal-storage batery. The batery is based on molten silicon for thermal storage and thermo-photovoltaic cells for the thermal-to-electrical energy conversion The project has been performed in a consortium with other cutting-edge spanish companies: Silbat SL, Advanced Thermal Devices (ATD), Nano For Energy (N4E) & Generaciones Fotovoltaicas de la Mancha (GFM). The consortium also counted with the invaluable experience of the ICV-CSIC for the development of high-temperature crucibles and the Instituto de Energía Solar (IES-UPM) for the development and manufacturing of the thermo-photovoltaic cells.

- [CDTI - INNOGLOBAL] Advanced technologies for solar telescopes (INNO-20181012) (TA-EST) (2018 - 2019)

- [CDTI - CIEN] Accelerators and technologies associated to Big Science projects (IDI-20160851) – Design of systems and components for metal liquid loops (ACTECA) (2017 - 2020)



ITER Test Blanket Modules

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM | MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NAVAL | NUCLEAR | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-45001 | OSHAS 45001 | ISO-50001

Company name: **FAGOR AUTOMATION**
Address: Barrio San Andrés 19. 20500, Mondragón (Guipúzcoa)
Web: http://www.fagorautomation.com/
Turnover: 80.00 million EUR in year 2023
Employees: 600 in year 2023
SME: NO
Phone: [+34] 943 039 800
Email: contact@fagorautomation.es

FAGOR AUTOMATION

Open to your world

ACTIVITY AND SKILLS

Fagor Automation designs and manufactures CNC systems, drives, motors and encoders for automatization and control of diverse equipment. The encoder catalogue range comprises high accuracy open or enclosed linear and angular models with analog or absolute digital interfaces.

For more than 40 years of history the company has deployed a strategy based in two main pillars; i) Development of know-how increasing the added value for customers, ii) International growth. As a result, the company develops its own softmare, hardware, electronics, optics and mechanics for the various products what has yielded 30+ patents. Besides, the worldwide commercial network comprises owned subsididaries in 16 contries and is present in many other countries through distributors.

Fagor Automation is a recognised provider of solutions in the market that excels in the quality of the products, unbeatable delivery times, flexibility and outstanding support and service to costumers throughout the complete process. Specific products have been integrated in Large Scientific Infrastuctures by direct issued Purchase Orders or through integrators. Undulators are the most common equipment using linear absolute encoders for controlling the gap between the magnets. Specific projects of undulators using Fagor encoders were published in several scientific articles presented at dedicated Particle Accelerator Conferences. Other applications comprise anti-collision systems, X-Y stages or index tables.

A comprehensive network of contractors or subcontractors for Large Scientific Infrastructures is also maintained. Through these, our products can be integrated in the equipment constructed for those facilities. Besides, Fagor Automation has its own R&D Department and Technological Center consisting of nearly 85 engineers, scientists and technicians, including a remarkable number of PhD graduates in engineering or science disciplines. Fagor Automation participates in projects funded by national institutions. It is also proactive in becoming partner in European funded projects. The Scientific Infrestructures may benefit of the developed technologies and advantages rendered by those projects. From a new enhanced optoelectronic technology named as 3STATECH to specific mechanical designs accounting for temperature or other magnitudes variations. It is the main objective to supply highly accurate, repeatable and robust products for fine positioning and smooth control solutions.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [Argonne National Laboratory] Linear high accuracy absolute encoders (2024 - 2025)
  High accuracy absolute linear encoders for the undulators of the synchrotron: Advanced Photon Source (APS) at the U.S. Department of Energy's Argonne National Laboratory. New ondulators for the APS upgrade to next generation.
- [ESO - INTA] Linear high accuracy incremental encoders (2023 - 2023)
  High accuracy incremental linear encoders for a X-Y table. This table is in the calibration module of the HARMONI instrument.
- [EUROPEAN XFEL] Linear high accuracy absolute encoders (2017 - 2018)
  High accuracy absolute linear encoders for all the undulators in one line of the X-FEL: SLAC National Laboratory operated by Standford University for the U.S. Department of Energy Office of Science.
- [Australian Nuclear Science and Technology Organisation (ANSTO)] Linear high accuracy absolute encoders (2015)
  High accuracy absolute linear encoders for index table and other undisclosed applications: Australian Synchrotron belonging to the Australian Nuclear Science and Technology Organisation (ANSTO).


CNC, drives, motors and linear and angular encoders

BIG SCIENCE AREAS

ASTRONOMY

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

CONTROL SYSTEMS

MARKETS

AERONAUTICS

AUTOMOTIVE

ENERGY

OIL & GAS

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-45001

OSHAS 45001

ISO-50001

Company name:	**FERROVIAL CONSTRUCCION, S. A.**
Address:	C/ Ribera del Loira 42. 28042, Madrid
Web:	https://www.ferrovial.com
Turnover:	7, 070 million EUR in year 2023
Employees:	19,632 in year 2023
SME:	NO
Phone:	[+34] 913 008 500
Email:	desarrollo.construccion@ferrovial.com

ferrovial construction

ACTIVITY AND SKILLS

Ferrovial is a global infrastructure company focused on the development and operation of sustainable infrastructures. The company business model is based on the integration of its 4 business units (Toll Roads, Airports, Construction and Energy). One example of this integration would be the early involvement of the construction division in the design stages, reinforcing the company's capabilities and increasing its competitiveness.

Present in more than 15 countries with more than 24,000 employees around the world, of which around 20,000 are in Ferrovial Construction. Listed simultaneously on the Dutch, American and Spanish stock markets, where it is a member of the IBEX 35.

The company is committed with the decarbonization of its activities. The reduction of emissions (Scope 1&2) in absolute terms was of 29% compared to last year.

Ensuring the safety and well-being of the employees is a top priority for Ferrovial. In this regard, the serious injuries and fatalities frequency rate down by 20.3%.

Ferrovial's commitment to maintaining the highest environmental, social, and governance standards is endorsed by its inclusion in the Dow Jones Sustainability Index for the 22nd consecutive year. Furthermore, we maintain our position in indices such as FTSE4Good, CDP, Sustainalytics, MSCI, Moody's, ISS ESG, and Bloomberg Gender Equality.

FERROVIAL CONSTRUCTION

The achievement of Ferrovial's strategy involves Construction. The division remains committed to innovation and technology to minimize its environmental footprint, generate a positive impact on society and ensure the safety of users and workers.

The United States and Poland, in addition to Spain as a market of origin, remain the division's main markets, accounting for around 80% of sales. Other geographies with a stable presence are the United Kingdom, France, Portugal, Ireland, Chile, Puerto Rico, Peru, Australia and Canada.

In 2023 revenues (EUR 7,070 million) increased by 9.4% vs 2022. It also represents 83 % of the whole Ferrovial revenues.

Its extensive experience is endorsed by having implemented more than 569 km of tunnels 16.374 km of new roads, 4.698 km of P3 highways, 6.257 km of new railway track (including 1.507 km of High-Speed rail), 446 water treatment plants, 12.993 M m^2 of industrial buildings and so on.

Ferrovial Construction is currently working in the ITER project contributing with its expertise in construction of large industrial facilities, as well as a deep knowledge of a wide range of civil works and M&E activities. The company has also executed works in all nuclear plants in Spain.

Aerial View October 19 ©ITER Organization-EJF Riche

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] (TB20) - Completion Doors in Tokamak Complex (2023)
  Includes the design, qualification, manufacturing, and installation of heavy nuclear equipment (215 doors) for the ITER project. Includes mechanical and I&C conections.
- [F4E] (TB18) - Civil works for Building 14 (Tritium Building) (2021)
  Includes the Completion of Concrete works of Building 14 from L2 to R1, the installation of 4 Lift Lobby Doors, and the Civil Works for the Cargo Lift machinery room at R1 level, sorrounding steel structure and complementary cladding.
- [F4E] (TB06) HV Electrical Equipment (2014 - 2022)
  Design, supply, installation, commissioning, testing and maitenance of electrical equipment (PBS43 and PBS41,PP) and design, construction, commisioning, testing and maintenance of buildings and associated infrastructure (F4E-OPE-428).
- [F4E] (TB05) Design & Build Buildings 32,33 and 38 (2013 - 2019)
  Includes the buildings 32 and 33 of 4.875 m2 each, where will be done the conversion of power supply for the energization of the magnets, and the building 38 which has an area of 778 m2 and will be where reactive power will be controlled. The main feature of these buildings is the existence of electromagnetic fields generated by the equipment included and this requires avoiding the use of ferrous materials in the range of the fields, and forcing to use concrete reinforced with fibers for some of the pillars, building walls and slabs of concrete of pits. The foundation will be underground to avoid being affected by electromagnetic fields.
- [F4E] (TB07) Design & Build Buildings 64,67,68 and 69 (2013 - 2019)
  Includes the Building 67 of 7.740 m2 which corresponds with storage tanks of hot and cold water for cooling towers, the building 68 of 416 m2 for water pumping station, the building 69 of 1.500 m2 for heat exchangers and the building 64 of 540 m2 for water treatment. In this contract, the building 67 is the work most important because its scope includes design, civil works and the installations, highlighting the foundations, structure and waterproofing of "hot & Cold basin".
- [F4E] (TB03) Civil Engineering & Finishing Works (2012)
  Includes a total of 11 buildings, storage areas, and bridges between buildings, highlighting among them the Tokamak complex (building 11-Tokamak, 14-Tritium and 74-Diagnostic) where will be located the reactor and 13-assembly building where will take place the previous assembly of elements.

Tokamak Assembly pit_March 19_© ITER Organization EJF Riche

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | CONTROL SYSTEMS | CRYOGENICS AND VACUUM | ELECTRICAL AND POWER ELECTRONICS | ELECTRONICS AND OPTOELECTRONICS | INFORMATION AND COMMUNICATION TECHNOLOGIES | MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-50001 | ISO-9001 | ISO-14001 | UNE-73401

Company name:	**FRACTAL S.L.N.E.**
Address:	C/ Tulipán 2, portal 13, 1A. E-28231, Las Rozas de Madrid (Madrid)
Web:	https://www.fractalslne.es
Turnover:	0.75 million EUR in year 2024
Employees:	10 senior consultants in year 2024
SME:	YES
Phone:	[+34] 916 379 640 | [+34] 630 737 981
Email:	info@fractal-es.com

ACTIVITY AND SKILLS

FRACTAL SLNE is a private company belonging to the technological activities sector, founded in August 2005, being now almost 20 years old. We provide consultancy in Management, System Engineering, RAMS analyses, Optics and opto-mechanics, Mechanics, Software and Control systems, for professional Astrophysics (ground-based telescope and Space astronomical missions).

FRACTAL customers are Research centres, professional observatories, universities, and private engineering Aerospace companies.

Our main area of expertise is the development of professional astronomical telescopes, Instrumentation and Software.

Starting from the basic scientific requirements, FRACTAL can produce feasibility studies, designs (at different levels) or even the development of the whole scientific project. In particular, FRACTAL can do the specification, design, acquisition and tests of collimators, cameras, filters, prisms, and Volume holographic gratings (VPHs), especially for Astronomy applications and measuring systems. FRACTAL has also developed proprietary software tools for Management and System Engineering and has a human resources business line.

FRACTAL has two know-how license agreement with ESO: for Continuous flow cryostat technology and for Anti-Vibration mounts for Cold heads. This technology has been applied to SCORPIO (Gemini) and CHORUS (GTC) instruments, among others.

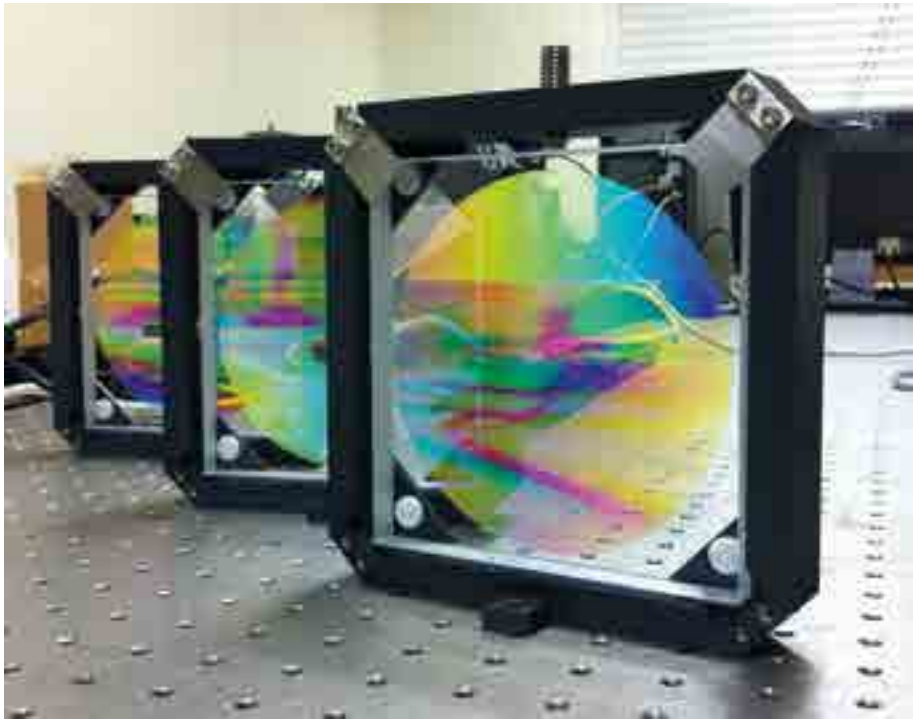
CONTRACTS FOR BIG SCIENCE FACILITIES

- [CALAR ALTO OBERVATORY - UNIVERSIDAD COMPLUTENSE DE MADRID] TARSIS Instrument (2023 - 2029)
  Management, System Engineering, Optics, Mechanics for TARSIS instrument
- [ESO - UNIVERSIDAD COMPLUTENSE DE MADRID] MOSAIC Instrument for the ELT (2022 - 2030)
  Management, System Engineering, Optics, Mechanics for NIR channel NIR spectrograph and Calibration module
- [GEMINI TELESCOPE – SOUTHWEST RESARCH INSTITUTE] Optics, Mechanics and Cryogenics, of SCORPIO instrument (2017 - 2022)
  Contract with South West Research Institute (San Antonio, USA)
- [GTC] MEGARA instrument for the 3.5m telescope (2017)
  Management and System Engineering, as well of other technical work packages
- [SAN PEDRO MARTIR TELESCOPE] Management and System Engineering for the 6.5m telescope in Baja California (2017)
  Project participated by two Mexican Research institutions (IA-UNAM in Mexico DF and INAOE in Puebla) and two in the United States of America (Smithsonian Astrophysical Observatory and the University of Arizona's Department of Astronomy / Steward Observatory).
- [CALAR ALTO OBSERVATORY] CARMENES instrument for the 3.5m telescope at Calar Alto (2015)
  Management and System Engineering, as well of other technical work packages

FRACTAL's projects and references:
https://www.fractalslne.es/files/FRACTAL-Introduccion.pdf

A presentation of the company is on-line:
https://www.fractalslne.es/files/FRACTAL-Services-Instrumentation-and-software-general.pdf

MEGARA spectrograph for the GTC 10m telescope during the assembly at laboratory in Universidad Complutense (customer UCM, Madrid)



Volume Phase Holographic gratings for ARES spectrograph at Joan Orç telescope (customer IEEC, Barcelona)

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

CONTROL SYSTEMS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

INFORMATION AND COMMUNICATION TECHNOLOGIES

Company name:	**FRENETIC ELECTRONICS, S. L.**
Address:	Avenida Cordoba 15, 4ºA1. 28026, Madrid
Web:	http://www.frenetic.ai
Turnover:	3.00 million EUR in year 2024
Employees:	50 in year 2024
SME:	YES
Phone:	[+34] 915 296 007
Email:	admin@frenetic.ai

Frenetic

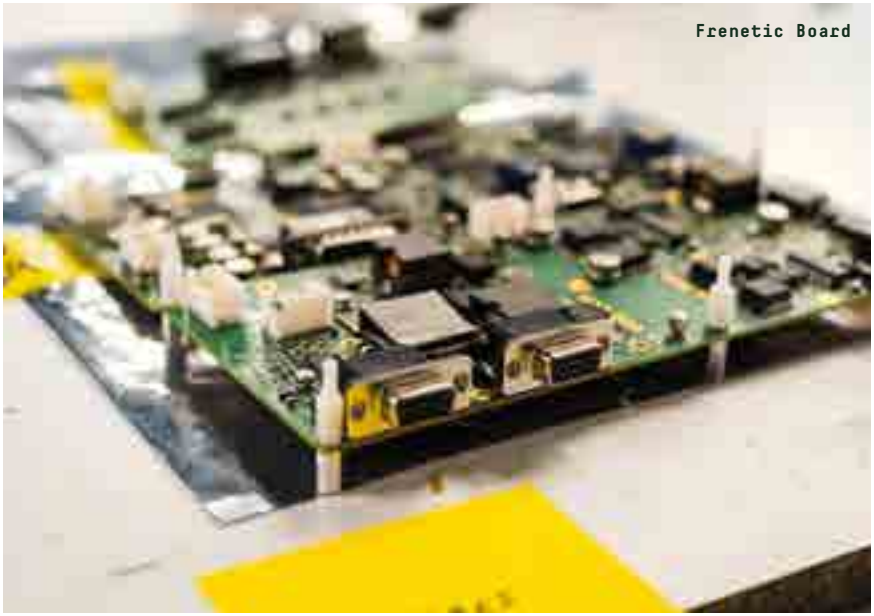
ACTIVITY AND SKILLS

Frenetic is a technology company, born to revolutionize the Magnetics industry. With a strong focus on innovation, we specialize in the entire range of Magnetic components design, simulation and manufacturing.

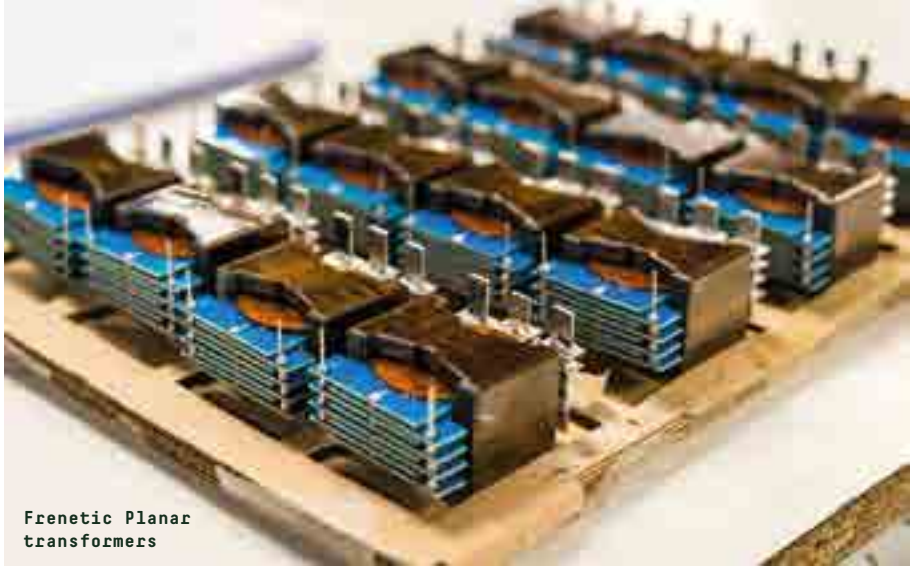
Our services include the most advanced simulation and design software for Magnetic components, a web-based platform that allows users to compare millions of different possibilities for their Magnetics within seconds, all while maintaining the highest level of accuracy in the market.

Frenetic extends its commitment to Magnetics customization by overseeing the production side of your project, managing both samples and mass production units. Our streamlined process ensures prompt quotations for Magnetic component design and production, with samples delivered swiftly within just a few weeks.

Our dedication is granted by our team of experts, who accompanies you throughout the entire design and production journey, guaranteeing that your projects not only meet but exceed the benchmarks for high quality, performance and sustainability.



Frenetic Board



Frenetic Planar transformers

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CNA] High voltage and variable frequency power source for the CNA cyclotron chopper system (2024 - 2025)
  Design and manufacture of a high voltage and variable frequency power supply for the chopper system of the cyclotron of the National Accelerator Center in Seville. The system is composed of two physical elements, high voltage AC-DC converter, and pulsed DC-DC converter. Characteristics of the AC-DC converter: maximum output voltage: 30kV, power input: 3x 400V ± 50Hz, voltage stability: ≤0.01%, temperature coefficient: ≤0.01%, Nominal voltage / ºC, interlock input, remote control. Characteristics of the pulsed DC-DC converter: BNC LVTTL input for switching signal, BNC output with converter interlock indication, 230V AC input, internal protection against over-current and oscillations.

RELEVANT R&D PROJECTS

- 1.5kW Planar transformer for Aerospace Application (2023 - 2024)
  The project consisted in the design, simulation and built of a planar transformer of 1.5kW for an aerospace application, for the company Safran (former Thales Group). The solution is a mergence (transformer+inductor on top) optimized for size and weight for an aerospace application

- [AUSTRIAN CLIMATE AND ENERGY FUND] 50kW DAB High Frequency Transformer for Megawatt Charger (2022 - 2023)
  Design and manufacturing of a 50kW Transformer for a modular DAB DCDC Converter for the Austrian Institute of Technology, as part of their project MEDUSA. The transformer is connected directly to the medium voltage grid, so it requires a 70kV Isolation level and partial discharge compliance. The project was a success and it is now being implemented in private customer.

- Development of a DC-DC Power Supply for Space Edge Computing Project (2022 - 2023)
  Design and manufacturing, for Thales Alenia Space, of a power supply for four different function modes in four different hardware boxes, using a specific software. The four boxes are two cameras (HYP & RGB) and two computers: Onboard Computer and SpaceEdge Computer (OBC & SEC). Frenetic designed, developed, manufactured and validated the DCDC converter (PCDU) that supplies energy to the four boxes from the main bus of the ISS.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

HEALTH

NAVAL

NUCLEAR

OIL & GAS

SPACE

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-45001

OSHAS 45001

ISO-50001

Company name:	**FUS ALIANZ SCIENCE ENGINEERING AND CONSULTING**
Address:	Nord 19, ático, El Vendrell (Tarragona)
Web:	http://www.fus-alianz.eu/
Turnover:	0.35 million EUR in year 2024
Employees:	4 in year 2024
SME:	YES
Phone:	[+34] 977 910 826
Email:	info@fus-alianz.eu

ACTIVITY AND SKILLS

SCIENCE DOMAIN:

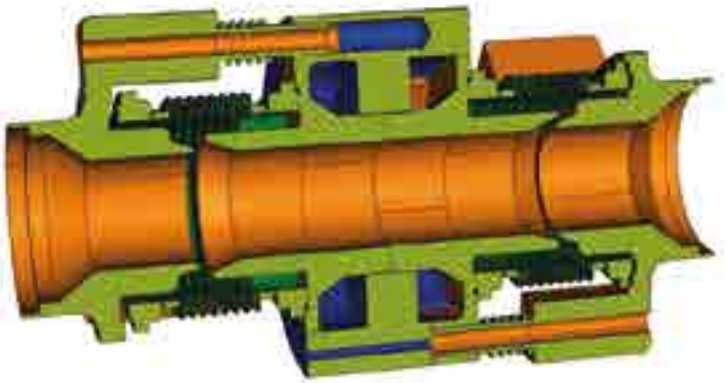
- Nuclear Fusion Science.
- Breeding Blankets for ITER and DEMO Tokamaks.
- Hybrid FUSION-FISSION reactor systems.
- AI application of Nuclear Fusion.
- Space Nuclear Propulsion reactor design.

ENGINEERING:

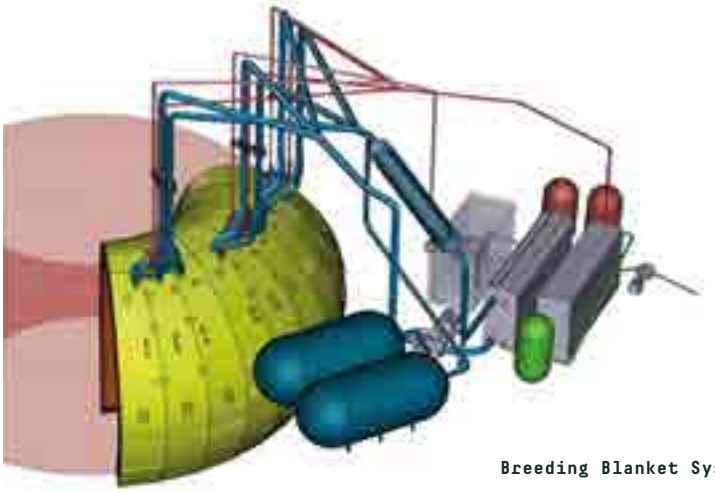
- Cutting-edge Nuclear Technology Projects.
- Reinforced Machine Learning for the dynamic control of isotopes in hypercomplex Plants.
- Production routes of Fusion reactor materials and Quality Assurance.
- Nuclear and Tritium Fusion diagnostics.

CONSULTING:

- Consulting on R&D & Innovation Undertakings
- Calls and Tenders Instruments and National and EU leves.
- Integral Consulting Services in the Sector of Industry of Science.
- Supporting Networking to the constitution of Consortia for international tendering.
- Providing highly qualified professionals.



Design and detailed engineered double pipe connector for fast remote handling



Breeding Blanket Systems

RELEVANT R&D PROJECTS

- [UK ATOMIC ENERGY AUTHORITY- LIBRTI] Accelerator for Tritium Production (ATP) as Fusion Fuel supply solutions for DEMO (LIBRTI) (2024)
  LIBRTI_UK. Lithium Breeding Tritium Innovation (LIBRTI) Programme. Information restricted (Safeguards). Proposal for tritium production and for the development of tritium breeding technologies based on the development of special target bounded to a Neutron Spallation source with Demo that no other options as (present or new CANDU-like, devoted HF reactors, RTNS) being reliable. A 20 L of tritium breeding domain with robust passive TRS and simple TSS with minimum residence time (for minimum dwell times when extrapolating to fusion). Innovative solutions for the tritium experimental testing as (A) Active TPR and n-capture sensors; (B) DWT to be potentially considered for simultaneous Dual Power and Tritium recovery; (C) SC_CO2 for HRS and TRS technology; (D) Use of RML for dynamic tritium-mass balance controlled monitoring (New ITOP); (E) Microprinted LM/SCCO2 heat exchangers design. (F) Tritium recovery technologies from SC_CO2. Execution plan discussed.

- [MINECO] Industrial production of the eutectic lithium-lead alloy enriched in 6Li (Pb-15.76Li) (EUTECTICS) (2023)
  Main challenge: experimental demonstration of an industrially scalable technique for producing the eutectic Lithium-Lead alloy (Pb-15.7(2)Li), a strategic material in fusion technology, along with the capability for enrichment in 6Li, according to nuclear material standards. Its 4 major objectives are: (1) Establishing the Quality Standard (UNE) for the material in its production, handling, and qualification. Establishment of a national network of characterization and qualification laboratories. (2) Experimental demonstration of a scalable isotopic separation technique for Li(6) (1 kg). (3) Experimental demonstration of a technique for mixing Li-Pb under quality requirements and industrial scalability (1 ton). (4) Key actions towards industrialization in the production of Pb-15.76Li batches. The activities are structured through 22 specific tasks between FUS_ALIANZ, IQS, URV, IDONIAL, and CIEMAT. Subcontracted entities include UNED, IPUL, and Riera Nadeu S.A.

- [EUROFUSION-EURATOM] Production and characterization of Pb-16Li alloy (production trial) IN TBM (EUTECTICS) (2022 - 2023)
  EUTECTICS®: Industrial production of LLE under nuclear QA standard. (1) Assessment of 6Li, lead-lithium eutectic material grades procurement demands for the EU WCLL ITER TBM blanket Program; (2) A Material Production and Qualification Plan (MPQP) for LLE material grades ; (3) A plan for the scoping production of 6Li and Pb-15.7(2)6Li nuclear grades including the selection of 6Li production technique in view of 6LLE TBM procurements (4) Design supported modeling of MHD stirrers for Industrial production of LiPb. (5) Prospecting production trials of LLE and LLE(6)) to confront MPQP. This Project has generated a full capacity to procure Li(6)-enriched Lead-lithium certified nuclear grades in Spain by FUS_ALIANZ and collaborators. EUROFUSION. 101052200 — EUROfusion — EURATOM-2021-ADHOC-IB

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

CONTROL SYSTEMS

MARKETS

ENERGY NUCLEAR

SPACE

CERTIFICATIONS

ISO-9001 ISO-14025

Company name: **FYLA LASER S. L.**
Address: Ronda Guglielmo Marconi 14. 46980, Paterna (Valencia)
Web: http://www.fyla.com/
Turnover: 0.67 million EUR in year 2023
Employees: 25 in year 2023
SME: YES
Phone: [+34] 607 971 021
Email: fyla@fyla.com

WE LASER
THE NEW INDUSTRY

ACTIVITY AND SKILLS

FYLA Laser S.L. develops unique and singular all-fiber ultrafast pulsed lasers. Our products are designed for high-end sectors and applications such as industrial metrology, advanced semiconductor processing, and FSO/fiber optical communications for civil, defense, and security markets. We serve key clients and partners across the entire value chain, including large scientific institutions and initiatives. Our lasers support a wide range of photonics-based research, from fundamental to applied developments, through the integration of our proprietary all-fiber technology.

Ultrafast fiber lasers

CONTRACTS FOR BIG SCIENCE FACILITIES

- [UV – Institute of Material Sciences] Supply of a pulsated laser for the Photonics and Semiconductors Group (FOSE) (2021)
- [IFCA CSIC] Development and Supply of a Femtosecond Laser for Two photon absorption (2019 - 2020)
- [CERN] Development and Supply of a Femtosecond Laser for a TPA- TCT System (2018 - 2019)

RELEVANT R&D PROJECTS

- [CDTI-MISIONES 2023] High-performance laser links in free space for terrestrial and space communications on an integrated photonics platform (ENLACE) (2023)
  The ENLACE project focuses on researching a new free-space optical link through the study of new integrated photonics (PIC) devices and circuits, and communication channels based on high repetition rate ultrashort pulse lasers. This new generation of links will enable Earth-to-Earth and Earth-to-Space-Earth laser communications under adverse atmospheric conditions, making a radical contribution to the development of future Internet infrastructure.
- [I+D PYME (PIDI-CV) 2023] Advanced Photonics for the Automation and Digitization of Color Quality Control in Coil Coating Production Lines (2023)
  The main objective of this project is to design and develop an inline quality control system for color properties in the production of pre-painted metal coils (coil coating). This inline color measurement system will be based on remote illumination using supercontinuum fiber laser technology, scanning and synchronous detection immune to ambient light, and new proprietary sequential measurement algorithms. It will replace the manual measurement methods currently in use, thereby optimizing quality control processes and drastically reducing costs due to color inconsistencies in the supply chain.
- [INNOVATeiC-CV 2023] Long-range Earth-to-Earth optical communication system based on ultrashort pulse lasers (2023)
  In this context, the main objective of this project is to design and develop a new transmitter-receiver system based on an ultrashort pulse laser source, to be used as an effective Earth-to-Earth optical communication link under adverse atmospheric conditions and effective at distances greater than 2 km

RELEVANT R&D PROJECTS

- [CDTI-MISIONES 2022] Research and Development of Intelligent Manufacturing Solutions using Laser Technology (STELA) (2022)
  The general objective of the STELA project is to research and develop an intelligent manufacturing system for processing materials at sub-millimeter levels (microprocessing) using laser technology as the manufacturing tool. This includes the research and development of a specially designed monitored fiber laser source for microprocessing, an integrated monitoring system within the optical head of the laser beam guide, and software that enables process control, modeling, and decision-making. The project aims to validate this system in three relevant applications in high-impact industrial sectors (automotive, water treatment, and food industry).

- [HORIZON-MSCA-2021-DN-01] COmputatioNal Imaging as a training Network for Smart biomedical dEvices (CONcISE) (2022)
  European Commission CONcISE is a new doctoral network set to bring to the market more data-efficient and quality-oriented techniques for biomedical optical imaging in biological tissues. The project follows an interdisciplinary approach, bringing together experts from academia and industry to develop novel, unconventional, and multi-dimensional computational imaging devices for biological tissues, where the hardware and the software are completely integrated and developed together.

- [IVACE] Optimization of the laser development process by using advanced design, calculation, simulation and analysis tools (IMDIGA) (2017)
  To do this, FYLA will implement new technologies specialized in the design process (CAD) of lasers and their components, as well as in the calculation, analysis and simulation of their properties (CAM - CAE).

- [EUREKA South Korea - Spain] Development of femtosecond laser based free-shape WLCSP (Wafer lever chip size packaging) manufacturing system for advanced semiconductors (DOWLPUL) (2017)

- [IVACE] Development of an integrated laser lighting equipment for high-resolution biological-clinical microscopy equipment, such as time-resolved fluorescence microscopy (FLIM) and Multiphoton microscopy (MPM) (IMDITA) (2016)

- [H2020 - SME INSTRUMENT] Development and market uptake of a fibre laser frequency comb (LASERCOMB) (2016)
  Will enable the new communication paradigm based on EONs and Super-Channels. Grant agreement Nº 826882.

- [H2020] Recruitment of a postdoctoral researcher from other countries (not Spain) to explore an innovation business idea (FEMTOCOLORS) (2016)
  The development of a Femtosecond (Fs) Temporally Coherent Supercontinuum (SC) Fiber Laser for Multi-Photon Microscopy (MPM). FYLA LASER S.L. has recruited a highly qualified specialist in photonics, that is not available in the Spanish job market, but whose knowledge has been crucial to open up opportunities for innovation and significant growth for the enterprise. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 739697.


Optical assembly

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS

REMOTE HANDLING AND ROBOTICS

ADVANCED MATERIALS AND MANUFACTURING

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

DEFENSE

NUCLEAR

SPACE

Company name:	**GD ENERGY SERVICES**
Address:	Ronda Auguste y Louis Lumière 15, Parque Tecnológico. 46980, Paterna (Valencia)
Web:	https://www.gdes.com/
Turnover:	89.86 million EUR in year 2023
Employees:	1,052 in year 2023
SME:	NO
Phone:	[+34] 963 540 300
Email:	info@gdes.com

ACTIVITY AND SKILLS

GDES (Grupo Dominguis Energy Services) is an international business group based in Spain with more than 90 years of experience in the provision of industrial services for the energy sector. It is a leader in support services for operations, maintenance and decommissioning, surface treatment, circular economy & logistics, energy efficiency and digital transformation for sectors as diverse as nuclear, wind power, solar photovoltaic, metallurgy and many others.

Its degree of diversification positions the group as one of the companies with the most promising outlook in the energy market (nuclear, fossil and renewable, petrochemical and gas).

GDES, founded in 1932, currently has a workforce of more tan 1000 professionals worldwide. This is a highly qualified customer-orientated team that provides added value solutions adapted to the specific needs of each project.

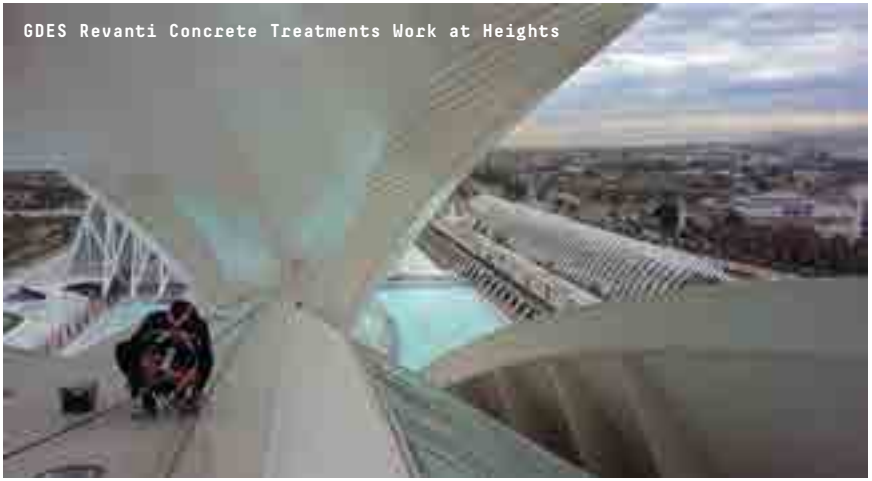
With its strong commitment to research, development and innovation, GDES has established itself as a pioneering company in technological developments adapted to specific projects and needs with the aim of extending its operational field, strengthening continuous improvement and maintaining its support to clients whenever new needs arise.

GDES performs surface treatment work for important national and international customers in the nuclear, petrochemical and industrial sectors through the GDES Revanti brand.

The GDES Radiological Protection Technical Unit (UTPR) offers its customers complete technical and legal support from the outset when the potential customer is considering the use of radiation. The GDES UTPR has over 30 years' experience in the sector, acting in all radiation application fields. This places it as one of the most prestigious Radiation Protection Units in the country.

GDES has been undertaking industrial cleaning and radiological decontamination services since its creation in 1977, with the aim of being able to handle materials by reducing the risk of contamination dispersion, the radiological cost of operations with affected materials, the volume of radioactive waste, and confining contamination. Outstanding among GDES's specialist services are those of radioactive decontamination and maintenance, an activity that is undertaken in France, UK and Mexico as well as Spain.

GDES performs thermal protection services in national and international customer in nuclear sector including research and engineering megaproject like ITER.



GDES Revanti Concrete Treatments Work at Heights

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Paint Touch-up Contract (2023)
  The basic scope of the project is the touch-up painting of embedded plates after welding of brackets or other devices. This work also includes the installation of scaffolding and means of access to the inlaid plates in question. The number of Plates included in the project will be approximately 37,000. The project include repairs and painting activities of civil works structures (reinforced concrete or steel structures).

- [F4E] Contract for painting and coating works for the tokamak building, tritium building and diagnostics building (2018)
  Application of different types of coatings,combining scaffolding, auxiliary resources and rope access work over a total area of 120,000 m^2, on both the Tokamak building and its two annex buildings, which will be used to achieve a deuterium-tritium plasma. Properties of the different coatings: Decontaminable and non-decontaminable, anti-carbonation, high resistance to chemicals and heavy traffic, high resistance to irradiation, additional electrostatic conductivity requirements, resistant to oils and specific chemical elements.

- [EDF] Coating system for the improvement of sealing and structural reinforcement for long-term operation of nuclear power plants (2016 - 2019)
  Development of a new coating system specifically for EDF. The added value comes from the real capacity of our system (SIKAWRAP 230C.) to solve a new requirement not raised until now, and whose resolution guarantees the operation of NPPs under the most recent regulations of international nuclear safety. Four different interventions: NPP Cattenom 3: 50 m^2 (2016), NPP Flamanville 2: 2400 m^2 (2017), NPP Flamanville 1: 4500 m^2 (2018)., NPP Flamanville 2: 3600m^2 (2019) covering 10,500 m2 of surface area.

GDES Revanti Tokamak Building - ITER

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MARKETS

NUCLEAR

CERTIFICATIONS

ISO-9001 | ISO-14001 | CEFRI | OSHAS 45001 | UNE-73401

Company name:	**GMV**
Address:	C/ Isaac Newton 11, Parque Tecnológico de Madrid. 28760, Tres Cantos (Madrid)
Web:	http://www.gmv.com
Turnover:	440.00 million EUR in year 2024
Employees:	3,450 in year 2024
SME:	NO
Phone:	[+34] 918 072 100
Email:	marketing.tic@gmv.com

ACTIVITY AND SKILLS

GMV is a privately owned technological business group with an international presence. Founded in 1984, GMV offers its solutions, services and products in very diverse technologically-advanced sectors, including space, big science and information technologies.

With respect to Big Science, GMV's current offer via services contracts or projects includes:

- Development and Implementation of Central/Local/User Control Centers
- Instruments processing, monitoring and control, and calibration
- Data Processing Framework: Automatic Process Execution, Monitoring and Control (Event driven/Data driven), Multi-Sensor Processing Environment, Automatic Resources Reallocation, Algorithm Development and Validation, Support Transparent Scalability, Data Fusion and Data Mining, Archive, Catalogue and Dissemination
- Application of multivariate analysis (PLS: Partial Least Squares regression) for predictive maintenance
- Quantum computing; Advanced machine vision algorithms: optical tracking, pose estimation and navigation algorithms
- Visualization, Validation & Analysis Tools. Simulators for R&D, Analysis, Training and Ops support
- Planning and Scheduling Solutions
- Custom HW/ SW Development and Independent Hardware/ Software Verification
- Specialized Engineering Services, including Project Management Support and System Integration, Verification & Qualification and RAMS Analysis
- Autonomous robotics solutions; Robotic Test Facility (platform-art)
- Physical and Cybersecurity solutions
- Quantum resistant cryptography
- Operation and support services 7x24.

Instrumentation and control for large scientific facilities

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS] Support to ESS Integrated Control System Division with network engineer (2019)
- [ESS] Support to ESS Integrated Control System Division with embedded engineer (2018)
- [ESS] Provision of Integration Services for ESS Integrated Control Systems (2018)
- [ITER ORGANIZATION] Development, Maintenance and Support Services for the NDS Driver for MTCA Devices in the context of their use in CODAC Core System (2018)
- [JAEA] Development, integration and test of Local Control Systems to the LIPAC Central Control System (2017)
- [ESA] Scatterometer Ground Processor Simulator & Prototype Tools in MetOp-SG (2016)
- [JAEA] Engineering Support for IFMIF/LIPAc Control System Integration (2016)
- [EUMETSAT] EPS-SG Mission Control and Operations Support (2016)
- [ESA] Design of the Framework Planning System for ESA's Science Missions (2016)
- [ITER ORGANIZATION] NDS Core Software Support for CODAC Core System (2016)
- [ITER ORGANIZATION] Remote Handling Engineering Support, in consortium (2015)
- [ESA] LISA Pathfinder (gravitational waves) Science Data Management Support (2015)
- [ESA] SWARM (magnetic measurements) System-Performance Simulator / Operational Instrument Data Processor (2015)

RELEVANT R&D PROJECTS

- [CDTI] Quantum computing applied to strategic industries (2021)
- [HORIZON 2020 - SPACE] European Robotic Goal-Oriented Autonomous Controller (ERGO) (2018)
- [CDTI] PROductivity InDUstrial EnhanCement through enabling TechnlOgie (PRODUCTIO) (2017)
- [CDTI] Accelerators and Associated Technologies for Big Scientific Facilities (2017)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | ELECTRONICS AND OPTOELECTRONICS | INFORMATION AND COMMUNICATION TECHNOLOGIES | REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | SPACE | NAVAL | NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-9001 | ISO-9100 | ISO-14001 | ISO-20000 | ISO-22301 | ISO-27001 | UNE-166002 | AQAP-2110 | AQAP-2210 | AQAP-2310 | CMMI | NRTL-C/US | UN/ECE N.10

Company name:	**GREENING**
Address:	C/ Alcayata, 4 Polígono Industrial El Florío. 18015, Granada
Web:	https://www.greening-group.com/
Turnover:	4.67 million EUR in year 2023
Employees:	62 in year 2023
SME:	YES
Phone:	[+34] 958 198 431
Email:	info@greening-group.com

Greening

Photovoltaic plant

ACTIVITY AND SKILLS

GENERATION: Ownership and operation of photovoltaic installations, industrial onsite Power Purchase Agreements (PPA), and/or pool sales, biogas, and H2 projects.

SOLUTIONS: Energy storage, energy efficiency, engineering, procurement and construction (EPC) for both third-party and in-house projects, operations and maintenance (O&M), electric vehicle (EV) chargers, recycling of electronic components, design of new generation products, and IA efficient use of water resources.

ENERGY TRADING: Sale of renewable energy, residential customer self-consumption, surplus compensation, virtual battery, and energy communities.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CALAR ALTO OBSERVATORY] Photovoltaic power plant for the Spanish Astronomical Center in Andalusia (2020 - 2022) *Supply and installation of a photovoltaic plant of minimum 200 KW for the Spanish Astronomical Center in Andalusia (Calar Alto Observatory)*

Photovoltaic plant

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CIVIL WORKS AND INFRASTRUCTURE

MARKETS

ENERGY

CERTIFICATIONS

ISO-9001 ISO-14001 ISO-45001

Company name:	**GREENLIGHT SOLUTIONS**
Address:	Avenida Somosierra 12, portal B, planta 2, oficina F. 28703, San Sebastián de los Reyes (Madrid)
Web:	http://www.greenlightsl.com/
Turnover:	0.75 million EUR in year 2023
Employees:	5 in year 2023
SME:	YES
Phone:	[+34] 655 050 260
Email:	info@greenlightsl.com

Greenlight Solutions

Optics and Photonics Solutions

ACTIVITY AND SKILLS

GREENLIGHT SOLUTIONS is a key company in the field of optical design and engineering (image formation) and photonics (radiation generation, conduction, and detection). Especially focused on solving specific problems of our customers, we have been expanding our capabilities to additionally offer electrical, piezoelectric, mechanical and software solutions. We offer design, manufacture, installation/assembly and commissioning of diagnostic imaging systems for magnetic confinement fusion devices, electromechanical systems and UV-VIS spectroscopy systems for space. We also are specialised in product engineering activities with piezoelectric technology: shutters for synchrotrons, elimination of noise from railway tracks or control of robotic arms for nanofabrication.

RELEVANT R&D PROJECTS

- [CIEMAT] Updating of the FIR imaging system for neutral impact detection
- [JET] Fast intensified camera for plasma physics studies, CDT Project Update of VIS-IR imaging diagnostic systems for wall protection and physical studies, Calculations of the impact of wall reflections on optical measurements
- [ITER] Feasibility study and optical design of wide-angle equatorial vision systems in VIS-IR (interspace and portcell zone), Design and photonic study of Core Charge Exchange Recombination diagnosis

LEITAT Laminar flow workstation

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IAC] IACSAT-1 Performance trade-off for IACSAT infrastructure enhancement: Stray light rejection in a compact design (2023 - 2024)
- [IAC] VINIS Ground prototype for a payload onboard a small satellite for Earth-Observation (2023 - 2025)
- [ICMAB] Optomechanical system for organic transistor manufacturing (2022)
- [AEMET] Design and manufacture of an optical protection window and its support frame for the micropulsed LIDAR CE376 in Izaña Observatory (2021)
- [ICMAB] Multiplatform optomechanical system for 2D flakes transfer system (2021)
- [IAC] Assessment of optical design of refocusing blocks for the Multi Conjugated Adaptive Optics (MCAO) and supply the linear stages to make the final refocusing (2020 - 2021)
- [ALBA] Manufacture of square first surface mirrors with a hole in the centre (2020)
- [CIEMAT] Manufacture of MgF2 windows for detection of dark energy (2019)
- [INL] Optomechanical set up the ultrafast bio and nano photonics laboratory (2019)
- [IAC] Requirement to apply a NIR AR coating at the end of glass fiber optics bundle connect (2018)
- [ALBA] Manufacture of collimating achromatic doublets and first surface mirror (2017)
- [LEITAT] Supply of several pneumatic optical tables, motorized iris diaphragm and a laminar flow workstation for the Renewable Energies Area and the Energy Conversion and Photonics Area (2017 - 2020)
- [ALBA] Supply of linear translation stages for lab (2016)
- [ALBA] Supply of pneumatic optical table for lab (2015)
- [IMDEA] Supply of optical tables, optomechanical supports and stages for Materials Department and Energy Department (2015)
- [CLPU] Supply of custom-made circular-shape optical tables, motorized slit, THz detectors, laser and energy power meters, motorized linear stages for vacuum for the Extreme Optics Group and Scientific Area (2014 - 2022)
  Activity carried out in years 2014, 2015, 2016, 2017, 2021, 2022.
- [CEM] Supply of several optomechanical components for Radiation Thermometry Lab (2014 - 2017)
- [CIEMAT] Training in Zemax Optical Studio (Introductory and/or Advanced) (2014 - 2022)
- [CLPU] Training in Zemax Optical Studio (Introductory and/or Advanced) (2014 - 2022)
- [IAA] Training in Zemax Optical Studio (Introductory and/or Advanced) (2014 - 2022)
- [IAC] Training in Zemax Optical Studio (Introductory and/or Advanced) (2014 - 2022)
- [INTA] Training in Zemax Optical Studio (Introductory and/or Advanced) (2014 - 2022)
- [INTA] Manufacture of custom-made optical tables and several optomechanics and optics items (2012 - 2022)
- [CSIC] Optical and opto-mechanical design, manufacturing, assembly, and testing of a patented calibration device for spectrometer "Calespio" (2012)
- [IPCE] Design, manufacture, and assembly of a 2D scanning system for hyperspectral image studies of art pieces (2011)
- [ALBA] Supply of fast piezo shutters for the RX lines (2010 - 2012)
- [IAA] Fused silica windows dummies manufacturing, custom-made 5 axes motorized stage manufacturing, manufacture of several cryostat windows, supply of pitch&yaw stages for Instrumentation Unit (2009 - 2016)


INL - BioNano Photonics Laboratory

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS | SPACE

Company name:	**GTD**
Address:	Passeig de Garcia Fària, 17. E08005, Barcelona
Web:	http://www.gtd.eu/
Turnover:	39.45 million EUR in year 2023
Employees:	375 in year 2023
SME:	NO
Phone:	[+34] 934 939 300
Email:	gtd_sir_business@gtd.eu

ACTIVITY AND SKILLS

GTD is a global technology company specializing in the design, integration, and operation of high-value, complex, mission-critical applications and systems worldwide. Our primary areas of activity include Big Science, Space, Robotics, Infrastructure, Aeronautics, Defense & Security, Logistics, and Transportation.

Our expertise spans diverse domains, such as process control, embedded safety systems using FPGAs, real-time control systems, safety-critical software, supervision and control rooms, Industry 4.0, decision support, and data analytics solutions. We combine extensive experience in system and software engineering for High Energy Physics laboratories, telescopes, fusion reactors, remote handling systems, space ground systems, and embedded systems for space vehicles and satellites.

RELEVANT R&D PROJECTS

- [Horizon Europe] reuSable strAtegic space Launcher Technologies & Operations (SALTO) (2021)
- [H2020] Standard And Modular Microlauncher BAsed services (SAMMBA) (2019 - 2022)
- [H2020] European Newspace Vertical Orbital Launcher (ENVOL) (2019 - 2023)
- [CDTI] Ultrafast functional safety protection system with high reliability and availability (2016 - 2017)

ITER vacuum vessel - (C) ITER Organization

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CNES] i-CDO: Core Launch Range Renoval at the European Spaceport (CSG) (2023 - 2026)
- [ESO] Full Automated Monitor and Control System for the 3.6 Coating Plant at La Silla (2023)
- [ITER ORGANIZATION] Framework Contracts for Central Safety system (CSS) Support Services - System engineering services (2022 - 2027)
- [ITER ORGANIZATION] Prototypes and early systems development services (2022 - 2027)
- [ITER ORGANIZATION] Framework Contract for CODAC Core System (CCS) Software Maintenance (2021 - 2026)
- [F4E - ALTER] Framework Contract for Bespoke Electronics (2021 - 2026)
- [F4E] Magnetics Diagnostic Plant Controller Integration (2021 - 2023)
- [F4E] FECDS-TCCS I&C MRR and First-of-a-kind Manufacturing (2021 - 2023)
- [ESA] International Gateway. I-HAB Application Software. (2021 - 2027)
- [ITER ORGANIZATION - ESTEYCO] Framework Contract for Tokamak System Monitoring (2020 - 2025)
- [F4E] GENROBOT Command Control (2020 - 2022)
- [F4E] Front End Cryogenic Distribution System (FECDS) I&C HW and SW (2019 - 2020)
- [F4E] Torus and Cryostat Cryopumping System (TCCS) I&C Integration with FEDCS (2019 - 2020)
- [CTAO] Cybersecurity Consultancy (2019)
- [ITER ORGANIZATION] Framework Contract for CODAC Development and Maintenance (2018 - 2022)
- [F4E] Remote Handling: GENROBOT Test Bench Validation and integration at DTP2 (2018 - 2020)
- [F4E] Advanced Conceptual, Preliminary and Final Design of the Magnetic Diagnostic plant system controller hardware and software (2018 - 2020)
- [ESA] Data Circulation and Dissemination (2018)
- [ESO] Alma Common Software ACS (2018)
- [F4E] Framework Contract for Instrumentation & Control Services (2017 - 2022)
- [ITER ORGANIZATION - FERROVIAL] Control and Supervision for Load Centers and TB05, TB06 Buildings (2017 - 2020)
- [CNES] Ariane Group Ariane 6 Control Bench Family (2016 - 2030)
- [EUMETSAT] MTG Level 2 Processing Facility (2016 - 2025)
- [F4E] Remote Handling: GENROBOT Development (2016 - 2020)
- [F4E] Instrumentation, Control & (Fast) Protection Systems for European Gyrotron test facility and ECT - FALCON (2016 - 2020)
- [ITER ORGANIZATION - OMEGA] Control and Supervision for TB04 Buildings (2016 - 2020)
- [F4E] Design and implementation of the Alarm Survey System extension (2016 - 2017)
- [F4E] Development of HMI and PLC interface (PSH) for LN2 plant (2016)
- [F4E] Preliminary Design of the Instrumentation and Control system for the HCLL PbLi Loop (2015 - 2016)

BIG SCIENCE AREAS

ASTRONOMY

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRONICS AND OPTOELECTRONICS

CONTROL SYSTEMS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS

DEFENSE

ENERGY

NAVAL

SPACE

NUCLEAR

CERTIFICATIONS

ISO-9001

ISO-9100

ISO-14001

AQAP-2110

AQAP-2210

CMMI

Company name:	**GUTMAR S. A.**
Address:	Avinguda de Cerdanyola, 97-101. 08173, Sant Cugat del Vallès (Barcelona)
Web:	http://www.gutmar.com/
Turnover:	17.90 million EUR in year 2024
Employees:	105 in year 2024
SME:	YES
Phone:	[+34] 932 234 823
Email:	comercial@gutmar.com

ACTIVITY AND SKILLS

Since its foundation in 1951, GUTMAR has been specialized in precision machining and assembly of mechanical parts and high technology subsystems, in order to satisfy the needs of its customers by offering them a complete service, ranging from product development, machining, heat, surface and painting treatments, to final assembly and after-sales service.

Gutmar is positioned as a top-tier supplier for major European aerospace companies like Airbus. We work in leading sectors as aeronautics, space, maritime, robotics and recently in the fusion energy sector. Gutmar develops and leads international technological innovation projects seeking a long-term win-win relationship with customers.

Robotic gripper

Gutmar offers:

- One stop shop service: from concept design to manufacturing, including maintenance and repair through the life cycle of our products
- Precision machining: We use the highest technology in industrial equipment (More than 50 machines, machining centers of 3, 5 and 9 axes, lathe, milling, 3D dimensional, ...).
- Mechatronic assemblies: High accuracy mechatronic systems.
- Wide variety of welding processes, with facilities and equipment that can be adapted to our customers' needs.
- Welding assemblies: Delivery of completely assembled, painted and adhesive structures.
- Prototype manufacturing capacity (short and large series).
- Special tooling: Engineering Design & Manufacturing.
- Precision Dimensional Metrology Laboratory, fully equipped with cutting edge technology.
- Multidisciplinary team capable to move to client's facilities to operate, make final adjustments and commissioning.

Gutmar covers: Manufacturing & Assembly Aerospace, Aeronautics, Defense, Automotive, Robotics, Equipment, Electronics, Automation, Mechatronic Engineering, Special Projects, R+D+I, Brazing (Oven Hard Welding) MAG, MIG & GMAW MIG. Brazing TIG, GTAW & SMAW, Process engineering, Mechanical and electrical engineering, Mech. and Elec. installation, PLC Programming, Robot Programming, Commissioning.


Satellite parts

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] IDES & IVS (2022)
  In-Divertor Electrical Service (IDES): Final design, Manufacturing & supply Connectors, Sensors, JB, Shunts and Mineral Insulated (MI) cabling for ITER diagnostics sensors. In-Vessel Supports (IVS): Manufacturing & Supply for MI Cabling.
- [F4E] Design, manufacturing & supply Leak Detection Systems for ITER (2022 - 2024)
  Design, manufacturing & supply of the Primary Vacuum and Cryostat Leak Detection Systems for ITER. *Manufacturing of ITER flanges.*
- [F4E] Diamond Window Unit Prototypes for ITER (2022 - 2024)
  Manufacturing of two torus diamond window prototypes for the ITER EC H&CD Launchers.

RELEVANT R&D PROJECTS

- [CDTI] Advanced, Innovative, and Smart Hydrogen Propulsion (PHIADI) (2021 - 2024)
  The main objective of the PHIADI project is to demonstrate, at TRL4, the technological concept of aircraft hybridization, by evaluating a gaseous hydrogen powertrain that combines direct combustion with fuel cell power generation, battery and ultracapacitors support, and intelligent energy management. Consortium with EDAIR-Technologies and INNEngine. Main Collaborators: CTA (Fundación Centro de Tecnologías Aeronáuticas), FIDAMC (Centro para la Investigación, el Desarrollo y la Aplicación de Materiales Compuestos), SHIKIBO and Air Liquide.
- [PROFIT] Electrochemical, Laser, Cvd and Peo Alternatives for The Generation and Enhancement Of Heavy Metal Substitute Coatings (ALELLA)
- [PROFIT] Alternatives to chrome and cadmium coatings, as well as to the currently employed primer and chemical conversion treatments. These alternatives must be environmentally acceptable (RAMPE)
- [SPRI] Alternative Lubrication Systems based on Low-Cost Cryogenic Gases (Co2 and Ln2). (BECOLD)
- [FP7-NMP] New cost-effective superhydrophobic coatings with enhanced bond strength and wear resistance for application in large wind turbine blades. (HYDROBOND)
- [CDTI - CENIT] Research project on Disruptive Technologies for the Rehabilitation of the 21st century (REHABILITA)
  The project allowed the Spanish Health sector to respond to the challenges faced by European societies
- [CDTI] Hybrid propulsion 8x8 vehicle project. (8X8)
- [ACCIÓ] Airborne Humidity Sensor Project (SAMHU)

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

ELECTRICAL AND POWER ELECTRONICS

MECHANICS AND OPTOMECHANICS

REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

HEALTH

NAVAL

NUCLEAR

OIL & GAS

SPACE

CERTIFICATIONS

ISO-9001

ISO-9100

PCAL-AQAP 2120

Company name: **HI IBERIA INGENIERIA Y PROYECTOS S.L.**
Address: C/ Juan Hurtado de Mendoza, 14. 28036, Madrid
Web: https://www.hi-iberia.es/
Turnover: 3.80 million EUR in year 2023
Employees: 108 in year 2023
SME: YES
Phone: [+34] 914 585 119
Email: dones@hi-iberia.es

ACTIVITY AND SKILLS

At HI Iberia (HIB), we bring over two decades of expertise in AI development tailored to meet the rigorous demands of Big Science facilities. Our competencies are anchored in deploying advanced AI, machine learning, and deep learning techniques to enhance operational efficiency, predictive modeling, and real-time data analytics in complex scientific environments.

Capabilities for Big Science Facilities

- Advanced Data Analytics and Machine Learning: HIB applies AI for predictive maintenance and fault detection in large-scale scientific equipment, ensuring uptime and efficiency. Projects like MAPRE and DONES-FLUX showcase their expertise in handling complex data streams and optimizing critical infrastructure, including particle accelerators.
- AI-Driven Materials Discovery: HIB accelerates material discovery with AI, using deep learning and reinforcement learning. Projects like SMART MATERIAL are essential for rapid material innovation in fusion reactors and accelerator technologies.
- Simulation and Predictive Modeling: HIB uses AI techniques like Deep Learning Surrogate Models (DLSMs) and Fourier Neural Operators (FNOs) to enhance predictive modeling for fusion facilities, improving efficiency and accuracy in physical processes while reducing computational costs.
- Computer Vision and Image Analysis: HIB has developed real-time computer vision solutions for monitoring and analyzing visual data, as demonstrated in the LIFEonLive project, which are crucial for anomaly detection in Big Science facilities.
- AI for Energy Optimization: HIB optimizes renewable energy integration and energy flow within fusion research facilities. Projects like ENIGMA and DONES-FLUX focus on maximizing energy efficiency and reducing costs in large-scale scientific environments.
- Intelligent Infrastructure Management: HIB creates AI-based models for managing and optimizing infrastructure in complex scientific environments, as demonstrated in DONES-MAGIA and DONES-FLUX, enhancing reliability and maintainability.
- Natural Language Processing (NLP) and Conversational AI: HIB develops NLP and conversational AI tools for better human-machine interaction, assisting researchers and operators in managing complex datasets in Big Science environments.
- Cybersecurity and Edge Computing: HIB integrates cutting-edge cybersecurity and edge computing solutions to ensure data security and low-latency processing, vital for the secure and efficient operation of scientific facilities, especially under extreme conditions like those in IFMIF-DONES.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IFMIF-DONES] VATIAC (Accelerator Systems Integrated Technology Validator) (2025 - 2027)
  CDTI has awarded to the HACES-DONES consortium the Pre-commercial Public Procurement contract (PPP) for the development of the technological validator for high intensity hadron accelerator systems of the IFMIF-DONES, VATIAC (Accelerator Systems Integrated Technology Validator). The scope of the VATIAC project includes the design, manufacture, assembly and testing of a validator, consisting of: high energy transmission line (HEBT), medium energy transmission line (MEBT), radio frequency system (RFPS), test bench or DPLATE, auxiliary systems, central control system (ICS) . The common thread of this integration will be the homogeneity and compatibility of the control, regulation, supervision and data acquisition and diagnostics systems, which will make it possible, in the future, to use data processing and machine learning methods to optimize the different processes that take place in the plant and improve its availability through the use of predictive maintenance tools.

RELEVANT R&D PROJECTS

- [CDTI-TRANSMISIONES 2024] Circularity in the wind farms reboosting by Reuse, Recycling, ecodesign strategies and development of new Recyclable and repairable materials (R3POWER) (2025)
  The wind energy sector needs circular disruptive changes to dynamize its economy and reduce its environmental impact. In this sense, cross-cutting artificial intelligence (AI) technologies through the development of predictive algorithms appear as a potential solution to accelerate industrial implementations of novel technologies. The R3POWER project aims to make a differential leap in the present context, presenting an integral, reliable and solid initiative in "integral circular repowering" of wind farms, applying 3 joint strategies that maximize its circularity around the use of waste - reuse, recycling and revaluation (zero waste) - and around its prevention - new easily recyclable and repairable materials - all catalyzed by transversal technologies such as AI, and pursuing the low environmental and economic impact of each of the strategies.
- [MINCOTUR PERTE NAVAL 2022] Development of Green Propulsion Systems for Maritime Ships (Spectrum (SISPROVE)) (2024 - 2025)
  Ship power plants are complex systems with several sub-systems interacting with each other in different sailing conditions. For each navigation condition, consumers and generators must be in balance to ensure the correct operation of the ship. A proper management of this balance would allow optimizing consumptions and reducing possible emissions occurring during the operation of the ship. HI Iberia will participate with the creation of a digital platform called SPECTRUM, based on the interconnection of data through AI neural networks for the training of intelligent agents with the capacity to act as controllers for a subsystem of batteries and generators of the ship's electric power plant, to design and validate an optimized and self-adaptive solution, capable of intelligently dealing with the variability, exigency and demands of the operating scenarios presented on the vessel. https://www.hi-iberia.es/artificial-intelligence/spectrum
- [European Defence Fund (EDF) 2021] Hybrid Energy Grid and Propulsion System (HEGAPS) (2024 - 2025)
- [CDTI-TRANSMISIONES 2023] New nanomaterials driven by artificial intelligence and industrial biotechnology (NanomatIA) (2024)
- [CDTI-TRANSMISIONES 2023] Application Of Advanced Digital Systems For Optimizing Monitoring, Operation And Integration Of Floating Offshore Wind Energy (OPTIMAR) (2024)
- [MINCOTUR PERTE NAVAL 2022] RESEARCH ON TECHNOLOGIES FOR TWINNING AND DIGITAL EXPLOITATION OF CONNECTED IOT ASSETS IN THE NAVAL SECTOR (KIMIKO) (2023 - 2025)
- [CDTI-MISIONES 2022] Industrial technology research project aimed at optimizing the efficiency of a large scientific fusion facility, such as IFMIF-DONES. (DONES-FLUX) (2022 - 2024)
- [CDTI-MISIONES 2022] Integrated digital platform for Operation and Maintenance of floating wind farms (ePROA) (2022 - 2024)
- [I+D DGAM Ministerio de Defensa] Predictive On-board Maintenance (MAPRE) (2022 - 2024)
- [Red.ES] Collaborative intelligence for sustainable cities (Green) (2022 - 2024)
- [ISR12205 INARIM I+D DGAM Ministerio de Defensa] Maduration of the SEDA Technology Demonstrator (MADS) (2022 - 2024)
- [Grid 2030 RED.es] Electrlc Grid AI (ENIGMA) (2019 - 2022)
- [COINCIDENTE 2018] SatEllite Data AI (SEDA) (2019 - 2022)
- [ITEA3 Call4 cluster EUREKA] SeCuRe and Agile connected Things (SCRATCh) (2018 - 2022)
- [PENTA programme] MUlti-level Secur lty for Critical Services (MuSiC) (2017 - 2020)
- [CDTI-MISIONES] Industrial research on strategic materials for cost-optimized, high energy density lithium-ion batteries in sustainable electro-mobility (LiON-HD) (2015 - 2020)
- [FP7-SECURITY] Advanced pRotection of critical buildinGs by Overall anticipating System (ARGOS) (2014 - 2015)

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CONTROL SYSTEMS

CIVIL WORKS AND INFRASTRUCTURE

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

DEFENSE

ENERGY

HEALTH

NAVAL

SPACE

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-20000

ISO-27001

Company name:	**IDOM**
Address:	Avenida Zarandoa, 23. 48015, Bilbao
Web:	http://www.idom.com/ada
Turnover:	461.00 million EUR in year 2024
Employees:	5,760 in year 2024
SME:	NO
Phone:	[+34] 944 797 676
Email:	ada@idom.com

Extremely Large Telescope (ELT) Prefocal Stations

ACTIVITY AND SKILLS

IDOM is an international firm specializing in Engineering, Architecture and Consulting. IDOM operates globally in areas such as power generation, oil &gas, renewable and alternative energies, manufacturing industry, civil infrastructures, nuclear plants, large technological and scientific facilities, architecture and unique challenging engineering projects.

IDOM ADA leads the company activity in technologically advanced and challenging projects involving optics, applied mechanics, structural design, electronics & control.

IDOM ADA fully develops INSTRUMENTS AND FACILITIES for astronomers, nuclear and particle physicists, researchers in atomic energy, medicine and others. In these fields, there is always a demand for the most advanced technology and innovative solutions, time and again involving a breakthrough from what was used before. As important as the technical challenge, is the definition and development of the project up to the construction and commissioning of the facilities in time and within budget. And this is our commitment.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [UKAEA] MAST Upgrade Middle & Upper Mirror Steering Mechanisms (2023 - 2024)
- [F4E] Vacuum Vessel Mounted & Divertor Mounted Bolometer Cameras (2022 - 2026)
- [F4E] EC Upper Launcher & Ex Vessel Waveguides (2022 - 2027)
- [ESO] Extremely Large Telescope (ELT) M1 Local Coherencer (2021 - 2025)
- [F4E] Core Plasma Thomson Scattering (CPTS) Diagnostic (2021 - 2026)
- [OCAN - IAC] European Solar Telescope (EST) Mount, Pier and Enclosure Preliminary Design (2021 - 2022)
- [ESS] ESS Active Cells Confinement and Shielding: Component Transfer Hatch (2019 - 2021)
- [ESO] Extremely Large Telescope (ELT) Prefocal Stations (2018 - 2025)
- [GTC] Cassegrain Station (Instrument Rotator + A&G Optomechanics) Design and Fabrication (2017 - 2019)
- [OCAN - IAC] William Herschel Telescope (WHT) Prime Focus Rotator (2017 - 2019)
- [VTT/CEA] Design, Manufacturing and Commissioning of the Hot Cell Gamma and X-ray (HGXR) Equipment in the ECE Hot Cell JHR (2016 - 2020)
- [CFHT CORPORATION] Concept Design of the MSE Telescope Structure (2016 - 2017)
- [VTT/CEA] Design, Manufacturing and Commissioning of two units of Underwater Gamma and X-ray (UGXR) Collimators (2015 - 2020)
- [VTT/CEA] Design, Manufacturing and Commissioning of two units of Underwater Gamma and X-ray (UGXR) Benches (2014 - 2020)
- [F4E] Integration Design of Diagnostics into ITER Ports (2014 - 2023)
- [AURA] DKIST Enclosure Design, Fabrication, Factory Assembly and Testing (2010 - 2014)
- [GTC] Folded Cassegrain Sets (Instrument Rotator + A&G Optomechanics) Design and Fabrication (2010 - 2012)
- [ESS BILBAO] High Power Spallation Target Development (2008 - 2011)
- [ESO] E-ELT Dome and Foundations Preliminary and Final Design (2007 - 2011)
- [OCAN - IAC] Design and Fabrication of QUIJOTE CMB Telescopes (2007 - 2015)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | CRYOGENICS AND VACUUM | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | ELECTRONICS AND OPTOELECTRONICS | MECHANICS AND OPTOMECHANICS | REMOTE HANDLING AND ROBOTICS | CONTROL SYSTEMS

MARKETS

DEFENSE | ENERGY | NUCLEAR | OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-20000 | ISO-27001 | ISO-45001

Company name: **IDONIAL TECHNOLOGY CENTRE**
Address: Parque Científico Tecnológico de Gijón, Zona INTRA. Avda. Jardín Botánico, 1345. 33203, Gijón (Asturias)
Web: http://www.idonial.com/
Turnover: 10.05 million EUR in year 2024
Employees: 161 in year 2024
SME: NO
Phone: [+34] 985 129 120
Email: info@idonial.com

ACTIVITY AND SKILLS

IDONIAL is a Spanish private technological centre, with more than 30 years of experience. The center is multisectorial and carries our R&D&I activities from the following areas: Materials (metals, ceramics, plastics), Advanced Manufacturing (Additive Manufacturing, Welding), Digital Industry (Industry 4.0) and Engineering (Numerical Simulation, Mechanical and Electronic Engineering). In addition, relevant Technological Services backed by official accreditations are available.

The areas of specialization of interest for Large Scientific Infrastructures include:

- Steels and Metallic Alloys. Development, manufacturing routes and characterization to application. The activities performed deal with extending service life, optimising in-use behaviour, improving mechanical, wear or corrosion resistance, increasing their formability and weldability, new materials selection and application. Specialisation in fatigue & fracture mechanics studies.
- Welding Technologies. Weldability studies, selection of the optimal welding parameters, design & validation of manufacturing technical instructions, manufacturing of special welded mockups and special NDT calibration blocks with advanced welding processes, global and conceptual manufacturing plans, as well as inspection plans. Wide range of techniques including robotic, FSW and laser hybrid welding.
- Engineering and Numerical Simulation. Structural, thermal and fluid-dynamics analyses by FEM&CFD; coupled analyses: thermo-hydraulic, thermo-mechanical. Welding process simulation, distortion prediction, selection of the optimal welding sequence. Large experience with different design codes (RCC-MR, RCC-MRx, ASME, etc), welded structures and complex settings.

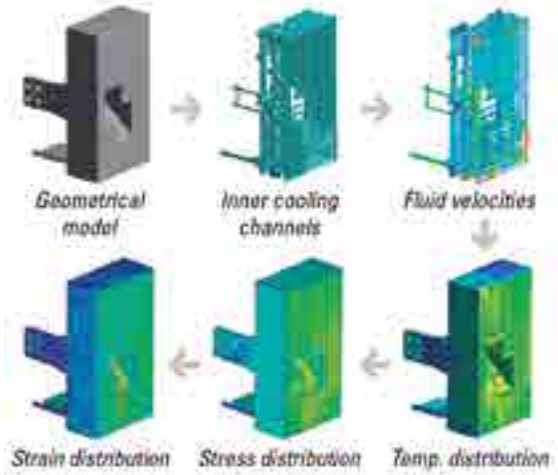
CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Development and testing of RH compatibility tooling for water and gas welded feedthroughs in diagnostic equatorial modular port plugs (2023)
- [ITER ORGANIZATION - Nortemecánica, S.A.] Correction Coil Feeder Ring Rail System (2023) *Structural integrity validation of the Rail System tooling design*
- [ITER ORGANIZATION] Refilling and Blowout Tests on DFW Mock-Up (2022)
- [ITER ORGANIZATION] Qualification Plan of TL-Isolation Shutter Valve (2022)
- [ITER ORGANIZATION] DFW Mock up mechanical studies (2022)
- [ITER ORGANIZATION] Fabrication of a demonstrator (mock-up) for the rails and Doglegs for the EPP system (2022)
- [ITER ORGANIZATION] Detailed thermal and structural design of six Diagnostic First Walls (2022 - 2023)
- [ITER ORGANIZATION - VAT Vakuumventile AG] Structural Integrity Evaluation of ECH Isolation Shutter Valve (2021 - 2024)
- [ITER ORGANIZATION] Assessment of the effect of Sulfur content on welding parameters (2021 - 2022)
- [ITER ORGANIZATION] PP Water Feedthroughs Manufacturing and Maintenance Feasibility (2020 - 2021)
- [ITER ORGANIZATION] Manufacture a Prototype of a Generic EDFW (2019 - 2021)
- [ITER ORGANIZATION] Mock-up for manufacturing feasibility demonstration of cooling implementation on vertical blades of the Modular Diagnostic Shielding Module (2018 - 2019)
- [ITER ORGANIZATION] Development of (EC) Electrical Feedthroughs. (2017 - 2020)
- [ITER ORGANIZATION] Thermal-hydraulic FE model of the integrated Equatorial Port Plugs (2017 - 2018)

RELEVANT R&D PROJECTS

- [RFCS] PREdictive simulation of finishing operations in steel Additive Manufacturing for optimal SUrface integrity (SupreAM) (2023)
- [Public-private collaboration project MCIN-AEI] The Eutectic Li-Pb Alloy Enriched in 6Li (Pb-15.76 Li): Strategic Material in Nuclear Fusion Technology (EUTECTICS) (2022)
- [RFCS] Optimisation of high damage tolerance at very high strengths by the quenching and partitioning process (OPTIDAMATOL) (2021)
- [MANUNET] Development of wire Arc Additive Manufacturing processes for Aeronautic large Structures (DAAMAS) (2020 - 2022)
- [MANUNET] Rapid Evaluation of Distortions in Welded Structures (RED WELDS) (2014 - 2016)
- [RFCS] Modular Simulation Tool for In-Service Behaviour Prediction of the Cooling Water Systems of the Steelmaking Industry (MODELCOR) (2014 - 2017)
- [CONSOLIDER INGENIO 2008] Fusion Technology Program (TECNOFUS) (2009 - 2011)
- [H2020] Repurposing manufacturing lines for providing products and services in case of spiking demand times (RESERVIST)
- [RFCS] Virtual Design of Cyber-Physical Production Optimization Systems for Long Production Factories (CIBER-POS)

Port Plug water feedthroughs manufacturing and maintenance feasibility



ITER DFW fluid thermal structural simulation

BIG SCIENCE AREAS

ASTRONOMY | FUSION

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

ADVANCED MATERIALS AND MANUFACTURING

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | AUTOMOTIVE

DEFENSE | ENERGY

NAVAL | NUCLEAR | OIL & GAS

SPACE

CERTIFICATIONS

ISO-9001 | ISO-17025 | ASME

UNE-166002

Company name: **IDRESA**
Address: PCTCAN, Isabel Torres 11, Edificio 3000, M 7. Santander (Cantabria)
Web: https://www.idresa.es
Turnover: 0.61 million EUR in year 2024
Employees: 4 in year 2024
SME: YES
Phone: [+34] 689 107 730
Email: eng@idresa.es

ACTIVITY AND SKILLS

IDRESA SERVICES specializes in advanced engineering, manufacturing, and integration for high-value sectors such as science, space, nuclear, and defense. As part of Grupo Resa, we combine technical expertise, cutting-edge technology, and an innovative approach to deliver tailored solutions for highly complex projects.

Our Capabilities

- State-of-the-art engineering – From conceptual design to turnkey solutions.
- Precision manufacturing – Components for ultra-high vacuum, cryogenics, and radiofrequency.
- Integration & testing – Ensuring maximum performance and reliability.
- Specialized outsourcing services – Providing talent and resources for high-tech projects.

Our expertise lies in radiofrequency, microwaves, cryogenics, ultra-high vacuum, and precision mechanics, allowing us to develop innovative solutions for the most demanding industries.

We invest in R&D and have established a dedicated integration laboratory to ensure quality and efficiency at every stage of the process.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Manufacturing of a high power coaxial line ends (2024 - 2024)
  Manufacturing of 10 x ETP high power coaxial line ends. The ETP Copper was completely and precisely machined, cleaned and qualified. Silverplating was subcontracted and controlled.
- [IFCA-CSIC] Clean Room design and equipment (2024 - 2025)
  Design and equipment for clean rooms in ESD environment.


Contact gripper

RELEVANT R&D PROJECTS

- [INVESNOVA] FILAC25; beyond the brazing (FILA25) (2024 - 2025)
  The FILAC25 project investigates filler materials for vacuum brazing of stainless steel 316L to copper alloys, particularly CuCrZr, for advanced applications in nuclear fusion and science. The goal is to optimize joining processes, improving mechanical and thermal performance while reducing structural defects. The project studies transition materials (Ni, Ag, Ti, Cr alloys) to address thermal expansion mismatches and avoid brittle intermetallic phases. In collaboration with Tecnalia Research & Innovation, the project leverages advanced simulation and characterization tools. FILAC25 aims to strengthen industrial capabilities and generate specialized employment in advanced welding technologies.

3D Scanner

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING | CRYOGENICS AND VACUUM | INFORMATION AND COMMUNICATION TECHNOLOGIES | MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | HEALTH | SPACE | NUCLEAR

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**INDRA SISTEMAS**
Address:	Avda. Bruselas, 35. 28108, Alcobendas (Madrid)
Web:	https://www.indracompany.com/
Turnover:	3,851 million EUR in year 2023
Employees:	+56,000 in year 2023
SME:	NO
Phone:	[+34] 629 251 408
Email:	seguridad@indra.es

ACTIVITY AND SKILLS

Indra is one of the leading global technology and consulting companies and the technological partner for core business operations of its customers world-wide. It is a world-leader in providing proprietary solutions in specific segments in Transport and Defence markets, and a leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America through its affiliate Minsait. Its business model is based on a comprehensive range of proprietary products, with a high-value focus and with a high innovation component. In the 2018 financial year, Indra achieved revenue of €3.104 billion, with 43,000 employees, a local presence in 46 countries and business operations in over 140 countries.

Our specific skills for fusion projects are in the following areas: 1) Energy Technologies: Control technologies (I&C, SCADA, Data Acquisition), Metering systems, Modeling & Monitoring applications, Technical consultancy. 2) Space Technologies: Digital signal processing, Radio frequency, IP protocols and multimedia, Real-time, critical and embedded SW & HW, big DB. 3) Simulators (full scale and compact) & Automatic Test Facilities. 4) RADAR, RF & Microwave Design, RF Power Modules, SSPAs (Solid State Power Amplifiers, Amplifiers based on solid-state technology -LDMOS-). 5) Cross-Sectors Technologies: HW / FW Design, Critical SW Design, Electrical, Mechanical & Test Engineering, Electro-Optics. 6) Security Systems for critical infrastructures: consultancy, enginering, installation and support ; Video surveillance, access control, Biometrics, PSIM (Physical security integrated management)


The five domains of defence

CONTRACTS FOR BIG SCIENCE FACILITIES

- [EUROFUSION] Subtask ENS-6.1.6.0-T19-03: LIPAc RFPS Circulator control SW upgrade (2019 - 2020)
  Upgrade for the circulator control software in the Radiofrequency Modules. The new software version allows changing the parameters dynamically using a new interface.
- [EUROFUSION] Subtask ENS-6.1.6.0-T09-11: Support to LIPAc activities 2017: RF Power system (2017 - 2018)
  Support on the activities at Rokkasho related to installation, check-out and commissioning of the RF Power System as well as to ensure the availability of the system during the LIPAc operation.
- [F4E] F4E-OPE-0819: On site support for the commissioning of the RF Module SRF02 of the Sathori Test Stand (2017)
  Placed in the CEA facilities, which aims to test and to validate the design of cavities before the assembly at Rokkasho.
- [ITER ORGANIZATION] Framework Contract for CODAC Operation Application Engineering Support, inside the CCS environment (CODAC Core) (2017)
  Contract for 5 years, awarded to 2 different consortia, Task Orders assigned under restricted competence.
- [CERN] HNSciCloud-Helix Nebula The Science Cloud (2016 - 2017)
  Establishment of a European hybrid cloud platform, Helix Nebula – the Science Cloud, to support the deployment of high-performance computing and big-data capabilities for scientific research.
- [CERN] Supply and installation of Site surveillance (SUSI) Access Control Systems (2013 - 2021)
  Framework contract for all CERN sites, including videosurveillance, access to sites, buildings and specially secured areas.
- [F4E] Framework Service Contract for Provision of System and Instrumentation Engineering Support (2010 - 2011)
  In the field of Instrumentation and Control Systems engineering. On-going tasks are covering: Remote Handling, Buildings, Magnets (e.g. PFC), Cryogenic Plant, Tritium Plant, Test Blankets, Diagnostics, PCS, Heating Systems (i.e. NB Test Facility, ECH, ICH).
- [CIEMAT] Manufacturing and supply of the RF Subsystem for IFMIF-EVEDA LIPAc Accelerator Includes Supply, Installation, and Support of 16 RF Power Chains (i.e. 8 x 105kW & 8 x 200kW) at 175Mhz. (2010)

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

NAVAL

NUCLEAR

OIL & GAS

SPACE

CERTIFICATIONS

ISO-9001

ISO-9100

ISO-14001

ISO-20000

ISO-27001

AQAP-2110

AQAP-2210

AQAP-2310

CMMI

EMAS III

TMMI

Company name:	**INESPASA**
Address:	C/ Ingeniero Rafael Rubio Elola, 10. 41300, La Rinconada (Sevilla)
Web:	https://www.inespasa.com
Turnover:	22.00 million EUR in year 2024
Employees:	210 in year 2024
SME:	YES
Phone:	[+34] 955 343 000
Email:	inespasa@inespasa.com

ACTIVITY AND SKILLS

INESPASA is a company dedicated to the design and development of tooling projects, R+D projects, the manufacturing of precision machined parts, sub-assemblies and substructures for the Aerospace sector. The company began its operations in 1983 in Seville (Spain) and it soon started to witness growth on an international level as much as on a national level, thanks to the diverse successful projects undertaken for the most demanding and outstanding clients in the field. At the present time, INESPASA currently has extensive, modern facilities, which include a centre dedicated to R+D+I projects, and which total a surface area approaching 10,000 m^2, all facilities located in the Aerópolis Aerospace Technology Park.

Inespasa: a company specialized in Aeronautics

RELEVANT R&D PROJECTS

- [CDTI - TRANSMISIONES] Design, prototyping and validation of high-temperature superconducting magnets for ultra-compact fusion reactors (HTSMART) (2024)
  The general objective of this project is to design the most compact and efficient magnetic confinement fusion reactor possible.
- [CDTI - MISIONES] Fuselage Sustainability Integration (FUSSION) (2024 - 2025)
  FUSSION develops a flexible, sustainable and intelligent assembly concept for the new rear fuselage of next generation short and medium range aircraft with synergies with military aircraft aerostructures.
- [CDTI - PTAP] Multi-material additive manufacturing of multifunctional moulds for out-of-autoclave infusion processes. (FAUNO) (2023 - 2025)
  FAUNO proposes the development of a new generation of multifunctional moulds and tools (self-heating and sensorised) produced by multi-material Additive Manufacturing (AM) technology based on multi-stage robotised processes.
- [CDTI - PTAP] Research into new technologies aimed at achieving an aeronautical production plant Eco-Competitive (ECOCOM) (2023 - 2025)
  ECOCOM is a project that aims to develop sustainable and competitive manufacturing processes in the production of aeronautical parts.
- [CDTI - PTAP] Research for AI-based Sustainable Asset Monitoring and WIP Management (IMAGINA) (2023 - 2025)
- [CDTI - PTAG] Multidisciplinary Future Assembly of Sustainable Aircraft (MUFASA) (2022 - 2025)
  The MUFASA project aims to develop the capabilities of the Spanish industrial fabric to meet the technological challenges associated with the automation of aerostructure assembly, focusing on each of the individual components of the Future Unpressurised Rear Fuselage and Empennage.
- [CDTI - MISIONES] Additive Manufacturing using Laser-Assisted WAAM Technology for Multi-Material Sensorized Components (COMSENSO) (2022 - 2025)
  The main objective of the COMSENSO project is to develop a new additive manufacturing technology for large-sized metallic components based on laser-assisted WAAM technology (L-WAAM) that allows overcoming the main barriers faced by AM: achieving high productivity and ensuring the manufacturing of multi-material components with zero defects.
- [CDTI - CIEN] Research for the development of aerospace solutions with new methods of evaluation, design, and inspection in Additive Manufacturing adapted to the entire supply chain. (NINFA) (2020 - 2024)
  The NINFA project focuses on the development of disruptive Additive Manufacturing solutions for the design and manufacturing of both high structural commitment and secondary aerospace components. The design solutions will take into account the definition of the optimal manufacturing route, incorporating inspection requirements and developing non-destructive testing strategies and technologies based on the criticality level and component requirements.

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

MARKETS

AERONAUTICS | DEFENSE | SPACE

CERTIFICATIONS

ISO-9001 | ISO-9100 | ISO-14001 | NADCAP

Company name:	**INGECIBER, S. A.**
Address:	C/ Vivero, 5, 3º 2. 28040, Madrid
Web:	http://www.ingeciber.com/
Turnover:	0.38 million EUR in year 2023
Employees:	12 in year 2023
SME:	YES
Phone:	[+34] 913 862 222
Email:	info@ingeciber.com

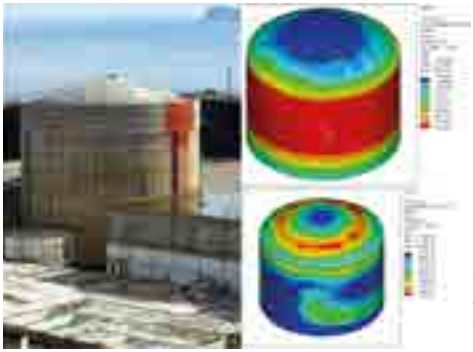
ACTIVITY AND SKILLS

Ingeciber is an engineering company founded in 1986, specializing in Finite Element Method (FEM) and CAE simulation tools. We offer engineering consultancy services, training, CAE software distribution, and technical support for civil and mechanical engineering industries.

Our Software Development and Engineering Consultancy Departments have extensive experience applying CAE to mechanical, civil, and CFD (Computational Fluid Dynamics) engineering, including expertise in fusion and fission nuclear power sectors. Additionally, we have the expertise to perform structural and CFD simulation analyses using our own CAE software, such as CivilFEM for ANSYS and CivilFEM powered by Marc, as well as other tools like CFD++, ZWCAD, and other applications.

Since its founding, Ingeciber has been at the forefront of innovative engineering sectors. We have contributed to projects for ITER/F4E and various nuclear power plants, providing analysis, design, and validation of structures, devices, and equipment through FEM and CFD consulting. Ingeciber has been selected by Fusion for Energy for a service contract to provide engineering support in the field of mechanical analysis for the vacuum vessel.

Reinforced concrete tank



Reactor renewal inside an old prestressed NPP containment

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - NUCLEAR ANSALDO] Buildings B44, B45, B46 and B47 of ITER TB13 (2021)
  Support consultancy with CivilFEM for ANSYS APDL models through modal-spectral analysis, check-design of Limit States by standard of metal and reinforced concrete structures.
- [HANHIKIBI-1 NPP – FENNOVOIMA] Design review of the safety building (10ukd) from Hanhikivi-1 NPP (2019)
- [ITER ORGANIZATION - FERROVIAL AGROMAN] Finite Element Analysis of Vibration and Frequency Transmission from the Compresor Fundation Blocks into Building B51. ITER Project TB03 (2018)
  The goal of this project was to offer a techno-economic study using the Finite Element Method, in order to analyze the vibrations generated by a group of compressors and its transmission through the soil to the B51 building under study
- [ENEL] MOCHOVCE Seismic Re-evaluation of EMO 1&2 NPPs (2014)
- [F4E] Framework service Contract for the "Provision of Engineering Support in the field of Mechanical analysis for the Vacuum Vessel". Awarded (IO Portal) (2012)
- [WESTINGHOUSE] Design and checking of structural elements of buildings of the Nuclear Plant type AP 1000 (2011)

RELEVANT R&D PROJECTS

- [EUREKA] Nonlinear Analysis and Simulation of Fiber-Reinforced Concrete in the Long Term and at High Temperatures (2023 - 2024)
- Advanced CAE Technologies to obtain a prototype with non-linear capabilities that can provide civil engineers with a closer approach to reality in the design and rehabilitation of civil infrastructure. (NONLINEARFEM) (2021 - 2022)
- Advanced Mathematical models and Technologies for optimum CAE Analysis and Design of Pits and Tunnel Mines (MININGFEM) (2017 - 2019)
- [EUREKA] Advanced Technologies for CAE Analysis and Design of Large Dams under construction stages, non-linear environment behavior and earthquake loads (CAEDAMTEC) (2015 - 2016)
- [CDTI - CENIT] Development of an off-shore wind turbine of 15 MW (AZIMUT) (2010 - 2013)
  Project coordinated by GAMESA and 11 companies and 22 Research Centers participated.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

CONTROL SYSTEMS

MECHANICS AND OPTOMECHANICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AUTOMOTIVE

ENERGY

NAVAL

NUCLEAR

OIL & GAS

DEFENSE

CERTIFICATIONS

ISO-9001

ASME

NRC USA

Company name:	**INGENIERÍA DE SISTEMAS PARA LA DEFENSA DE ESPAÑA S.A., S.M.E. M.P. (ISDEFE)**
Address:	C/ Beatriz de Bobadilla, 3. 28040, Madrid
Web:	http://www.isdefe.es/
Turnover:	213.15 million EUR in year 2023
Employees:	1,843 in year 2023
SME:	NO
Phone:	[+34] 914 115 011
Email:	gdesarrollo@isdefe.es

TBT Telescope in the Satellite Tracking Station at Cebreros.
© Francisco Ocaña

CESAR Project
Telescope, ESA-Cebreros

ACTIVITY AND SKILLS

- Consultancy
- Technical Assistance
- Engineering and Operations Services
- Turn-Key Projects

CONTRACTS FOR BIG SCIENCE FACILITIES

- [INTA] Astrobiology Center. Assistance in scientific, divisive and engineering matters (2022)
  Consultants through two assignments
- [INTA] Assistance to INTA (2022)
  Isdefe provides comprehensive support for the space infrastructure at INTA Torrejón, offering multidisciplinary technical support in the Ground Segment, Control Center, and Mission Analysis at the INTA Space Center (CEIT).
- [ESA] ESAC Scientific Astronomy Operatión and Development Support (2005)
  Engineers and Scientists
- [ESA] Telemetry Tracking and Command, Ground segment operations for ESA science missions (2005)
  Engineers and Scientists
- [NASA] Support to Radio-astronomy Activities in Madrid Deep Space Communications Centre (2000)

RELEVANT R&D PROJECTS

- [INTA-ESA] Cooperation in Education for Science and Astronomy Research CESAR (CESAR) (2010)
  As part of the agreement signed between INTA and NASA, we operate the tracking and communications control for NASA's deep space missions, carrying out the operation and maintenance of the systems, equipment, antennas, and infrastructure of the Madrid Deep Space Communications Complex (MDSCC) in Robledo de Chavela.

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

INFORMATION AND COMMUNICATION TECHNOLOGIES

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CERTIFICATIONS

ISO-9001 ISO-14001

Company name:	**INGENIERÍA Y DISEÑO EUROPEO S. A.**
Address:	Paque Científico Tecnológico de Gijón - C/ Profesor Potter, 105. 33203, Gijón (Asturias)
Web:	http://www.idesa.net/
Turnover:	41.30 million EUR in year 2023
Employees:	220 in year 2023
SME:	NO
Phone:	[+34] 985 175 705
Email:	idi@idesa.net

ACTIVITY AND SKILLS

Founded in 1993 as a technical and commercial office to support local fabrication shops in the oil and gas business, IDESA has become one of the most recognised and respected companies for the design, manufacture and supply of static and modular equipment worldwide.

IDESA is an engineering and manufacturing company, one of the leading suppliers of large manufactured equipment such as Coke Drums, Vacuum Columns, Fractionators, Reactors and FCC & FCK units, as well as all types of Vessels and Drums.

With 48'000 m^2 of indoor manufacturing areas and its privileged location close to the Port of Aviles, IDESA satisfies any demand in the Oil&Gas and Renewable Energy sectors (LNG, CO2, H2).

The company has a long experience and reputation in the demanding energy sector and its processes and quality procedures are the most suitable to operate in the sector of Large Scientific and National Research Facilities.

Since May 2014, Idesa is part of GRUPO DANIEL ALONSO (GDA).

Other certifications: ACHILLES UTILITIES NC

Flexicoking unit - There are only seven in the world - IDESA manufactured the last two units

CONTRACTS FOR BIG SCIENCE FACILITIES

- [JT60-SA] Manufacturing of Cryostat Base for JT60-SA Project (2022)
  In the context of JT-60Sa Project developed in Naka (Japan), IDESA was awarded with the contract for the fabrication and shop assembly of the Cryostat Base. This structure, weighing around 300 ton and with a diameter of 12 meters, is an assembly comprising seven big stainless steel sectors, that are to be bolted together during final assembly in Japn There are three "lower level" 120º sectors (the Lower Structure sectors), and three "upper level" 120º sectors (the Double Ring sectors) resting on the Lower Structure Sectors. The seventh piece is the Cylindrical Shell, located inside the DR sectors, and resting onto the LS sectors. This solution was adopted in view of the dimensional restrictions to the final land transport between Hitachi Port and final destination at Naka site. The thicknesses of the structure are mostly betwwen 80 and 100 mm. Most of welds are butt or corner welds, full penetration type, so a great amount of weldment is involved. Thus, the control of the distorsion produced during welind activities was essential to fabricate a welded structure that at a later stage can be machined within the required tolerances.
- [ITER ORGANIZATION] Revision and Update of SDC-IC Code for ITER Project (2022)
  Several ITER components, referred to as in-vessel Components, are located inside the ITER Vacuum Vessel; they will be subjected to special operating and enviromental conditions (neutron radiation, high heat fluxes, electromagnetic forces, etc.). The effects of irradiation on them, including embrittlement, swelling and creep, were not addressed in the existing commercial codes. These conditions are different from conditions in fission reactors and create challenging issues related to the design of these components. The tasks covered were: (a) Modification of design rules, incorporating rules from recently developed codes, and development of specific design rules to cover ITER specific issues and operational conditions, (b) Demonstration of consistency between design rules in SDC-IC and european standards used for manufacturing, in particular EN 13445; identifying areas where consistency is not provided, (c) Assessment of the compliance with the Essential Safety Requirements of the French Regulations (ESP and ESPN).

RELEVANT R&D PROJECTS

- [H2020] Grant Agreement no. 958303 (PENELOPE)
- [FP7] The HIPERWind Project (HIPERWind)
- [CDTI] Joints-Off | Low-Cost and High-Durable Offshore Foundation (EEA GRANTS)
- [LIFE+] Use of CO2 as a subtitute of chlorine-based chemicals used in O&M industrial processes for macrofouling remediation (CO2FORMARE)
- [LIFE+] Development of a cogeneration demonstration plant from biomass forest bales (BIOBALE)
- [RFCS] Development of Modular Steel Jacket for Offshore Windfarms (JABACO)
- [RFCS] Life-Cycle Assessment of a Renewable Energy Mult-Purpose Floating Offshore System (REFOS)
- [H2020] Closed-loop digital pipeline for a flexible and modular manufacturing of large components (PENELOPE)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | CRYOGENICS AND VACUUM | MECHANICS AND OPTOMECHANICS

MARKETS

ENERGY | OIL & GAS

CERTIFICATIONS

ISO-3834 | ISO-9001 | ISO-14001 | ISO-45001 | UNE-1090 | ASME

Company name:	**INSTER TECNOLOGÍA Y COMUNICACIONES, S. A.**
Address:	Avenida Rita Levi Montalcini, 2. 28906, Getafe (Madrid)
Web:	https://grupooesia.com/inster/
Turnover:	10.82 million EUR in year 2023
Employees:	85 in year 2023
SME:	YES
Phone:	[+34] 913 802 022
Email:	info_inster@oesia.com

ACTIVITY AND SKILLS

Inster is a technology and engineering company that designs and manufactures innovative products and solutions for the telecommunications, defence and security sectors. The company is part of the OESIA group, a solid 100% Spanish private corporation with a strong presence in the aeronautics, space, defence and security and ICT markets.

The core of Inster's technological developments and know-how are radio communications, in particular broadband satellite communications and data links for mobility applications. The company has developed a solid portfolio of products and solutions in the fields of fixed and mobile wireless communications for terrestrial, railway and aeronautical applications.

SATCOM SOLUTIONS:

- A wide range of satellite terminals for mobile applications (SOTM), intended for military and civil environments in vehicles, railways, ships and aircraft.
- Configurations adapted to low level, low footprint or small size requirements, single or dual band, optimizing efficiency.
- Ultralight deployable satellite terminals for special operations forces.
- Satellite docking stations for X, Ku and Ka bands.

VEHICLE INTEGRATION:

- Comprehensive turnkey solutions for system integration in vehicle platforms.
- Complete design of the solution, including modelling, mechanics and electronics.
- Study of ergonomics, weight distribution, radio compatibility and power supply systems.
- Calculation and simulation based on finite elements.
- Integration of third-party technology.
- Prototyping and short series.
- Industrialization.
- Configuration and commissioning.

MOBILE AD-HOC NETWORK:

- IP broadband mobile network solutions without the need for fixed infrastructure for communication between deployed personnel.
- High capacity and high range data links in line of sight (LoS) and near line of sight (NLoS).
- Based on software defined radio (SDR) technology.
- Tactical communications and multipoint systems in millimeter waves.
- Beamforming and obtaining spatial information.

RELEVANT R&D PROJECTS

- [EUREKA] Electronic Steerable Antenna prototype for band Ka between Korea and Spain.
- [HORIZON EUROPE] 5G multiorbital Electronic Steerable Antenna for Ku/Ka band. (TRANTOR)
- [CDTI - PTA] Resilient satellite communications for integrated and operational rotary-wing aircraft (CORSARIO)
- [ESA ARTES] Antennan Control Unit (ACU) for Distributed electronic Steerable Antenna arrays (DSA) for Ka band.
- [EUROPEAN DEFENCE FUND] 5G Communications for Peacekeeping and Defence for Ka band. (5G COMPAD)

Satellite applications for telecommunications, defence and security sectors

Foldable SATCOM

Facilities

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

CONTROL SYSTEMS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS

DEFENSE

NAVAL

SPACE

CERTIFICATIONS

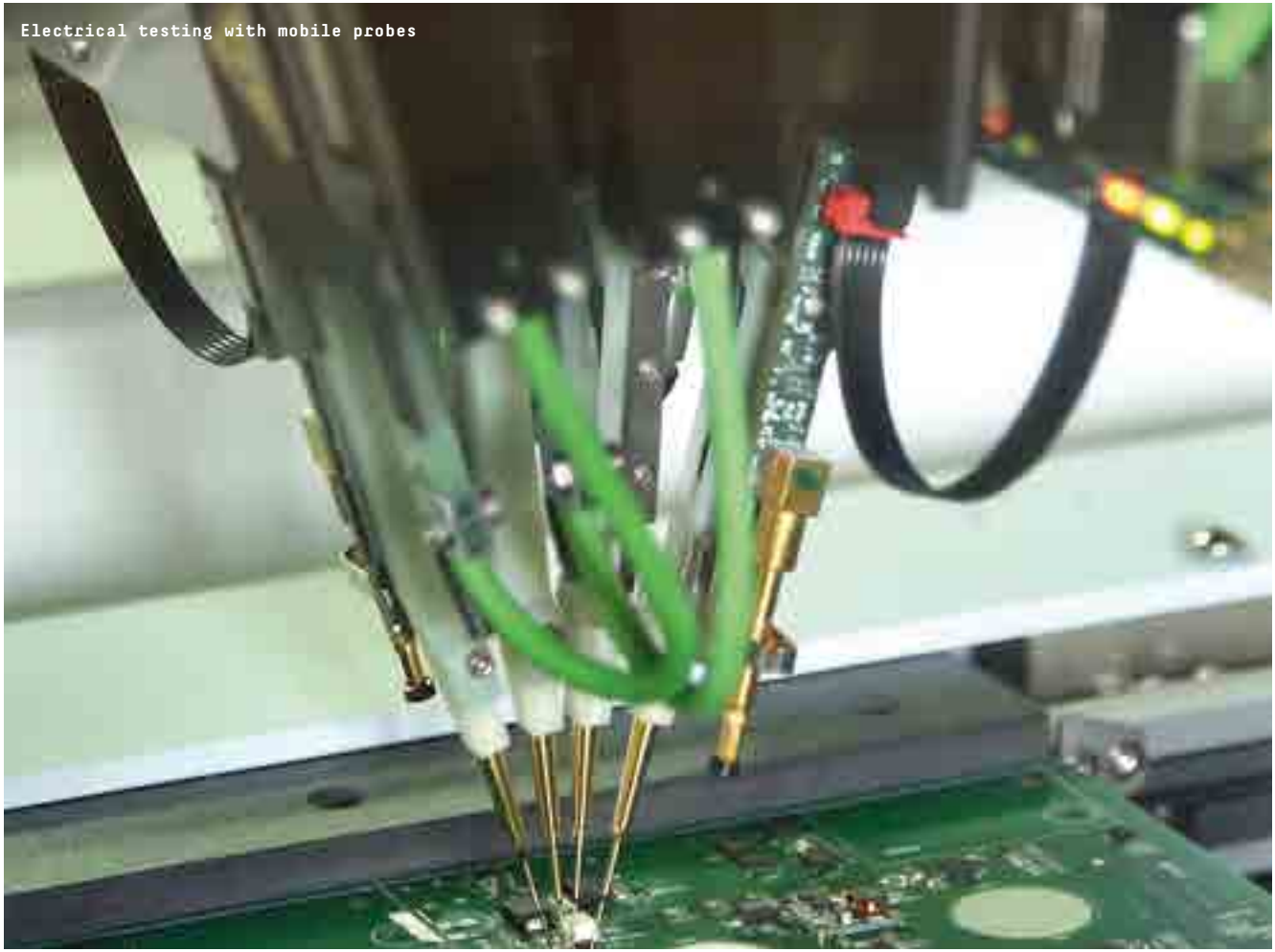
ISO-9001

ISO-9100

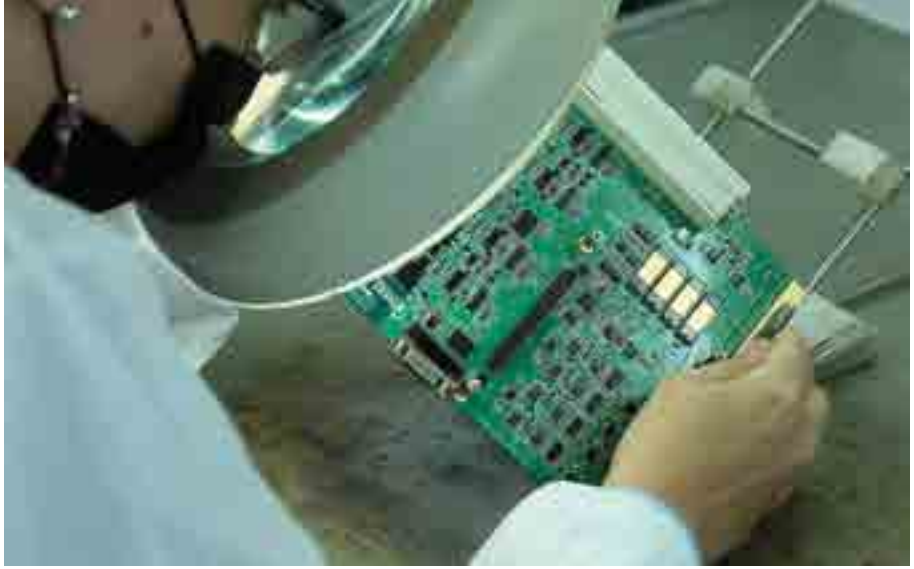
ISO-14001

AQAP-2110

Company name:	**INSYTE, S. A.**
Address:	C/ Calidad, 6; Pl Los Olivos. 28906, Getafe (Madrid)
Web:	http://www.insyte.es/
Turnover:	7.67 million EUR in year 2023
Employees:	70 in year 2023
SME:	YES
Phone:	[+34] 916 010 991
Email:	insyte@insyte.es



Electrical testing with mobile probes



Quality control

ACTIVITY AND SKILLS

Industrialization and assembly of electronic boards and complete electronic products for different applications, in harsh environment and considered safety critical for different sectos including scientific installations.

Assembly of harnesses for power applications, communications including fiber optics cables (multi and mono mode).

All fully inspected and tested. CoC and production documents.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ILL] Diverse electronics circuit boards (2010)
  Carte MED32, M32MB, RDL DATA LVDS, TARJ. MCC V2, FFSD FLAT CABLE, MEZZA_NUM_MDR, Board COOLTOT.
- [CERN] Diverse electronics circuit boards (2007)
  ELMB mother boards, Beam Energy Acquisition 3U (BEA/3U), Beam Energy Meter (BEM), Beam Energy Interlock (BEI), Beam Energy Controller (BEC), Beam Energy Acquisition 6U (BEA/6U), Beam Energy Acquisition 3U (BEA/3U), TPA EDA-03500-V1-1, ITS PU LEFT REV.2 17026-3L, ITS PU RIGHT REV.2 17026-3R, TARJ. EDA-03791-V2-0.

RELEVANT R&D PROJECTS

- Electronics circuits boards for different applications
  Device for measuring creatinine on the blood, Device for controlling different tools from a drone, device to help with rehabilitation to people with ictus, home interface for charger for electrical vehicles, device for people taken multiple medications, sensors for different applications (safety in people), communication boards of GHz, controlling board for micro valves, light for metro, stewardess call, AC supply for military vehicles, etc.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS

ELECTRICAL AND POWER ELECTRONICS

MARKETS

AERONAUTICS

DEFENSE

ENERGY

HEALTH

NAVAL

NUCLEAR

SPACE

CERTIFICATIONS

ISO-9001

ISO-9100

ISO-13485

ISO-14001

ASME

Company name:	**INTARCON**
Address:	P.I. Los Santos, Bulevar de los Santos 34; P.Box 410. 14900, Lucena (Córdoba)
Web:	http://www.intarcon.com/
Turnover:	42.00 million EUR in year 2023
Employees:	450 in year 2023
SME:	NO
Phone:	[+34] 957 509 293
Email:	info@intarcon.com

INTARCON chiller installed at ESO premises, Atacama desert, Chile

ACTIVITY AND SKILLS

INTARCON is a Spain-based company dedicated to designing, manufacturing, marketing and servicing a full range of refrigeration equipment for commercial and industrial sectors.

The mission at INTARCON is to develop and offer the markets a wide range of innovative solutions for the most reliable, efficient and sustainable operation of refrigeration facilities.

The human team of INTARCON has valuable experience of over 35 years in the fields of refrigerations, air conditioning and related thermal appliances, focusing the effort on the conception and development of a wide range of innovative refrigeration solutions.

Presently, INTARCON has supplied more than 40,000 units and systems to more than 40 countries all over the world by mean of a sales and service network in more than 30 countries.

INTARCON is highly concerned about the environment and carries out many R&D projects conducted to develop environmentally friendly solutions based in energy saving and efficiency, with natural refrigerants

Other certifications: RoHS, CE, F-Gas

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESO] Desing, manufacturing and testing of custom-made (2013 - 2015)
  -25ºC glycol chillers for ESO Paranal site, in Atacama desert in humedity, to maintain accurate conditions for the electronic and optical equipment of VLTi auxiliary telescopes.
- [CERN] Precision chiller (2013)

RELEVANT R&D PROJECTS

- [CDTI] Research and development of an innovative product for industrial refrigeration with R-717 (NH3) (INDIRA) (2019)
- [CDTI] New refrigeration and air conditioning system based on ejector technology applied to high efficiency refrigeration cycles with natural refrigerants for commercial and industrial refrigeration (EJERCER) (2018)
- [CDTI] Development of efficient refrigeration cycles for ultra-light electrical urban transport and domestic applications with high performance air cooling and predictive maintenance solutions (EFFICITY) (2016)
- [CDTI] Design and development or air conditioning processing of air cooling with control of temperature and humidity by means of nanometric spray of desiccant liquids (DESEHVAC) (2015)
- [CDTI] New refrigerant system with natural refrigerant for supermarket (ECOMARKET) (2015)
- Coworkers as suppliers with committee company (HUMIDEX) (2014)
- [IDEA] Expansion of production capacity in manufacturing plant for industrial refrigeration equipment (EFFIMARKET) (2013)
- [CDTI] Variable capacity efficient air conditioning systems for electric buses (AIRE) (2013)
- [CDTI] Development of prototypes and series of a new generation (2008)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | CRYOGENICS AND VACUUM

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NAVAL | NUCLEAR | OIL & GAS

CERTIFICATIONS

ISO-3834 | ISO-9001 | ISO-14001 | ISO-45001 | UNE-1090 | ASME

Company name:	**INTEGRASYS S. A.**
Address:	Calle José Echegaray 8, edificio 3, planta 1, oficina 3. 28232, Las Rozas (Madrid)
Web:	http://www.integrasys-space.com/
Turnover:	5.00 million EUR in year 2024
Employees:	50 in year 2024
SME:	YES
Phone:	[+34] 916 316 846
Email:	info.sales@integrasys-sa.com

ACTIVITY AND SKILLS

Founded in 1990 by a team of senior engineers from Hewlett Packard, INTEGRASYS has developed over 20 products designed to address customer needs in Spectrum Superiority, communications, PNT, and intelligence. As a leading software engineering company, INTEGRASYS specializes in advanced software solutions for satellite networks and space communications, driving network innovations, and RF and optical technologies.

While INTEGRASYS also serves commercial markets, it's oriented towards solving defense threats. The company provides tailored software solutions that ensure critical network infrastructure operates available, resilient, and securely, even in congested and contested environments. Each tool is designed to integrate seamlessly with others, creating a unified orchestrated system that supports real-time decision-making through intuitive graphical interfaces or M2M.

CleanRF, InterGeo, Vectorsat, and EO Master are engineered to help warfighters manage complex scenarios with the support of AI, reducing time-to-resolution and the risk of errors, and enhancing overall mission success.

Orbisat - Space Situational Awareness

Satmotion Pocket- VSAT
Auto-Commissioning

RELEVANT R&D PROJECTS

- [EDF] AI-Driven Decision Support for Space and Defense Operations (INDISPENSATBLE) (2024)
  Objective: Develop a robust AI-powered decision support system for real-time situational awareness in satellite operations and defense scenarios. The project aims to enhance mission-critical decision-making for space-based assets, cyber resilience, and threat mitigation. INTEGRASYS Role: Lead AI integration and system automation for defense applications. Partners: Key European defense agencies, research institutions, and AI specialists.
- [EDF] RF Interference Removal for Military Services based on Spaces Link (RFSHIELD) (2022 - 2025)
  Objective: Protect SatCom services (COMSATCOM/MILSATCOM) from intentional and unintentional interferences, enhancing availability and performance for military users. INTEGRASYS Role: Coordinator due to expertise in interference removal solutions, leveraging its CLEANRF product. Partners: AICOX, MBS, Ecliptic DS, INGESPACE.
- [EDF] Microsatellite for Geostationary Orbit Surveillance and Intelligence (NAUCRATES) (2022 - 2025)
  Objective: Design and demonstrate a microsatellite (<100 kg) positioned in a stable orbit outside the GEO belt. It will act as an in-orbit optical sensor capable of approaching objects in GEO to capture centimeter-level resolution images. Features: Stealth design to avoid detection by ground radars, telescopes, or SIGINT; uses infrared laser for secure image transmission. Lifespan: 3–5 years. INTEGRASYS Role: Partner in the development of this first European SDA (Space Domain Awareness) satellite for GEO.
- [HORIZON EUROPE] Trusted and Green traceability through EU Space Technologies (SPACE4GREEN) (2022 - 2024)
  Project: Trusted and Green Traceability Through EU Space Technologies Objective: Develop a trusted platform using Galileo OS-NMA signals and blockchain to certify activities or locations without third-party human intervention. INTEGRASYS Role: Contributor to integrating space technologies with blockchain for green and trusted traceability solutions.
- [ESA] RF Blind interference removal for space links (CLEANRF) (2020 - 2022)
  Objective: Develop algorithms for interference detection, separation, and cancellation in LEO, MEO, and GEO constellations. Outcome: Creation of a resilient interference cancellation system transparent to protected transceivers. INTEGRASYS Role: Developer of CLEANRF technology.
- [H2020] Prevention, detection, response and mitigation of the combination of physical and cyber threats to the critical infrastructure of Europe (RESISTO) (2018 - 2021)
  Objective: Enhance the resilience of communication infrastructures against combined cyber-physical threats using an innovative decision support system. INTEGRASYS Role: Partner alongside major telecom players like Telecom Italia, British Communications, Orange, and Ericsson.
- [ESA] Ka-Band Metrology and Calibration System (Ka-METROCAL) (2015 - 2016)
  Objective: to design a high-precision metrology system (+/- 0.5 dB uncertainty) for Ka-band Rx Carrier Power measurements across different satellite services.

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS

CONTROL SYSTEMS

MARKETS

AERONAUTICS

DEFENSE

OIL & GAS

SPACE

CERTIFICATIONS

CMMI

Company name: **INVENTIA KINETICS, S. L.**
Address: Av. Galileo Galilei, 2. 28906, Getafe (Madrid)
Web: https://www.inventiakinetics.com/
Turnover: 6.90 million EUR in year 2023
Employees: 80 in year 2023
SME: YES
Phone: [+34] 918 707 095
Email: info@inventiakinetics.com

ACTIVITY AND SKILLS

INVENTIA KINETICS is an SME specialized on thermo-mechanical engineering with own inside production capabilities and Clean Room ISO 8 for MAIT activities, with more than 20 years of experience and involved in many national and international programs and missions, for Aerospace, Industrial and Defense industries.

INVENTIA KINETICS has its own in-house capabilities to carry out turnkey projects, from conceptual design to execution and commissioning, special machines, and automatic production lines and, of course, their associated tooling.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - EADS CASA ESPACIO] Engineering activities for ITER pre-compression ring (2013 - 2016)
  Several projects including definition, manufacturing, testing and handling of large carbon fiber components for ITER Pre-Compression Rings

RELEVANT R&D PROJECTS

- [CDTI - PTA] Multidisciplinary future assembly of sustainable aircraft (MUFASA) (2022 - 2024)
  MUFASA project aims to develop the capabilities of the Spanish industrial fabric aimed at meeting the technological challenges associated with the automation of the assembly of aerostructures, focusing on each of the individual components of the Future Non-Pressurized Rear Fuselage and Empennage (or tail): i) horizontal stabilizer (HTP), ii) rear fuselage (section S6) and iii) tail cone (section S6.1); as well as the final integration of the three components so that they form a single component, increasing their level of integration and production rate, and reducing cost and energy consumption by eliminating assembly operations and templates. MUFASA also contributes to achieving sustainable aviation by analyzing new assembly concepts for the future zero-emission hydrogen-powered aircraft.
- [CDTI - PTA] Conical section shell for fuselage with cocured frames, stringers and beams (CUVICO) (2021 - 2024)
  CUVICO project proposes a qualitative technological leap that enables the manufacture of complex and integrated fuselage structures for very high-speed commercial aircraft using composite materials (carbon fiber), so an optimized and multidisciplinary design of structures can be carried out to form part of a new, ultra-efficient advanced fuselage, contributing to the development of the zero-emissions aircraft.
- [CDTI - MISIONES] Optimization of automated, multifunctional and sustainable industrial technologies (OPTIMUS) (2021 - 2024)
  OPTIMUS project aims to promote the mission "Boosting Spanish industry in the industrial revolution of the 21st century", pursuing the development of disruptive technologies for the industry aimed at its transformation and digitalization that generate greater competitiveness, greater resource efficiency and are supported by digital transformation and connectivity. OPTIMUS addresses the development of flexible automated manufacturing processes (multi-operational), for processing multi-material/multifunctional parts and with embedded sensors; the hybridization between the physical and digital environment; collaborative environments between person-robot, robot-robot, person-machine/production systems, with modeling, simulation and advanced programming of collaborative scenarios; and technologies for eco-design and sustainable, safe and efficient industrial production in all links of the chain.

Automation and Robotics of Tooling. Special Machines. MGSE. SEOSAT Satellite Integration Tool

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

REMOTE HANDLING AND ROBOTICS

CONTROL SYSTEMS

MARKETS

AERONAUTICS

DEFENSE

OIL & GAS

SPACE

CERTIFICATIONS

CMMI

Company name:	**JEMA ENERGY**
Address:	Paseo del Circuito, 10. 20160, Lasarte-Oria (Gipuzkoa)
Web:	http://www.jemaenergy.com/
Turnover:	45.00 million EUR in year 2023
Employees:	150 in year 2023
SME:	NO
Phone:	[+34] 943 376 400
Email:	sales@jemaenergy.com

ACTIVITY AND SKILLS

Jema Energy designs and manufactures customized power conversion systems.

The company is part of Irizar Group (3300 employees and yearly turnover over 700 M€).

Our scope includes a wide range of high current and high voltage power supplies for magnet coils, RF tubes and plasma heating systems used in a nuclear fusion installation and particle accelerators.

Magnet power supplies (fusion)

CONTRACTS FOR BIG SCIENCE FACILITIES

- Gyrotron High Power Voltage Supplies (2023)
  For different facilities: 90kV 55A (2023), 55kV 110A (2022), 60kV 20A (2020), 50kV 50A (2020)
- [F4E] Gyrotron HVPS 60kV 110A (2021)
- Tetrode HVPS 22kV 150A (2021)
- [CCFE- MAST upgrade] HVPS Positive Ion Neutral Injector (PINI) 80kVdc/70A, 5,6MW, 2% duty cycle (2018)
- [F4E - JT60SA] 1 x MHVPS 60kV/2x55A pulsed 100s, 2 x BPS 35kV, 100mA and 2 x APS 50kV/100mA (2018)
- [ESS] Klystron Modulators 115kVdc/100A, 14Hz (2017)
- [Tokamak Energy- ST40] 1 x BvU PS 12kA ±500V, 1 x Central Solenoid PS +17.1kA -14.5kA 1Kv, 1 x Toroidal Field PS 100kA/100V 0,6s pulse (2017)
- [TAE - C2W] Electrode PSU 5kV/300A 50ms pulse (2017)
- [ENEA - JT60SA] 4 x Central Solenoid + 2 x Equilibrium Field PS 1kV/±2*10kA, 12% duty cycle; 2 x Fast Plasma Positioning PS 2kV/±5kA, 7% duty cycle (2017)
- [RAL-ISIS] HVPS Tetrode 20kV/20A (400kW) (2016)
- [IFIC-IFIMED] Klystron Modulator 150kV/110A, 16,5MW peak, 5us pulse, 400Hz rep rate (2016)
- [CEA Cadarache - JT60SA] 1 x Toroidal Field PS 1kVdc/±20kA, 20MW continuous; 4 x Equilibrium Field PS ±1 kVdc/±20 kA and ±1 kVdc/+10 kA,-20 kA, 12% duty cycler (2016)
- [CIEMAT - IFMIF] HVPS Tetrode 11kV/34A (375kW); HVPS Tetrode 8kV/45A (360kW) (2015)
- [ESS BILBAO] Klystron Modulator 120kVdc/60A, 7.2MW peak, 9% duty cycle (2015)
- [CCFE - MAST] Toroidal Field Power Supply 340Vdc/133kA, 45MW, 0,3% duty cycle (2015)
- [ESS BILBAO - SNS Oak Ridge] Klystron Modulator 85kVdc/160A, 14MW peak, 9% duty cycle (2013)
- [ESS BILBAO - ITUR] Power supplies for ion source; 110kVdc/120mA, 25kVdc/2A, 80Vdc/100A, 800Vdc/2A (2010)
- [CCFE - MAST] 1 x HVPPS for Positive Ion Neutral Injector (PINI) 80kVdc/70A, 5,6MW, 2% duty cycle (2010)
- [GSI-DESSY] 1 x AC Dipole 1330V/1004A; 1 x DC Dipole 1560V/520A; 2 x Quadrupole 210V/650A; 3 x Sextupole 85V/200A, <10ppm (2009)
- [EFDA - JET] 4 x Seriable Power Supplies ±12kVdc/±5kA, 60MVA, 10% duty cycle for Enhanced Radial Field Amplifier (ERFA) (2009)
- [CIEMAT - TJII] HVPS for Electron-Cyclotron Resonant Heating (ECRH) gyrotron 80kVdc/50A, 0,1% duty cycle (2007)
- [EFDA - JET] 2 x HVPPS for Neutral Beam Enhancement (NBE) 130kVdc/130A, 16,9MW, 3% duty cycle and crowbars (2003)
- [IPP- Wendelstein 7-X] 10 x Control Coils Power Supplies ±30Vdc/±3Ka (2002)

Klystron modulator

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

MARKETS

AUTOMOTIVE

ENERGY

OIL & GAS

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-45001

Company name: **KIMUA ENGINEERING S. L.**
Address: Polígono Industrial Irunzubi, 7. 20490, Lizartza (Gipuzkoa)
Web: https://www.kimuagroup.com/
Turnover: 10.00 million EUR in year 2023
Employees: 40 in year 2023
SME: YES
Phone: [+34] 943 691 396
Email: sales@kimuagroup.com

KIMUA.

ACTIVITY AND SKILLS

Kimua is a specialized engineering company focused on delivering customized solutions for handling heavy, high-value, and sensitive components. Our meticulously designed equipment supports industrial operations at every stage—from transport to installation, maintenance, and dismantling—prioritizing both safety and efficiency.

Our solutions range from simple, tailored tools to sophisticated equipment, including custom mechanical and automated work platforms, heavy-lift devices, and precision tools for the maintenance and repair of large-scale components.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Beam Screen Spreader (2022 - 2022)
  The CERN contract involved the CE certification and manufacturing of a spreader beam, designed by their team specifically for lifting and handling the Beam Screen. This solution was engineered with multiple lifting points to prevent deformation of the component beyond 3 mm, even in the most challenging lifting scenarios.
- [CERN] Lifting Baskets for Ultrasonic Leaching (2019 - 2019)
  The CERN project involved the design, fabrication, and load testing of four stainless steel lifting baskets, intended for the ultrasonic leaching of various components of different weights and sizes. Additionally, the baskets were designed to enable efficient drainage of the components once removed from the treatment tank.

Kimua Hub

RELEVANT R&D PROJECTS

- TARTALO (internal project) (2024)
  *Tartalo is named after a giant Cyclops from Basque mythology and introduces a groundbreaking remote visual monitoring system. With Tartalo, customers can continuously monitor restricted and controlled areas 24/7, ensuring heightened safety and control. The Tartalo system is designed to detect any deviation from "safe working conditions" in real-time. When such conditions are not met, it will instantly trigger an alarm and notify relevant personnel or connected systems. Tartalo offers versatile surveillance options, including: * Monitoring temperature fluctuations in confined areas. * Detecting bolt or part displacements. * Conducting PPE (Personal Protective Equipment) compliance checks. Customizable System and Interface Features: * Access control through face recognition. * 360º camera for full area monitoring. * Intuitive, user-friendly web interface for streamlined operation.*

Lifting Baskets for Ultrasonic Leaching - Structre Deformation Analysis

Solutions Cover Page

BIG SCIENCE AREAS

ASTRONOMY | FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | ENERGY

NAVAL | OIL & GAS

CERTIFICATIONS

ISO-3834 | OSHAS 45001

ISO-9001 | ISO-14001 | UNE-1090

Company name:	**LEADING METAL MECHANIC SOLUTIONS, S. L.**
Address:	Barrio La Agüera, s/n. 39409, San Felices de Buelna (Cantabria)
Web:	http://www.leading.es/
Turnover:	24.36 million EUR in year 2023
Employees:	158 in year 2023
SME:	YES
Phone:	[+34] 942 814 052
Email:	gestion@leading.es

LEADING METAL-MECHANIC SOLUTIONS | Evolving With You

ACTIVITY AND SKILLS

LEADING is a horizontal mechanical and mechatronic solutions company with 50 years of experience in strategic sectors from engineering to advanced manufacturing techniques, such as precision machining, mechano-welding, complex unions (laser, orbital, HIP, brazing, beryllium, coatings, thermal treatments, assembly of mechatronics, NDT and DT examination among other services.

FUSION CAPACITIES: Mechanical Engineering: mechanical design (2D/3D) and engineering simulations, Components manufacturing (prototype/series) and integration of turn-key systems., Beryllium workshop, one of the most advanced in the world. Beryllium is one of the science-preferred materials for its high-performance applications.

TS1 Project Beryllium Reflector (LEADING)

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] Supply of Machined Pure Beryllium Samples (2024)
  Supply of 1 long and 12 short beryllium samples for qualification welding of new Ultra-High vacuum beryllium chambers. The contract includes Procurement of the raw material; Machining of the Beryllium Samples; Cleaning after machining of the Beryllium Samples; Inspection & Testing; Packing and Shipping to CERN site.
- [JET - Imperial College] Manufacturing of AlBeMet Acoustic Resonators for JET (Joint European Torus) fusion reactor – Ref. CE/4681220 (2023 - 2023)
  Manufacturing of AlBeMet (aluminium-beryllium alloy) components.
- [F4E] Series Manufacturing of the FW panels – Ref. F4E-OPE-0900-03 (2020)
  Supply of the Normal Heat Flux (NHF) First Wall (FW) panels that represent the in-kind European contribution to the construction of the ITER blanket. The subject matter of the Contract is divided into 2 parts: Firm Part: Covers 3 tasks, already awarded and in development: Task 1: Implementation of Industrial Organization All the activities needed to build an industrial organization ("Production Line") for the Series Manufacturing of the First Wall Panels. Task 2: Process Qualification All the activities needed to Qualify the Industrial Organization ("Production Line") built during the Task 1 manufacturing three identical FWP, called Pre-Series Panels (PSP). 2.3 Tasks 3.2: Series Manufacturing Manufacturing of the awarded Batches of NHF FW panels (an initial Batch of 27 units) using the built and qualified Industrial Organization ("Production Line"). The Reopening of Competition Part covers the supply of up to 161 panels grouped into Batches. Project on going (since January 2021)
- [ESS BILBAO] Design of manufacturing plan and manufacturing of Proton Beam Window (PBW) – Ref. 035/20 (2020 - 2024)
- [NRG (Nuclear Research and consultancy Group)] Beryllium Reflector Elements for the HFR Petten – Ref. 2020-271 (2020 - 2021)
- [F4E] Provision of Industrialisation studies for First Wall Series Productions – Ref. F4E-OPE-1041 (2020 - 2020)
- [F4E] Manufacturing of Welded Support Mock-Ups – Ref. F4E-OPE-1060 (2019 - 2020)
- [ITER ORGANIZATION] Tokamak Assembly Contract no.2 (TAC-2) – Ref. IO/19/CT/4300001900 (2019 - 2024)
- [OTHER - STFC] TS1 Project Beryllium Reflector – Ref. UK SBS PR17134 (2018 - 2019)
- [ESS BILBAO] Manufacturing of Distributor Assembly – Ref. 296/18 (2018 - 2019)
- [F4E] Manufacturing of Prototypes of the Supports of the Blanket Cooling Manifold (BCM) System and Application of Coatings on Different Items – Ref. F4E-OPE-0833 (2018 - 2019)
- [ITER ORGANIZATION - AMW (Ansaldo Nucleare & S.p.A, Mangiarotti S.p.A)] Sub-assemblies for ITER Vacuum Vessel (2017 - 2018)
- [F4E] Splice Plate Custom Machining for JT-60SA TF-Magnet – Ref. F4E-OPE-0805 (2017 - 2018)

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS BILBAO] Fabrication of ESS Target Cassettes – Ref. 162/16 and ESS Cassette Bricks Patterns Ref. 310/16 and 312/16 (2016 - 2018)
- [F4E] Supply of Full-Scale Prototypes of the ITER Normal Heat Flux (NHF) First Wall (FW) Panels – Ref. F4E-OPE-443-03 (IV-PT) (2014 - 2020)
- [F4E] Fabrication of a Standard Semi-Prototype of the ITER Normal Heat Flux (NHF) First Wall (FW) Panels – Ref. F4E-OPE-394 (IV-PT) (2012 - 2016)

RELEVANT R&D PROJECTS

- [CDTI - TRANSMISIONES] Development of advanced manufacturing technologies to produce large-scale components to enhance the competitiveness of Spanish industrial sector in Fusion (RODAS (MIG-20242038)) (2025)
  The main objective is to address the challenges associated with producing large, complex, and high-performance components that are crucial for the successful operation of fusion reactors. .
- [CDTI - MISIONES] Advanced manufacturing for the development of critical technologies for the construction of DEMO and the advancement of the fusion roadmap, based on challenges identified during the design and construction of ITER (ROAD2DEMO (MIP-20221013)) (2022 - 2024)
  ROAD2DEMO shall address activities that enable research into the development of key enabling processes, materials and technologies, promoting disruptive breakthroughs. Specifically, the main objective of ROAD2DEMO focuses on advancing research in critical and fundamental technologies that will enable significant breakthroughs in nuclear fusion.
- [CDTI - MISIONES] Industrial technological research focused on the optimization of the efficiency of IFMIF-DONES large scientific fusion facility (DONES-FLUX (MIP-20221017)) (2022 - 2025)
- [CDTI - MISIONES] Industrial research in technologies and processes applied to IFMIF-DONES to evolve in the fusion program (DONES-EVO (MIG-20211066)) (2021 - 2025)
- [CDTI - MISIONES] Research on new materials, technologies, and advanced processes to contribute nuclear fusion (FUSIONFUTURE (MIG-20201051)) (2020 - 2024)

F4E-OPE-443-03 FSP FWP Front (LEADING)

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

ADVANCED MATERIALS AND MANUFACTURING

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NUCLEAR | OIL & GAS | SPACE | HEALTH | NAVAL

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-45001 | ASME | RCC-MR | ISO-3834

Company name:	**LIDAX INGENIERÍA**
Address:	C/ Antonio Alonso Martín, 1. 28860, Paracuellos de Jarama (Madrid)
Web:	http://www.lidax.com/
Turnover:	2.98 million EUR in year 2023
Employees:	16 in year 2023
SME:	YES
Phone:	[+34] 916 780 805
Email:	commercial@lidax.com

ACTIVITY AND SKILLS

LIDAX is a technology company founded in 2000. LIDAX develops high advanced Optical & Opto-electronics units used as part of Space or On-ground instrumentation and Scientific Research, from design through to the delivery of integrated and tested equipment. Additionally, the Cryogenics Business Unit can design and manufacture cryogenic/vacuum systems and components from brand new to modifications/upgrade of existing.

Our Optical Units are essential in Optical and IR Instruments which operate from IR, VIS up to UV wavelength and may include precise passive/active thermal control elements and, if necessary, high accuracy positioning mechanisms.

Among the passive thermal control elements developed, Lidax offers the Flexible Thermal Straps, in an off-the-shelf approach for both flight and ground instruments.

LIDAX's infrastructure and internal processes are implemented to carry out a serial production of space products (industrialization).

LIDAX's space product family includes: Focal Planes Assembly and Optical Units for Spectrometers / Cameras, Telescope Optics & Mounts, LIDARs for Space Applications (e.g. In Orbit Servicing), Cryogenic Folding Mirrors, Optical Head / Lens Objective

In a fully integrated and equipped centre of 1.800 m^2, LIDAX concentrates the development office for design and engineering activities, the assembly, integration / clean room areas (ISO5 & ISO 7), the thermal testing laboratory (e.g., Bake-Out Chamber, Cryostat) & metrology equipment (e.g. CMM, Interferometer / Autocollimator)

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS BILBAO] RFQ water cooling system design (2023 - 2024)
  Engineering Service for the design of the RFQ water cooling system, considering maximum allowed variations of 0.1ºC
- [University of Vigo] Thermal chamber capacity upgrade (2023 - 2024)
  Design and manufacture of a cooling and heating system, that allows the testing chamber temperature variations by means of radiation (shroud)
- [ESA - INTA] Payload Focal Plane Assembly (FPA) Thermo-mechanical elements QM and FMs (2021 - 2023)
  Design and manufacture of 28 FPAs intended for the PLATO mission
- [OCAN - IAC] Laser Launch Telescope for a Laser Guide Star (2020 - 2022)
  Design and manufacture of the structure intended for the collimation of the laser beam
- [ESA - INTA] Development of EXOMARS RAMAN Instrument: iOptical Head Thermo-Mechanics Laser encapsulation box & Autofocus Mechanism (2014 - 2019)
  Development of EXOMARS RAMAN Instrument: iOptical Head Thermo-Mechanics Laser encapsulation box & Autofocus Mechanism
- [ESA - THALES] Development of FCI& IRS Telescope Optics for MTG Satellites Series. (2013 - 2020)
  Optical Mounts and Environmental Test Campaign 24 Units develivered
- [ESA - AIRBUS D&S] Development of Co-alignment Sensor ATLID Earthcare Satellite. Thermomechanics (2012 - 2017)
  Development of Co-alignment Sensor ATLID Earthcare Satellite. Thermomechanics
- [ESA] Cryogenic Testing Campaign of EChO Fine Steering Tip/Tilt Mechanism (2009 - 2009)
  Design and execution of the Cryogenic Testing Campaign of EChO Fine Steering Tip/Tilt Mechanism
- [ESA - TASE] Development of a Coarse Lateral Sensor PROBA 3. Thermo-Mechanics (2009)
  Development of a Coarse Lateral Sensor PROBA 3. Thermo-Mechanics
- [OCAN - IAC] Atmosphere and Telescope Simulator for new adaptative optics (2009)
  Atmosphere and Telescope Simulator for new adaptative optics
- [ESA - INTA] Focal Plane Assembly for PLATO Cameras. Thermo-mechanics (2008 - 2020)
- [ESA - INTA] James Webb Space Telescope Mid-IR Instrument Simulator (MTS) (2008 - 2009)
  Development of 4 Cryogenic Folding Mirrors
- [ESA - INTA] Focal Plane Assembly for BEPICOLOMBO Satellite MIXS-T & MIXS-C (2007 - 2015)
  Focal Plane Assembly for BEPICOLOMBO Satellite MIXS-T & MIXS-C. Thermo-Mechanics
- [GTC] Elmer Folding Mirrors for the Gran Telescopio Canarias (2005)
  Elmer Folding Mirrors for the Gran Telescopio Canarias

RELEVANT R&D PROJECTS

- [CDTI MISIONES - TASE] MORERA – TIR Objective Structure and MAIT (MORERA) (2021 - 2024)
  System for the Monitoring of Efficient Irrigation and Agricultural Yield
- [LIST] Feasibility Study of a Mass Spectrometer on board of a Scientific Mission (2019)
  Feasibility Study of a Mass Spectrometer on board of a Scientific Mission
- [INTA] High Conductance Thermal Management Components for the ATHENA IFU Instrument (2019)
  High Conductance Thermal Management Components for the ATHENA IFU Instrument
- [ESA] Cryogenic Heat Switches for Focal Planes Assembly and Cryocoolers in EO/Scientific Instruments. (2015)
  Development of Cryogenic Heat Switches 30-80K for Focal Planes Assembly and Cryocoolers in EO/Scientific Instruments.
- [UE/REA] Development of a Deployer Mechanism & Carrousel (2014)
  Development of a Deployer Mechanism & Carrousel for an Ultrasonic Planetary Core Drill for Space Robotic Exploration
- [ESA] Development of a Family of Space Planetary Gearboxes (Dry Lubricated) (2012 - 2017)
  Development of a Family of Space Planetary Gearboxes (Dry Lubricated)

MORERA thermal infrared objective

Shroud UV piping render

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | CRYOGENICS AND VACUUM | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | SPACE | DEFENSE | AUTOMOTIVE | ENERGY

Company name: **MAMMOET IBÉRICA, SAU**
Address: P.I. Los Frailes, Crtra Alcala de Henares a Daganzo. 28814, Daganzo de Arriba (Madrid)
Web: http://www.mammoet.com
Turnover: 26.10 million EUR in year 2023
Employees: 132 in year 2023
SME: NO
Phone: [+34] 918 845 403
Email: salesmammoetspain@mammoet.com

ACTIVITY AND SKILLS

Wherever there is growth, there is a need for energy, power, raw materials, and infrastructure. Helping to meet those needs is a World in itself. It is the World of Mammoet. In this World, it is our purpose to lift, transport, install and decommission big objects so that our customers can grow and maintain their production capacities and infrastructures in the safest and most efficient ways possible.

Clients trust us to help them achieve feats that were once considered impossible, and we have often broken records in doing so. We have a unique global network and an unparalleled fleet of equipment. Our extensive engineering expertise and high quality and safety standards deliver value to a wide breadth of industry sectors and projects.

With an unmatched fleet of equipment, Mammoet stands ready to handle any heavy lifting and transport challenge that arises, no matter the scale or complexity.

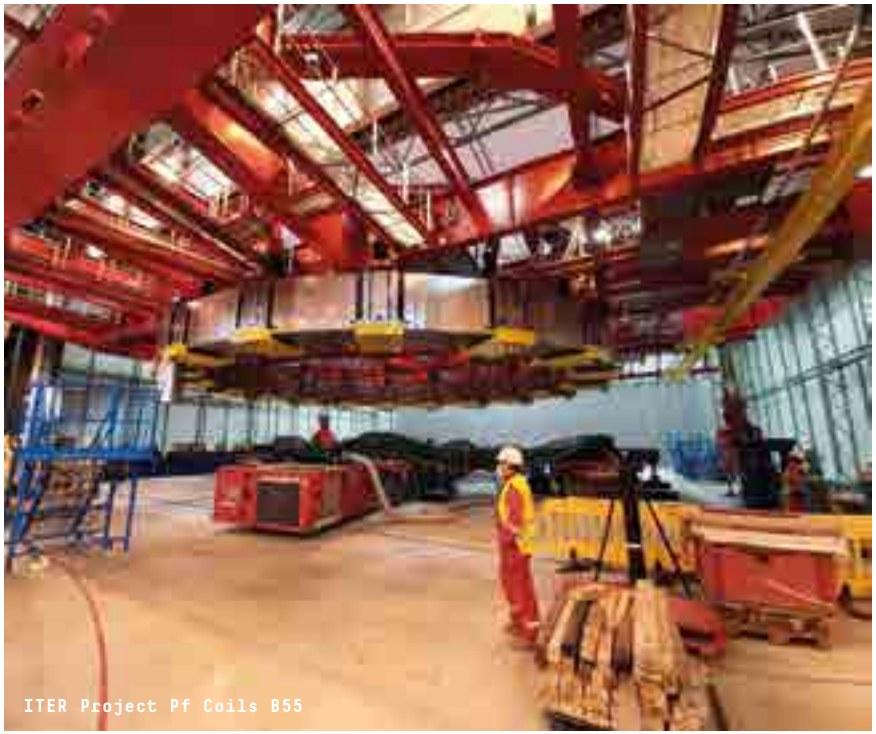
CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Design and supply lifting frame for TF coils at B55 (2024 - 2025)
- [ITER ORGANIZATION - DAHER] Design and supply lifting frame for PF1 coil at B55 with TA6 gantry - ITER Project (2024 - 2024)
- [TSK energia y plantas industriales] Atinkou CCPP in Abidjan, Ivory Coast (2023 - 2023)
- [ITER ORGANIZATION - DAHER] Movements: PF2 and PF5 coils from PF Building to Temporary Storage, PF6 from PF Building to Temporary Storage and later to Assembly Hall (2021 - 2021)
- [ITER ORGANIZATION - ALSYOM] Lifting and handling operations PF coils with TA6 gantry (2021 - 2021)
- [ENWESA] Asco Nuclear Power Plant - Heat exchangers replacement (2021 - 2021)
- [Cobra Azito Energie] Azito 4 Nuclear Power Plant (Ivory Coast) - Azito Energie Transport and installation of main components (2021 - 2021)
- [METKA] Turbin and generator installation at Agios Nikolaos CCGT-II (2021 - 2021)
- [AREVA] Vandellós II Nuclear Power Plant - Handling spent fuel storage racks (2020 - 2020)
- [CNAT] Almaraz Nuclear Power Plant - Transport spent fuel storage cask JFK6 from ATI to fuel building U2 and back (2020 - 2020)
- [ANAV] Vandellós N.P.P. - Transport and storage of the main reactor head (2015)
- [F4E] Lifting gantry for the lifting of main coils (2015 - 2015)
- [SIEMENS Egypt] Transport and installation of main components as turbine and generators in 2 power plants of total 4800 MW (2015 - 2015)

ITER B55 TA6 gantry crane

RELEVANT R&D PROJECTS

- Windar Offshore SL - TPs Vertical transportation. Forklift type beams between SPMTs to pick and carry Transition Pieces at offshore Ports and yards. (2024 - 2024)
- CNAT - Design and supply special low bed for the transportation of spent fuel storage flask from fuel building to storage area and route test / Almaraz Nuclear Power Plant (Spain) (2017)
- Lifting offshore wind prototype in Canaries



ITER Project Pf Coils B55

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MARKETS

ENERGY | NAVAL | NUCLEAR

OIL & GAS

CERTIFICATIONS

ISO-14001

Company name: **MAP INDUSTRIAL PROJECTS, S. L.**
Address: Avenida Agricultura, 22. 33211, Gijón (Asturias)
Web: https://mapindustrialprojects.com/en/
Turnover: 2.31 million EUR in year 2023
Employees: 14 in year 2023
SME: YES
Phone: [+34] 985 168 133
Email: operaciones@mapindustrialprojects.com

ACTIVITY AND SKILLS

MAP Industrial Projects specializes in the design, manufacturing, and delivery of high-precision mechanical components and capital goods, with nearly 50 years of experience in the field of machining and advanced manufacturing. We have:

- Expertise in producing intricate components with stringent dimensional tolerances, working with advanced materials such as nickel alloys, aluminum, titanium, plastics, ceramics, and composites.
- Comprehensive project capabilities spanning from conceptual design to final production, ensuring seamless integration of client requirements into tailored mechanical solutions.
- Proven track record in delivering critical components for several industrial sertors, with full readiness to meet the demanding standards of scientific research centers.

We operate under ISO-certified systems, ensuring strict compliance with international quality and environmental standards. Continuous investment in state-of-the-art machinery, advanced technologies, and professional training enables consistent delivery of innovative, high-quality solutions.

MAP Industrial Projects operates across international markets, delivering components and equipment that adhere to diverse regulatory frameworks and operational standards. This global perspective ensures the capability to manage projects with complex technical and logistical requirements. This gives us:

- Decades of expertise in machining and advanced manufacturing.
- Mastery of complex materials and sophisticated production techniques.
- Integrated project management for metalmechanical equipment under leading international codes.
- Commitment to precision, innovation, and reliability.

This descriptive overview highlights MAP Industrial Projects' ability to deliver cutting-edge solutions tailored to the needs of the scientific and industrial sectors.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] PCCF Threaded rods manufacturing (2025)
  Raw material development and testing, manufacturing and delivery of threaded rods for fixing Pre-Compression Counter Flanges inside ITER Tokamak

RELEVANT R&D PROJECTS

- [ITER] Production process for special Alloy Inconel 718 for PCCF threaded rods (2025)
  Raw material production monitoring and mechanical testing at 4K (-269°C)

Alloy C-276 Neutralizer & Agitator cap

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

MARKETS

ENERGY

NUCLEAR

OIL & GAS

CERTIFICATIONS

ISO-9001

Company name:	**MECÁNICAS BOLEA S. A.**
Address:	Avda Bruselas s/n (P.I Cabezo Baeza). 30353, Cartagena (Murcia)
Web:	http://www.mecanicasbolea.com
Turnover:	21.20 million EUR in year 2023
Employees:	224 in year 2023
SME:	YES
Phone:	[+34] 968 324 220
Email:	secretaria@gmbolea.com

ACTIVITY AND SKILLS

Industrial Maintenance: Maintenance is one of the most experienced divisions of Bolea Group. Our major clients belong to the industrial, chemical & petrochemical, and shipbuilding sectors.

We have all the necessary resources and equipments to provide to our clients any service and technical solution that they may require, such as heat exchangers, gearboxes, pumps and valves repairs, milling machine works, welding jobs, laser alignments, onsite plants maintenance, etc.

Aeronautics: in 1998, Mecanicas Bolea began its career in the aeronautic sector, as a supplier of large welded structures for the aircraft jigs & tools and industrial equipment.

In 2012, the Aeronautic Division was created, integrating the design of aircraft tooling with the supply of goods and equipment, thus providing a holistic response to our clients' needs, i.e. from concept development to the final onsite installation of jigs & tooling equipment.

Nowadays, Mecanicas Bolea is classified as Tier 2 Airbus supplier for the direct provision of specific componentsand aircraft related tooling.

Oil & Gas: with over 30 years of experience in the supply of goods and industrial units, Mecanicas Bolea is a solid provider of services in Oil & Gas. We encompass most of the stages within a project: from the initial design and implementation of manufacturing processes to the assembly and onsite commissioning.

Our range of products and services include reactors, tanks, furnaces, skids, complete vacuum units, distillation, evaporation, heat transfer, heat exchangers, air coolers and a wide range of pressure vessels that are calculated, modeled and executed according to international design codes in our workshops and offices.

In addition, we are present in the different petrochemical plants that we support, with the capability to carry out construction, assembly and piping installation, industrial units, and fuel storage tanks, as well as the delivery of turnkey projects.

Food & Pharma: our food and pharmaceutical division provides a broad range of services and equipment to the different national and international clients. We can carry out complete complex projects applicable for different processes, oriented to fulfill our clients' needs and most demanding requirements.

From the manufacturing of small containers of sanitary finish up to the supply of tailored machinery and production plants turnkey projects. Within our most distinctive products, we wish to highlight our autoclaves for pharmaceutical use, horizontal mixers for foodstuff and plants for preserve concentration.

ELT M2&M3 Handling Tool Load Test

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] CA9410476. Vacuum chamber VXSS T6 in Stainless Steel (2022 - 2023)
  MECANICAS BOLEA supplied CERN a VXSS Vacuum Chamber for the M2 Beamline in the North Area, including ultra-vacuum tests
- [ILL] N3415953-1. D20-C Detector Vessel (2022 - 2023)
  MECANICAS BOLEA manufactured, tested and assembled a high accuracy D20-C Detector Pressure Vessel
- [ITER ORGANIZATION - ENSA] 002814.2021. Supply of platforms for Welding and Machining Robots (2022 - 2023)
  Mecanicas Bolea supplied platforms for Welding and Machining Robots for ITER Organization
- [ESO] 97671/ESO/21/106447/ADE. ELT M2&M3 handling tool (2021 - 2022)
  The M2&M3 Mirror Handling Tool allows handling of the M2 and M3 Mirror, and the M2 and M3 Dummy Mirror, in horizontal position (optical surface facing up) by means of a single hook crane. MECANICAS BOLEA manufactured a second M2&M3 Mirror Handling Tool in line with the design documentation and drawings delivered by ESO. Furthermore, MECANICAS BOLEA verified the dimensions of the tool and carried out necessary steps which lead to a certification (including static load test) of the tool according to the Machinery Directive 2006-42-EC.
- [ILL] Fresnell Coil (2021 - 2022)
  MECANICAS BOLEA manufactured of a frame to host cupper Fresnel coil of WASP. Manufactured of circular precise aluminum frame, 3m of diameter, 150 mm high, 150mm width and 150kg weight.
- [GTC] GLIC-21-005. Fixed complementary Platforms and adaptation tools for OSIRIS Instrument (2021 - 2022)
  Mecanicas Bolea supplied fixed complementary Platforms and adaptation tools for OSIRIS Instrument in GRANTECAN Telescope
- [CTAO - IAC] LIC-20-025 Azimutal Locking System LST2-LST3-LST4 (2020 - 2023)
  MECANICAS BOLEA manufactured the Azimutal Locking System for LST2-LST3-LST4 Telescopes and sent to Observatorio Roque de Los Muchachos in La Palma
- [CTAO - IAC] LIC-20-020 Access Systems at the Telescope Mount (2020 - 2022)
  MECANICAS BOLEA manufactured the Access Systems at the Telescope Mount for LST2-LST3-LST4 Telescopes and sent to Observatorio Roque de Los Muchachos in La Palma
- [CTAO - IAC] LIC-20-017 Camera Access Towers (2020 - 2023)
  MECANICAS BOLEA manufactured the Camera Access Towers for LST2-LST3-LST4 Telescopes, sent to Observatorio Roque de Los Muchachos in La Palma and installed in place
- [GTC] GLIC19-004 Half Moon Platform Gran Telescopio de Canarias (2019 - 2020)
  Mecanicas Bolea designed, manufactured and installed a mobile-elevating maintenance platform for GRANTECAN Telescope (Lifting people more than 3 meters) including EC declaration of conformity, CE marking and technical files according to CE 42/2006 European Directive about safety of machinery.
- [ILL] D16 Detector Pressure Vessel Machining (2019 - 2020)
  MECANICAS BOLEA manufactured, tested and assembled a high accuracy D16 Detector Pressure Vessel
- [CTAO - IAC] LIC-19-005 Azimut structures for LST-2, LST-3,LST-4 (2019 - 2023)
  MECANICAS BOLEA manufactured the Azimutal structures for LST2-LST3-LST4 Telescopes, sent to Observatorio Roque de Los Muchachos in La Palma and installed in place
- [CTAO - IAC] LIC-18-023 Azimutal Locking System LST1 (2019 - 2019)
  MECANICAS BOLEA manufactured the Azimutal Locking System for LST1 Telescope and sent to Observatorio Roque de Los Muchachos in La Palma
- [CERN] Alignment tables for TANB (2018 - 2019)
  MECANICAS BOLEA manufactured 4 alignment tables for TANB
- [ILL - The Vacuum Projects] PC1700293-Boitler and Bride H32 (2017 - 2018)
  MECANICAS BOLEA manufactured, tested and assembled a high accuracy H32 Detector Pressure Vessel

BIG SCIENCE AREAS

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TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NAVAL | OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001 | ISO-9100 | ISO-14001 | ASME | ISO-3834 | OSHAS 45001 | UNE-1090 | AQAP-2110

Company name:	**MECANITZATS PRIVAT S. L.**
Address:	Polígono Industrial Pont Xetmar F-21. 17844; Cornellà del Terri (Girona)
Web:	http://www.mecprivat.com
Turnover:	4,00 million EUR in year 2023
Employees:	42 in year 2023
SME:	YES
Phone:	[+34] 972 594 602
Email:	info@mecprivat.com

ACTIVITY AND SKILLS

PRIVAT was created in 1988, specialized in precision CNC machining and mechatronics integrated assemblies for a wide variety of industries and applications. Our production is based on all kinds of operations, including complex processes developed with high precision equipment. Our closed collaboration with qualified suppliers allows us to perform a wide range of treatments and mechanical specialisations to provide numerous solutions to customers.

We have two work centres for this purpose differentiating the machining plant and assembly plant, with a total surface of 3.000m^2 available.

The main activities are focused on the following markets:

- Engineering and industry
- Aerospace and defence
- Medical, pharmaceutical, and optics
- Robotics
- Scientific Instrumentation

CONTRACTS FOR BIG SCIENCE FACILITIES

- [LSC - IFIC] Manufacture of copper parts for sapphire windows for the NEXT experiment (Canfranc Underground Laboratory) (2023 - 2023)
- [ESO] Frame Contract No. B001196/ESO/20/100553/ADIN for Machining of Standard Mechanical Parts (2021 - 2023)
- [ESO - SENER] Manufacturing mechanical parts M2-M3-M5 for ELT (2020 - 2022)
- [ESA - SENER] Manufacturing mechanical parts JANUS JUICE Mission (2019)
- [ILL] Manufacturing mechanical parts of XtremeD Detector Modules (2018 - 2019)
- [ESA - SENER] Manufacturing mechanical parts for FIXBOX Mission (2015)
- [ALBA] Manufacturing mechanical parts for several Beam Lines (2010 - 2017)

RELEVANT R&D PROJECTS

- [EURECAT] COMRDI16-1-0019. Research Project for machining characterization (AVINT) (2016 - 2021)

Quality Department

Mechatronics Assembly

Machining Plant

Assembly plant

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | DEFENSE | ENERGY | HEALTH | OIL & GAS | SPACE

CERTIFICATIONS

ISO-9001

Company name:	**METROMECÁNICA**
Address:	Polígono Malpica, calle E 32-39, Nave 43. 50016, Zaragoza
Web:	https://www.metromecanica.com
Turnover:	4.60 million EUR in year 2023
Employees:	55 in year 2023
SME:	YES
Phone:	[+34] 976 106 183
Email:	metromecanica@metromecanica.com

ACTIVITY AND SKILLS

Metromecánica was founded in 2003, more than 18 years of experience endorse it as a reference company in the provision of services and integration of industrial metrology solutions.

Metromecánica works internationally providing 3D metrology solutions and developing turnkey projects that require the integration, automation, programming and installation of industrial metrology solutions.

Currently, Metromecánica has direct implementation in Spain in Getafe (Madrid), Zaragoza, Berriz (Vizcaya) and in France in Toulouse, St. Nazaire and Cadarache.

Thanks to the experience, the knowledge acquired in various sectors, the know-how accumulated by our staff and the mastery of the latest technologies in 3D metrology, Metromecánica develops research and innovation projects providing solutions that optimize measurement processes.

Metromecánica has quality certifications according to ISO 9001, EN9100 and NADCAP standards, a management system applied to processes and whose purpose is to meet all the requirements and expectations of its customers.

In addition, Metromecánica has the seal of innovative SME, a recognition with which the Ministry of Science and Innovation distinguishes small and medium-sized companies that have a highly innovative character.

The Quality and Environment model adopted by the company leads to permanent continuous improvement, where customer orientation and continuous training of Metromecánica's human team, in addition to its commitment to the Environment, are the two main axes in this improvement process, thus increasing the effectiveness and efficiency of its services.

- Activities: Automations (high range metrology, metrology in online processes), Metrology services (Dimensional control projects, studies, simulations, measurement of complex & installations, Measurement of products and assemblies, Reverse engineering), Digitized AEC - Architecture, engineering and construction (Large volume scanning, Digital Twin, applications in BIM and Smart Factory Product)
- Products: Robotic solution with scanner sensor: Agile 3D, Gapgun PRO2 and Vectro profiler, Spatial Analyzer metrology software

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CIEMAT] Technical support in definition of monument networks for alignment (2022)
- [ESO] Optical Alignment Strategy (2018)
- [F4E] Supply of metrology instrumentation (2018 - 2022)
- [ITER ORGANIZATION] Alignment & Metrology (2015)

RELEVANT R&D PROJECTS

- [CDTI - MISIONES] Research into New Technologies Aimed at Achieving an Eco-Competitive Aeronautical Production Plant (ECOCOM) (2023 - 2013)
- [CDTI - MISIONES] Multidisciplinary Assembly Technologies for Sustainable Aircraft (MUFASA) (2022 - 2024)
- [CDTI - MISIONES] Optimisation of Automated, Multifunctional and Sustainable Industrial Technologies (OPTIMUS) (2021 - 2024)

Measurement in ITER facilities

Automatic application for ITER project

BIG SCIENCE AREAS

ASTRONOMY

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

NUCLEAR

OIL & GAS

SPACE

NAVAL

CERTIFICATIONS

ISO-9001

NADCAP

ISO-9001

Company name:	**MICROLAN AEROSPACE S. L.**
Address:	Pol. Industrial Areta. C/ Bideberri, 2-4. 31620, Huarte (Navarra)
Web:	https://microlanaerospace.com/
Turnover:	5.30 million EUR in year 2024
Employees:	49 in year 2024
SME:	YES
Phone:	[+34] 948 361 036
Email:	info@microlanaerospace.com

ACTIVITY AND SKILLS

We manufacture high precision mechanical parts for the space industry. Your parts are highly demanding or critical in terms of geometry / dimensions? We are your perfect fit. That's the kind of parts we like. Microlan Aerospace "is" passion for precision. We make parts others can't do. Highly precise and cost-effective.

Our technical capacities are based on:

- CNC turning, CNC milling, 5-axis continuous machining, multitasking machining, EDM wire cutting, grinding, shot blasting, vibratory drums, chip briquetting.
- Automations, IOT, flexible manufacturing cells, measurement during manufacturing by Renishaw probe, laser marking, correlative marking for traceability of the production process.
- CAD CAM design and programming.
- Temperature control of the manufacturing and measuring area. Measurement by 3D coordinate machines, endoscopic probe for analysis and deburring of joints between holes.
- Tool management (management software, balancing machine, intelligent stock management, tool press-setting, thermal clamping).

We are certified under ISO9001 and EN9100 standards.

CERN proyect - IT4811 chain clamps for collimators

Microlan Aerospace headquarters

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] HL LHC-WP3_PHASE2_MEC-VIDE_P1 (2024 - 2024)
- [CERN] HL LHC-WP3_PHASE2_MEC-GEN_P1 (2024 - 2024)
- [ESS] Chopper flanges and front enclosures for BEER and HEIMDAL (2024 - 2025)
- [ESS] BEER and HEIMDAL choppers main enclosure (2024 - 2025)
- [CERN] IT-4811 chain clamps for collimators (2023 - 2024)
- [CERN] LINAC 4, 32 tuning tooling ASS (2022 - 2022)
- [CERN] CMS 15.8m and 15.4m support assembly (2020 - 2020)
- [CERN] MB-SSS (type 1) interconnection (2019 - 2019)
- [CERN] Connection cryostat space (2015 - 2015)

RELEVANT R&D PROJECTS

- Q-band | Output stage analysis and optimization of machining geometries for high-capacity Q-band satellites (2020 - 2021)
- FC Space | New space communications system for new generation Ka-band satellites consisting of an antenna and Feed Chain with dual polarization (2019 - 2020)
- GGW Filters | High-frequency devices for communications satellites with advanced manufacturing (2019 - 2019)
- FCOMP | Functional composites for the aerospace industry (2018 - 2019)
- COMPACSAT | Routable components for small communications satellites (2017 - 2019)

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS

SPACE

CERTIFICATIONS

ISO-9001

ISO-9100

Company name:	**MONCOBRA S. A.**
Address:	C/ Cardenal Marcelo Spinola, 10. 28106, Madrid
Web:	http://www.grupocobra.com
Turnover:	185.00 million EUR in year 2023
Employees:	1,650 in year 2023
SME:	NO
Phone:	[+34] 682 054 429
Email:	moncobra@grupocobra.com

Busbar installation at ITER

ACTIVITY AND SKILLS

MONCOBRA is a service company specialized in site installation activities. Our core businesses are: piping fabrication and erection, steel structure fabrication and erection and mechanical erection in general. We have more than 40 years of experience in the field, and we are used to working in high-requirement applications, such as nuclear, vacuum, etc

MONCOBRA is a Spanish company with intenational experience in Europe, Central and Latin-America.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] TCC2 Contract. Electromechanical and piping fabrication and erection in Tokamak Complex (2021 - 2026)
- [GTC] Installation and testing of the steel dome of GRANTECAN (2007)
- [CIEMAT - ENRESA] Dismantling and decontamination works in the frame of PIMIC Project (2006 - 2009)
- [CIEMAT - ENRESA] Rehabilitation of Building 55 (2005 - 2007)

Vessel Installation at ITER

BIG SCIENCE AREAS

ASTRONOMY
FUSION
PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING
MECHANICS AND OPTOMECHANICS
CIVIL WORKS AND INFRASTRUCTURE
CRYOGENICS AND VACUUM
ELECTRICAL AND POWER ELECTRONICS

MARKETS

AUTOMOTIVE
ENERGY
HEALTH
NAVAL
NUCLEAR
OIL & GAS

CERTIFICATIONS

ISO-9001
ISO-14001
UNE-73401
ASME

Company name:	**NAGERU S.L.**
Address:	C/ Embajadores, 146 - P2 5B. 28045, Madrid
Web:	https://www.nageru.com
Turnover:	0.15 million EUR in year 2024
Employees:	4 in year 2024
SME:	YES
Phone:	[+34] 660 109 686
Email:	administration@nageru.com

nageru solutions

ACTIVITY AND SKILLS

nageru was born to help organizations to better manage their information, either analog or digital, through a coherent and innovative use of Information Technologies, adapting them to the reality of each user. With presence at Barcelona, Madrid and Lleida, nageru has promoted the adoption of the digital tech at several fields, private and public, and at sectors like the Administration, Culture, Energy, Engineering or Education, among others.

This vision led nageru Solutions to execute several projects to develop their own tools, of integration of open-source software and of depiction of third-party technologies that allow to cover all the information lifecycle from creation to preservation in order to assure the future accessibility.

Among these tools, we can mention solutions for the management of archives, advanced document management, publication, digital preservation and digitization. The development of tools based on artificial intelligence to improve the processes of collection of information or for the most precise exploitation of the available information has been one of the lines of work since the onset of the company and already has been used in real projects successfully.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA - GMV] ESA Copernicus LTA (2023)
  Providing Long Term Archiving service to ESA Copernicus program data.
- [ESA] ESA Preservation Platform (2023 - 2023)
  Consultancy to evolve the current preservation platform in ESRIN to new components. Market survey and suggestions to make a tender to upgrade hardware and software.

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS | DEFENSE | ENERGY | HEALTH | NUCLEAR | OIL & GAS | DEFENSE | SPACE

Company name: **NANOKER RESEARCH S.L.**
Address: Polígono Industrial de Olloniego, Parcela 22 A, Naves 5-7. 33660, Oviedo
Web: http://www.nanoker.com
Turnover: 2.50 million EUR in year 2023
Employees: 25 in year 2023
SME: YES
Phone: [+34] 985 207 613
Email: info@nanoker.com

ACTIVITY AND SKILLS

The company has expertise in the development of special materials (ceramics, ceramic-composites) for extreme environments and in the manufacturing of top-end products based on them. The company has skills in the synthesis and conditioning of new materials, starting from precursors and on the shaping and densification of these materials into final parts. The shaping processes, available in the company, are slip casting, pressure casting, cold isostatic pressing and green machining. The densification processes, available in the company, are conventional sintering and pressure-assisted sintering (spark plasma sintering and hot-pressing).

The company has a solid background in the development and consolidation of oxidic ceramic materials (Zirconium oxide, aluminum oxide and its composites) and non-oxidic ceramics (machinable aluminum nitride, boron nitride composites, graphite-metal carbide composites, refractory metals - Mo, W, Cermets - TiC, TiN, and custom-made sputtering targets).

Nanoker supplies its products to different market sectors: Big Science, automotive, oil and gas, jewelry, metal forming, chemical and thin-film industry.

TECHNOLOGIES AND CAPABILITIES

- Spark plasma sintering: pressure assisted sintering technology to produce special materials (i.e. graphite-molybdenum material for collimators) and to join dissimilar materials (i.e. refractory metals to ceramics).
- Cold isostatic pressing: to produce green bodies to be processed in further steps into final shape.
- Green Machining: precision shaping to green bodies by using CAD/CAM technologies.
- Conventional sintering: sintering furnaces under oxidic atmospheres up to 1800ºC.
- Grinding: finishing on hard ceramics.
- Slip casting: slurry formulation and production of parts.

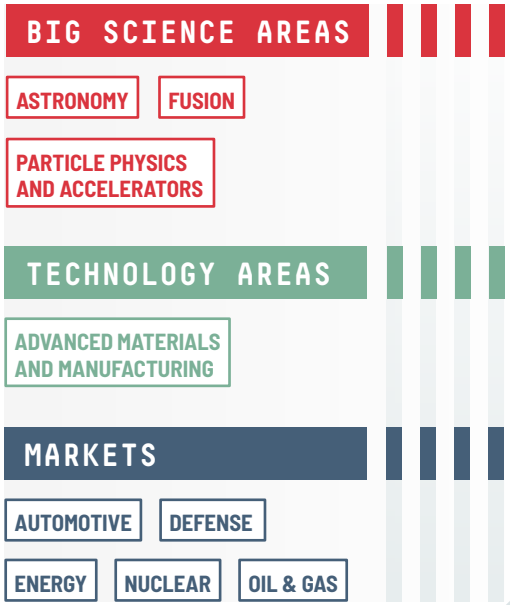
Large scale Spark Plasma Sintering (SPS)

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] IT-4671 - Spacers and stiffeners of Aluminium-Nitride, machined by micro-waterjet cutting for the CMS Outer Tracker modules. (2023 - 2025)
- [F4E - GUTMAR] Development of a machinable aluminum nitride material (KALMAN) and production of 1500 pieces for junction boxes of IVS (2021)
- [ITER ORGANIZATION - CIEMAT] Development of complex shape alumina components for Maple-U test facility (2019)
  EUROFUSION project. Development of complex shape alumina components for Maple-U test facility. Manufacturing of several components based on a 99.7% purity alumina for the multi-effect facility (Maple-U) that is designed to investigate material interactions for liquid metal breeder/coolant flow systems for fusion energy
- [CERN] IT-4201 - Manufacturing of 380 blocks for collimators in the HL-LHC based on a graphite-molybdenum composite (2018)
- [CERN] DO/TE - HV Ceramic Insulators for UHV Injection / Ejection Kicker Magnets (2018)
- [ITER ORGANIZATION] Development of different self-doped alumina grades by using colloidal routes and advanced processing technologies (2014)
  EUROFUSION project

RELEVANT R&D PROJECTS

- [CDTI MISIONES PERTE CHIP] Research for improving the competitiveness of power diode with silicon carbide substrate (DIOSIC) (2023)
- [CDTI MISIONES] Industrial research into strategic materials for energy dense, cost-optimized Lithium ion batteries in sustainable electromobility (LION-HD) (2020 - 2024)
- [CDTI] Development of a new generation of carbonaceous materials for the use in extreme environments (SINTEX) (2018)
- [H2020] Next generation ceramic composites for combustion harsh environments and space - grant 685594 (CHARME) (2016)
- [EUROSTARS] New ceramic sputtering targets manufactured by SPS using tailored powders for TCO (Transparent Conductive Oxide) coating deposition (CERCOAT) (2016)



Company name:	**NEWTESOL - NUCLEAR EQUIPMENT MANUFACTURING**
Address:	CA-141 Km 2.5 – Nave Sur 2. 39792, Gajano (Cantabria)
Web:	http://www.newtesol.com
Turnover:	12.00 million EUR in year 2023
Employees:	70 in year 2023
SME:	YES
Phone:	[+34] 942 503 009
Email:	sales@newtesol.com

newtesol
new welding technologies

ACTIVITY AND SKILLS

Born in 2002 from the nuclear industry experience, NEWTESOL is offering today its capabilities in Nuclear Equipment Manufacturing such as:

- Cyclones and internals
- Swirl vane separators
- Heat exchangers and heaters
- Pressure vessels and spools
- Racks and cells
- WO tubesheets
- Storage wasted fuel casks
- Fresh fuel element containers

Specific certifications:

- NPT stamp, ASME III Div.1
- API 5LD monogram
- RCC-M Fabrication code
- ISO 19443

International Award received from World Nuclear Exhibition 2018, for its Operational Excellence!

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - META] Tokamak Complex Contract – TCC2 (2024 - 2026)
  TCC2 Contract Reference number : IO/20/CT/4300002227) piping spools fabrication
- [ITER ORGANIZATION - IES] E20-24740 ITER (2022 - 2025)
  Design and fabrication of pressure vessels for set of process electrical heaters

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

MARKETS

DEFENSE | OIL & GAS | NUCLEAR

CERTIFICATIONS

ISO-3834 | ISO-9001 | ISO-14001

AQAP-2110 | ASME | RCC-MR

Company name:	**NORTEMECANICA S.A.**
Address:	Área Industrial de Tabaza I, Parcelas E4, E5 y E6. E-33469, Carreño (Asturias)
Web:	http://www.nortemecanica.es
Turnover:	7.50 million EUR in year 2024
Employees:	49 in year 2024
SME:	YES
Phone:	[+34] 985 579 857
Email:	comercial@nortemecanica.es

Nortemecánica

ACTIVITY AND SKILLS

Nortemecánica is a regular supplier of mechanical components for research laboratories, large science facilities and engineering companies, both within Spain and abroad in Germany, France, Sweden, Switzerland, Denmark, UK and US.

Our company is a reference in the manufacture and assembly of complex capital goods, machinery and spare parts, with over 30 years experience.

The following activities are conducted at our premises: Boilermaking and welding, Machining, Painting, Assembly and Tests (load, lifting, vacuum, pneumatic and electrical tests).

Nortemecánica is equipped with the highest technology standards. We incorporate the latest technical advances, like for example, two laser trackers and a heated area for verification and assembly at constant temperature that has been recently built at our premises. This area and the heated room in which the 6 meter-long-milling machine is located, allows us to achive tolerances without precedents (30 microns in 5 meters length).

Proton Beam Window Port Block and Proton Beam Window Vessel for European Spallation Source ERIC

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] CC Feeder Ring Rail System (2023 - 2024)
  Design, manufacturing and syupply of CC Feeder Ring Rail System used for lifting and positioning tools in the clean area of the tokamak pit at ITER (International Fusion Energy Organization)
- [ESS] CSPEC Inside Bunker Neutron Guides Vacuum Housings (2023 - 2024)
  Manufacturing design and manufacturing of CSPEC Inside Bunker Neutron Guides Vacuum Housings, bellows, neutron windows and beamline supports for the cold neutron chopper spectrometer scientific instrument. Vacuum tested.
- [ESS] Inner Shielding Blocks (2020 - 2021)
  Manufacturing and supply of the Inner Shielding Blocks- Fifth Part for ESS Research facility located in Lund, Sweden, including inspection, testing and delivery.
- [ILL] Manufacturing and supply of H16 steel shielding for the Institut Max von Laue – Paul Langevin (2020)
- [ESS BILBAO] Target Wheel Vessel (2019 - 2022)
  Manufacturing and supply of the Target Wheel Vessel for European Spallation Source ERIC at Lund, Sweden.
- [ESS BILBAO] Proton Beam Window Port Block and Proton Beam Window Vessel (2019 - 2021)
  Manufacturing and supply of Proton Beam Window Port Block and Proton Beam Window Vessel
- [CERN] Manufacturing and delivery of yokes for magnets for the Proton Synchrotron (PS) (2019)
- [ESS] Manufacturing and supply of 116 In-Bunker Base Plates, including inspection, testing and delivery (2019)
- [ESS BILBAO] Manufacturing and supply of the Tuning Beam Dump Steel Shielding and T-Copper Block (2018 - 2019)
- [EUROPEAN XFEL] Manufacturing and supply of Insertion Device Support Systems. Production, assembly, testing, documentation, packing and supply of nine (9) undulator carriages (2018 - 2019)
  Motion control system, alignment and commisioning included
- [ESRF] Manufacturing and supply of ID Support Systems. Manufacture, testing, and delivery of four 2.0 M long In-Vacuum carriages and one prototype of Single Axis carriage for the ESRF-EBS accelerator complex (2018)
- [ESRF] Manufacturing, assembly, testing and delivery to the ESRF site of 65 girders assemblies for the ESRF Storage Ring (2016 - 2018)

Nortemecánica premises in Carreño, Asturias

Target Wheel Vesssel for European Spallation Source ERIC

BIG SCIENCE AREAS

FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING

CRYOGENICS AND VACUUM

MECHANICS AND OPTOMECHANICS

MARKETS

ENERGY

NUCLEAR

HEALTH

CERTIFICATIONS

ISO-3834

ISO-9001

UNE-1090

Company name: **NUMERICAL ANALYSIS TECHNOLOGIES S. L.**
Address: C/ Marqués de San Esteban, 52, Entresuelo D. 33206, Gijón (Asturias)
Web: https://natec-ingenieros.com/
Turnover: 0.35 million EUR in year 2023
Employees: 8 in year 2023
SME: YES
Phone: [+34] 984 199 692
Email: info@natec-ingenieros.com

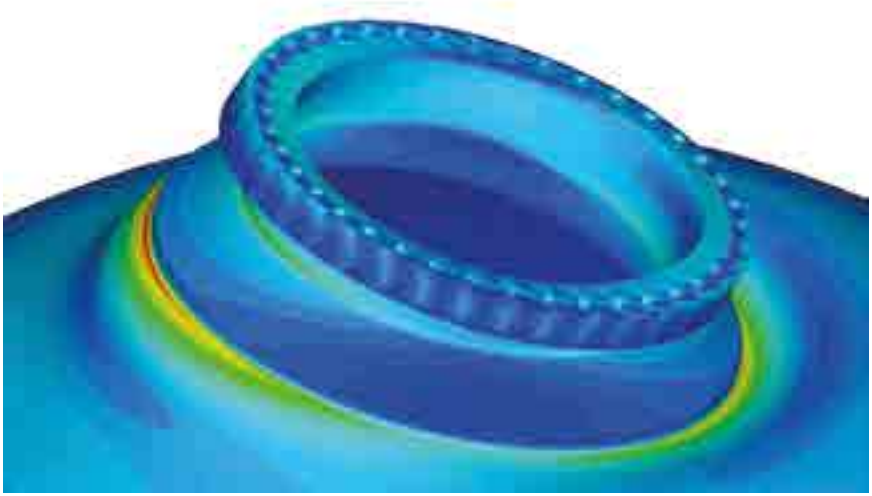
NATEC INGENIEROS
pensando en futuro

ACTIVITY AND SKILLS

NATEC is an engineering company specialized in advanced analysis: nonlinear and coupled analysis in the mechanical, thermal and electromagnetic fields. Main capabilities demonstrated in projects carried out in the framework of ITER are:

- Structural integrity assessment according to nuclear codes (RCC-MR, ASME and SDCIC) of VV components, Port Plugs and In-Vessel components.
- Welding process simulation to predict distortions during the manufacturing of the ITER components:, Diagnostic Port Plugs, Toroidal Field Coil Cases and Vacuum Vessel.
- Mechanical design, engineering and manufacturing analysis of ITER Equatorial and Upper Port Plugs.
- Electromagnetic analysis of plasma disruptions and other electromagnetic events.

Natec Ingenieros



CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] IO/23/CT/43-2970. Provision of Analyses for ITER Electron Cyclotron Equatorial Launcher. (2024 - 2025)
  Analyses for the EC Equatorial Launcher (EL) in order to assess the structural integrity of the current design and for providing support for the review of the analyses of other EC subsystems such as upper launchers, transmission lines, supporting structures, etc
- [F4E] F4E-OMF-1442-01: Framework Service Contract for the Provision of Engineering Support in the Area of EM and Electromechanical Analysis of ITER Component (2023 - 2027)
  Provision of electromagnetic analysis, under fast and slow electromagnetic transients, of different ITER components (blanket shield modules, IC/EC antennas, ELM coils, Vacuum Vessel, etc.) and the supporting to improve already existing electromagnetic models. Performance of the subsequent coupled mechanical analysis of the component under study subject to electromagnetic forces.
- [F4E] F4E-OMF-0938-01: Framework Service Contract for the Provision of Engineering Support in the Area of EM and Electromechanical Analysis of ITER Components (2022 - 2023)
  Provision of electromagnetic analysis, under fast and slow electromagnetic transients, of different ITER components (blanket shield modules, IC/EC antennas, ELM coils, Vacuum Vessel, etc.) and the supporting to improve already existing electromagnetic models. Performance of the subsequent coupled mechanical analysis of the component under study subject to electromagnetic forces .
- [ITER ORGANIZATION] IO/22/CT/43-2626. Thermal-Hydraulic Analysis and Structural Assessment of Equatorial Port #17 Port Plug with Integrated Disruption Mitigation System and Diagnostics. (2022 - 2023)
  Analysis support for the justification of structural integrity and production of related structural assessment reports of Equatorial Port #17 port plug with integrated Disruption Mitigation System and diagnostic systems. Thermal-Hydraulic (TH) analysis of 3 Diagnostic Shield Modules (DSM) with integrated DMS and diagnostic systems; - Iterative implementation of water-cooling channels in DSM in conjunction with TH analysis; - Structural integrity assessment of 3 DSMs prepared on the basis of outcome from thermal-hydraulic and Electro-Magnetic (EM) analysis; - Delivery of Structural Assessment reports and presentations.
- [ITER ORGANIZATION] IO/CT/ 22/60-434. Framework Contract for Support of Port Integration Engineering (2022 - 2026)
  Thermal analysis for different ITER components . Finite element models and analysis. ANSYS CFX and APDL techniques. Transient thermal for operation conditions (plasma burn and dwell cycles). Transient thermal for cooling baking/cooling conditions. Coupled CFX – TH analysis Mesh generation and model's quality assessment, thermal and mechanical contacts definition between parts. Programming (APDL). Structural integrity justification , P and S-type damage of the different components in frame of RCC-MR 2007 code. Assessment of S type damage (ratcheting and fatigue).

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MECHANICS AND OPTOMECHANICS

CRYOGENICS AND VACUUM

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

MARKETS

AUTOMOTIVE

ENERGY

NUCLEAR

OIL & GAS

CERTIFICATIONS

ISO-9001

Company name:	**OBEKI ELECTRIC MACHINES S. L.**
Address:	C/ Baratzondo, 3. Pol. Industrial Apatta-Erreka. 20400, Ibarra (Guipúzcoa)
Web:	http://www.obeki.com
Turnover:	11.20 million EUR in year 2023
Employees:	48 in year 2023
SME:	YES
Phone:	[+34] 943 679 900
Email:	info@obeki.com

A set of OBEKI microspeed brake-motors manufactured for a French nuclear power plant

ACTIVITY AND SKILLS

Obeki calculates, designs, manufactures and tests low voltage electric generators and motors for applications with special requirements such as non-standard speed and torque requirements, harsh ambient conditions, vibration, shock, seismic certification for nuclear power plant installations, etc.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] F4E-OPE-285 Supply of Slewing Motor for DCHLB Tokamak/Assembly Hall Cranes (2016)
  Supply of electric motor. Design, manufacturing and testing of a 2,1 kW three phase electric motor for slewing movement for DCHLB Tokamak/Assembly Hall Cranes

Motor supplied within the contract [ITER] F4E-OPE-285 (2016)
Supply of Slewing Motor for DCHLB TokamakAssembly Hall Cranes

BIG SCIENCE AREAS

FUSION | ASTRONOMY

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

MARKETS

DEFENSE | OIL & GAS | NUCLEAR | ENERGY | NAVAL | AERONAUTICS

CERTIFICATIONS

UNE-73401 | ISO-9001

Company name:	**OBUU TECH S. L.**
Address:	Avenida Gregorio Peces-Barba, 1. Leganés (Madrid)
Web:	http://www.obuu.es
Turnover:	1.00 million EUR in year 2023
Employees:	12 in year 2023
SME:	YES
Email:	admin@obuu.es

ACTIVITY AND SKILLS

Obuu is a fast-growing SME with 3 main legs, focused on Aerospace, Energy, Railway and Big Science sectors:

- Engineering Services: We're problem solver engineers, experts in CAD design, FEM and CFD analyses, and prototyping. We accompany the customer through all the steps of the life cycle of the product, from the idea to the certifications and delivery.
- STOCKWATCH, Logistics Intelligence Cloud Platform: We have an innovative cloud platform for stock optimization, where our clients can link their investment in fixed asset from their maintenance of complex machines (aircraft, train, wind generators, etc) with their systems availability. So they can find the most optimum provisioning strategy, saving money while improving their efficiency.
- AI & Digitalisation: Thanks to our expertise in engineering and software, we are prepared to build very abroad projects linked to Industry 4.0 and IoT, where we put together our data analysis, software implementation, cloud services and machine learning capabilities with our material, processes, standards, and industrial knowledge.


TOOLS4FUSION post-image

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] IO/19/17922/DAL: Lot 7: VVTS Port Shroud Assembly Tools (2019 - 2021)
  OBUU was leader of the consortium with the objective to deliver, from the design to the manufacture, and testing of 3 tools for the assembly of the upper, equatorial and lower port shroud. The main challenge of this contract was to create the most optimal design form the design-to-cost point of view to be able to deliver all the sets within a limited budget. (Participants SOGECLAIR AEROSPACE and SGS).

RELEVANT R&D PROJECTS

- [CAM - RIS3 SME] New algorithm for the optimisation of consumables for maintenance stock (2022 - 2023)
  Project in collaboration with the Operational Research department of Universidad Complutense de Madrid
- [CDTI - MISIONES] OPTIMUS Project (OPTIMUS) (2021 - 2024)
  Optimus is a big scope R&D project in consortium with Airbus, Utingal, Inventia Kinetics, LGAI Technological Center, Metromecánica, where our objective was to develop a system for the automated detection of manufacturing defects on aerospace flight parts through Machine Learning, Computer Vision, Artificial Intelligence and Image Processing techniques in order to reduce the quality inspection times, in collaboration with the CITSEM researching center from Universidad Politécnica de Madrid. This project has been granted by CDTI, supported by Science and Innovation Ministry of Spain, and funded by European Union – NextGenerationEU.
- [GOOGLE STARTUPS] Google for Startups Residency Program (2020)
- [CAM RIS3] TEMACON (2019 - 2022)
  Consortium leaded by Airbus and with participation of FIDAMC, IMDEA, and 3 SMEs. Our work package consists on creating a method of study for some physical properties of the largest carbon fibre part manufactured for an aircraft, by studying deformation and other parameters, and later building a tool to process this information automatically, identifying if the deformation produced by springback is or not in tolerance.
- [H2020] Develop a new stock optimization algorithm to be applied into the mass production sector with the multinational plastics company Greiner Packaging (DATAPITCH) (2019 - 2020)
- [WAYRA] RENFE TRENLAB - Develop of a stock optimization method into railway maintenance with Spanish national operator Renfe (TRENLAB) (2019 - 2020)
- Integration of stock optimisation cloud software into Industry 4.0 and IoT cloud services platform "Predix" (G&E DIGITAL INDUSTRY PROGRAMME) (2018 - 2019)
- [ALSTOM GRABCAD CHALLENGE] Challenge winners consisting in the Redesign the Structural Support of the Metropolis Metro Underframe (2018 - 2018)
- [ESA BIC] Collaboration with European Space Agency to evolve the stock optimisation software into a cloud platform (SaaS) (2017 - 2018)
- [CDTI - NEOTEC] National funding program to start the development of a tool for a stock optimisation software (2016 - 2017)
- [AIRBUS BIZLAB] Collaboration with Airbus to optimise the Initial Provisioning Lists (IPL) of Ground Support Equipment for some of their clients (2015)


Visual inspection

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | MECHANICS AND OPTOMECHANICS | INFORMATION AND COMMUNICATION TECHNOLOGIES | REMOTE HANDLING AND ROBOTICS | ADVANCED MATERIALS AND MANUFACTURING

MARKETS

AERONAUTICS | DEFENSE | SPACE | NAVAL | ENERGY

Company name:	**PACADAR**
Address:	Pº Castellana 259-D. 28046, Madrid
Web:	https://www.pacadar.com/en/
Turnover:	124.80 million EUR in year 2023
Employees:	511 in year 2023
SME:	NO
Phone:	[+34] 915 297 900
Email:	contacto@pacadar.com

ACTIVITY AND SKILLS

PACADAR is a globally recognized leader in the design, manufacture, transportation, and assembly of reinforced and prestressed concrete prefabricated elements.

With 80 years of experience and technological leadership, we offer the most comprehensive range of prefabricated concrete products for the construction of all types of structures, including civil works, industrial buildings, and residential buildings, anywhere in the world.

To achieve this, we have factories and offices in Spain, the United Kingdom, Saudi Arabia, Australia, the United States, Mexico, and Panama.

We are well aware that every project requires a different service, in a variety of environments and countries, which demands a high level of adaptability, either in national or international projects, to provide the greatest possible flexibility in meeting our clients' needs, always honouring our commitment to quality. That is why we offer a Flexible Project Scheme, ensuring that each project is tailored to the specific requirements of our clients. Our Global Presence allows us to operate seamlessly across different regions, bringing our expertise to both national and international projects. Additionally, our On-site Plant capabilities enable us to deliver high-quality solutions directly at the project location, ensuring efficiency and precision in execution.

Pacadar has a strong commitment to research and development (R&D), not only through projects directly aimed at enhancing our technology and innovation processes but also by collaborating in the construction of R&D centers, providing our prefabricated solutions. Our contributions as precast company have been instrumental in several key projects, including:

- The Biotechnological Spin-Off Container Building
- The R&D Building UBE in Puerto Castellón
- Building 7000 of PCTECH, Center for Innovation and Technology Transfer, in Huelva
- Radiotrans Offices in Madrid
- The R&D Center in Nanomachining and Precision Optics

These projects exemplify our dedication to advancing R&D infrastructure and supporting innovation across various sectors. By leveraging our expertise in prefabricated construction, we ensure that these centers are built to the highest standards, fostering an environment conducive to cutting-edge research and technological advancements.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS] Common Shielding System (2020 - 2024)
  In March 2020, PACADAR was awarded throughout an international competitive bidding with the manufacturing of the more 1.500 blocks that conforms the ESS Common Shielding Project. These blocks make up the radiation shielding for the instrument guides of 7 instruments at ESS (BIFROST, CSPEC, DREAM, ODIN, NMX, BEER and MAGIC). PACADAR is contributing to the design and will carry out the manufacturing, delivery and installation overview of the precast concrete shielding blocks under the most demanding requirements of accuracy, tolerances and safety conditions when the ESS is fully operational. The quality of the work carried out by the team involved has meant that, in addition to the pieces that make up the armor, Chopper Team Project has awarded us the design, manufacture and delivery of other parts of special precision (+/-3 mm of dimensional tolerance).
- [ALBA] Synchrotron Light Laboratory Phase II Civil Works ALBA Tunnel in Cerdanyola del Valles (2006 - 2007)
  ALBA is a 3rd generation Synchrotron Light facility located in Cerdanyola del Vallès (Barcelona), being the newest site in the Mediterranean area. PACADAR supplied prefabricated elements for the execution of the roof and the bunker walls. Both the roof and the walls are made of heavy concrete blocks. The blocks were manufactured with precast concrete, in different shapes and sizes. The main coarse aggregate of the concrete is barite (4.47 tn/m3). To reduce dust generation, the concrete blocks have a surface coating. PACADAR was responsible for reviewing the detailed design of the ALBA blocks, preparing the detailed plans, quality control of manufacturing, manufacturing, delivery, supervision, and installation.

RELEVANT R&D PROJECTS

- [CDTI] Experimental validation of new fatigue technology for fiber-reinforced concrete structures subjected to low-frequency cyclic loads (2017)
  The main objective of this project was to advance the research on the fatigue behavior of concrete and determine the evolutionary trend of the material's resistance to cyclic loads, as well as its relationship with other mechanical properties, such as compressive strength. This was aimed at developing a new experimental mathematical model, valid for the design and structural calculation of prefabricated concrete elements with high fatigue demands, including those subjected to low-frequency cyclic loads. To achieve this objective, various testing campaigns were conducted. These aimed to establish the evolutionary trend of concrete's fatigue resistance and its relationship with other mechanical properties (compressive strength) that determine the variability in the material's response when subjected to fatigue stresses.
- Cost effective floating foundation for wind energy production at deep seas (CEFLOWIND) (2014)
  CEFLOWIND is an RIA project that addresses the specific challenge of developing the necessary technology for obtaining wind energy under the LCE02-2015 topic of the Horizon 2020 program. Its name comes from the acronym "Cost-Effective FLOating platform," as it is an offshore system comprising a floating foundation and a wind tower, both made of ultra-high-strength concrete reinforced with a new generation of corrosion-resistant fibers. The main objective of the project was to reduce the costs associated with wind energy production through the innovative development of an integrated offshore system. This system significantly reduces production, installation, operation, and maintenance (O&M) costs for regions where the bathymetry exceeds 50 meters.
- [CDTI] Fiber-reinforced concrete in prefabricated elements for applications with high fatigue requirements (2013 - 2013)
  The primary objective of the project was the design and testing of new formulations of fiber-reinforced concrete. Through a planned study of their mechanical behavior under fatigue and their sensitivity to loading frequency, a numerically validated fatigue model based on experimental data was derived. This model facilitates the calculation of prefabricated structural elements that will be subjected to cyclic loads. The initial focus was on the following highly relevant application fields, which have significant industrial potential: - Onshore and offshore wind energy - Support elements for offshore infrastructure - Support elements for high-speed rail
- [CDTI] Characterization and modeling of the behavior of prefabricated concrete shafts for wind turbines (2011 - 2011)
  The main objectives of the project can be summarized in the following key points: 1) Development of a theoretical method for modeling prefabricated concrete structures for wind turbine towers. 2) Development of a new methodology for the manufacturing, transportation, and assembly of shafts, optimizing the design of the towers with the incorporation of highly innovative solutions, mainly regarding the use of prestressing technology, materials used, and transverse and longitudinal joint systems. 3) Construction of a full-scale prototype at any height and generator power to validate both the developed theoretical model and the methodology for the manufacturing, transportation, and assembly of the new towers.
- [CDTI] Development and industrial implementation of techniques for determining the orientation and effectiveness of fibers in metal fiber-reinforced concrete (2010 - 2011)
- Ultrasonic propagation velocity in prefabricated elements with fiber-reinforced concrete for pathology evaluation
- Dynamic analysis of the elastic modulus of slender prefabricated elements subjected to cyclic loads
- Experimental response of high-strength fiber-reinforced concrete to explosive loads
- HYPERLOOP Project
- Design of prefabricated slab track adapted to the Spanish high-speed railway system
- Monitoring of movements in high-rise buildings. Application to Torre Espacio, corporate headquarters of Pacadar


Thame Valley Viaduct_ Pier

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MARKETS

ENERGY

HEALTH

NAVAL

NUCLEAR

OIL & GAS

CERTIFICATIONS

OSHAS 45001

ISO-9001

ISO-14001

Company name:	**PROACTIVE RESEARCH AND DEVELOPMENT**
Address:	Carrer de Ca n'Alzina, 118ª. 08202, Sabadell (Barcelona)
Web:	http://www.proactiverd.com
Turnover:	0.46 million EUR in year 2023
Employees:	9 in year 2023
SME:	YES
Phone:	[+34] 934 222 180
Email:	info@proactiverd.com

PROACTIVE R&D

ACTIVITY AND SKILLS

Proactive R&D provides valuable expertise, equipment and leadership in the field of Research and Development. With skills and capabilities on High precision mechanics, Optomechanics, Complex Finite Element Analyses, UHV design, Cryogenics design, System integration, Procurement of equipment.

Proactive R&D proposes an extremely flexible and collaborative framework according to the customer's needs. We can provide specific support within one single phase of the project, and full end-to-end services from concept design to final verification of the hardware work-packages.

Emittance Metter Unit for MYRRHA project (ESS-Bilbao & SCK CEN)

Vacuum Chamber with Temperature Control System form -150° to 200° for CNA

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS] Design and production of two insertable beam stop (IBS) for the ESS SPK section (2024)
- [ESRF] Supply of a water coolled Secondary Slit System for ID26 beam line (2022)
- [ESRF] Supply of a Sub-microm Possitioning System for ID21 (2022)
- [FAIR - GSI] Supply of a 0.5 mm pitch and 64 wire GRID (2022)
- [ESS BILBAO - SCK CEN] Supply of and Emittance Metter Unit for MYRRHA project (2022)
- [CEA] Supply of a SEM-GRID system for a medical proton LINAC (2021)
- [ESRF] Supply of a 3 axis High Precision Positioning System for 80 kg loads (2021)
- [CIEMAT] Design of tooling for the manufacturing of the coils of the internal dipole MCBXFA (2020)
- [CNA] Supply of a Vacuum Chamber with Temperature Control System form -150° to 200° F (2019)
- [ILL] Supply of a Collimator for Neutros (2019)
- [ILL] Supply of Neutron Shielding for the XTremeD Monochromator (2019)
- [ILL] Final Design and Procurement of an Optical Bench for the instrument XTremeD (2019)
- [ILL] Final Design and Procurement of a Monochromator Support for the Instrument XTremeD (2019)
- [ESS BILBAO] Design and Procurement of 2 Emittance Meter Units for the MEBT of ESS (2018)
- [ESS BILBAO] Design and Procurement of 6 Scrapers for the MEBT of ESS (2017)
- [ESS BILBAO] Design and Procurement of 3 Wire Scanners for the MEBT of ESS (2017)
- [Calar Alto Observatory] Supply of the Optical Mount for the Echelle of CARMENES instrument (2017)
- [ESRF] Suppy of a water cooled Secondary Slits System for ID 21 beam line (2017)
- [Calar Alto Observatory - IAC] Supply of the Optical Mount for the Fiber Exit Unit of CARMENES instrument (2015)
- [ESRF] Supply of a magnetic field measurement system for the Cryogenic Permanent Magnet Undulator (CPMU) (2015)

RELEVANT R&D PROJECTS

- [Spanish Research Agency] Development of a Cryo Preparation Unit able to deliver gas nitrogen in a large range of temperatures (80 – 180 K) with very high stability (few mK)

Wire Scanner instruments for ESS (ESS & ESS-Bilbao)

BIG SCIENCE AREAS

ASTRONOMY

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM

REMOTE HANDLING AND ROBOTICS

MECHANICS AND OPTOMECHANICS

ELECTRONICS AND OPTOELECTRONICS

Company name:	**PROCON SYSTEMS**
Address:	C/ Arquímedes, 26. 08918, Badalona (Barcelona)
Web:	http://www.proconsystems.net
Turnover:	17.03 million EUR in year 2024
Employees:	80 in year 2024
SME:	YES
Phone:	[+34] 934 609 940
Email:	procon@proconsystems.net

ACTIVITY AND SKILLS

With nearly 30 years of experience, Procon Systems has firmly established itself as a leader in advanced control systems, renowned for delivering cutting-edge technological solutions to some of the world's most critical industries, including ITER and CERN. Our deep technical expertise enables us to design and implement highly customized control systems that not only enhance production efficiency but also uphold the highest standards of safety across operational processes and infrastructure.

At Procon Systems, we manage the complete lifecycle of projects with a technical excellence that spans from detailed requirement gathering and system design to manufacturing and flawless on-site installation. Our meticulous approach ensures every phase is executed with precision, adhering to the strictest quality standards.

Our services include:

- Functional safety projects
- Turnkey instrumentation and control projects
- I&C cubicle design and fabrication
- Engineering services

We also specialize in key technological areas, including automation, industrial networks, Industry 4.0, IIoT (Industrial Internet of Things), software development, and industrial cybersecurity—delivering sophisticated, cutting-edge solutions that streamline industrial processes, enable smart manufacturing, and safeguard critical infrastructure against cyber threats.

At Procon Systems, we are committed to driving innovation and delivering unparalleled value, helping our clients achieve their objectives and advance their operations with state-of-the-art technology that sets new industry standards.

CERN PPS SPS Test Platform

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESO] Framework for for the Construction of Electronic Cabinets (2025 - 2026)
  The project involves manufacturing, assembling, programming, verifying, and delivering electronic cabinets for the European Southern Observatory (ESO). It includes creating mechanical and electrical drawings, procuring components, and conducting Factory and Site Acceptance Tests
- [ITER ORGANIZATION] Site-wide central supervision of ITER fire protection systems (2024 - 2030)
  The project supervises and coordinates ITER's fire protection systems, ensuring occupational and environmental safety. It involves the Central Safety System for Occupational Safety (CSS-OS), which manages fire detection and protection monitoring functions, interfaces with fire panels, and displays monitoring information on workstations.
- [ITER ORGANIZATION] PLC Expert support for PBS46 (2024 - 2025)
  The project provides technical support for PBS46, focusing on PLC development and integration of plant interlock systems with the Central Interlock System
- [ITER ORGANIZATION] Fire Protection Central System (2024 - 2029)
  The project involves designing, manufacturing, and testing new central cubicles for fire monitoring. It integrates with the CSS-OS, covering activities like cubicle design, procurement, and Factory and Site Acceptance Tests.
- [CERN] Provision of Project Development and Maintenance of Industrial Controls and Safety Systems Services (2023 - 2027)
  The project involves developing and maintaining industrial control and safety systems. This includes designing and manufacturing the systems, integrating them with existing infrastructure, installing them on-site, and conducting thorough testing and commissioning. The project ensures compliance with safety standards and regulations, such as IEC 61511 for functional safety.
- [ITER ORGANIZATION] Supply Contract for SCWS-TCWS I&C cubicles (2021 - 2025)
  The project involves supplying control cubicles for SCWS and TCWS systems, including design, fabrication, testing, and delivery to the ITER site.
- [F4E] Provision of System, Instrumentation and Control Engineering Support. (2021 - 2028)
  Provision of services in the field of conventional Instrumentation and Control System Engineering aiming to support F4E with the preparation of technical specifications, the follow-up of contracts and the acceptance of systems
- [ESO] Supply of M1 Electronic Cabinets (2020 - 2022)
  Procurement of parts, fabrication and verification, FAT's of 132 cabinets for the ELT Primary Mirror (M1) Cells.
- [ITER ORGANIZATION] Central Safety System for Occupational Safety (CSS-OS) (2019 - 2029)
  Design, fabrication, and commissioning of the CSS, which coordinates the locally distributed Plant Safety Systems (PSS) that are not part of the CSS. The CSS shall participate in the protection of people and the environment for the entire ITER site.
- [ESO] 8-M Coater System Overhaul (2019 - 2020)
  The main purpose of the 8-m coater control system overhaul was to migrate the as-used obsolete control system.
- [CERN] Personnel Protection Systems for the SPS (2017 - 2022)
  Supply, installation, testing and commissioning of the new Personnel Protection System (PPS) for Super Proton Synchrotron (SPS) at CERN.
- [ALBA] Design and implementation of the Personnel Safety Systems (PSS) (2008 - 2025)
  Supply, installation, testing and commissioning of the Personnel Safety System (PSS) for ALBA Synchrotron.

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AUTOMOTIVE | ENERGY | NAVAL

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-27001 | ISO-45001

Company name: **QUASAR SCIENCE RESOURCES S.L.**
Address: Camino de las Ceudas, 2. 28232, Las Rozas de Madrid (Madrid)
Web: https://www.quasarsr.com
Turnover: 1.77 million EUR in year 2024
Employees: 21 in year 2024
SME: YES
Phone: [+34] 918 197 120
Email: contact@quasarsr.com

ACTIVITY AND SKILLS

Quasar Science Resources, S.L. is a recently formed private company that provides consulting Software and System Engineering services for Research and Development projects. Quasar provides high quality tailored-made services targeted at Research Centres, Universities and Private Companies looking to expand their activity domain.

We operate in Madrid (Spain) area but our customers include national and European partners both in the public and private sectors. Quasar has strong expertise in scientific software development and data reduction techniques, handling and exploitation of scientific databases, archive engineering and data mining, computer systems engineering, including virtual machine infrastructure, network, data storage and backup. Quasar has ample experience working in international collaborations in the fields of ground and space-based scientific astronomical observatories.

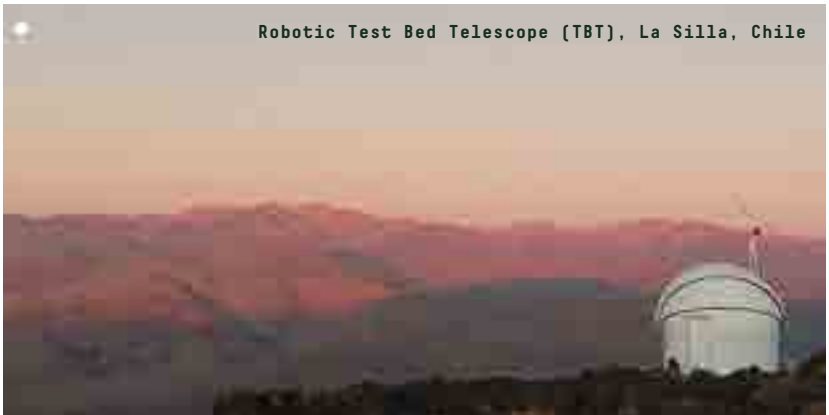
Quasar has presence at the European Space Astronomy Centre (ESAC) within the Frame Contracts for Industrial Support to ESA. The work at ESAC focuses on four main areas: Science Operations Support, Software Engineering, Development and Maintenance Support, IT Support to Scientific Missions and the ESA Science Data Centre.

In 2018 Quasar was accepted into the ESA Business Incubation Centre (BIC) Madrid Region for two years with the SIMBAD project. SIMBAD (Sentinel Imagery MultiBand Analysis and Dissemination), is a module of our Scientific Exploitation Platform dedicated to the processing of Sentinel imagery and the extraction of EO-based products.

Quasar has expertise in the field of SSA, especially in the field of optical robotic telescopes.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [YEBES OBSERVATORY] Technical assistance for software development and the implementation of a system for the exploitation, visualization, and public service of the data from the 40m radio telescope at the Yebes Observatory (2023 - 2025)
  Financed by the Recovery, Transformation, and Resilience Plan funded by the European Union Next Generation EU.
- [ESA] S1-PD-06.2 - Software Development for NEO Observational Activities (2022 - 2024)
  To improve and maintain the ESA's Test-Bed Telescope's (TBT) software; and to develop a service to support astronomers with ArtSat/NEO identification.
- [YEBES OBSERVATORY] Technical assistance for the commissioning of an astronomical and geodesic correlator for RAEGE and EU-VGOS at the Yebes Observatory (2022 - 2023)
  Procurement of technical assistance for the implementation of an astronomical and geodetic correlator for RAEGE and EU-VGOS at the Yebes Observatory as part of the YNART project co-financed with FEDER funds.
- [ESA - DEIMOS SPACE] S1-PD-10 Software Maintenance (2021 - 2024)
  Maintenance, including the provision of support to operations, of the NEOCC for what concerns the continued availability and usage of the NEO data systems.
- [CNES] Share My Space - Automation and autonomous onboard system for collision risk management (2020 - 2022)
  Identify the need and the feasibility of automating the collision risk management process for a wide range of satellite missions.
- [ESA] SSA P3-NEO-I B - Installation and Commissioning of TBT2 in La Silla (2019 - 2022)
  Installation and commisioning of the Test Bed Telescope at La Silla Observatory in Chile.


Robotic Test Bed Telescope (TBT), La Silla, Chile

RELEVANT R&D PROJECTS

- [MICIN Industrial PhD] DIN2024-013348 - Assessment of the Impact of aquaculture activities on the quality of coastal waters using earth observation data. (AQUALIA) (2025)
  The general objective of this project is to employ satellite remote sensing techniques for the development of independent and fully automated routines for real-time detection, characterization, and monitoring of the shallow marine environment, with particular emphasis on industrial sectors such as aquaculture, which have a large-scale, yet unevaluated impact on the environment. Industrial doctorate programme of the Ministerio de Ciencia, Innovación y Universidades, in collaboration with Universidad de Valencia, DIN2024-013348.
- [CAM Industrial PhD] IND2022/BIO-23597 - Development of real-time wildfire risk mapping for the Community of Madrid using remote sensing data. (Risk4Fire) (2023)
  Development of real-time wildfire risk mapping for the Community of Madrid using remote sensing data. Industrial doctorate programme, IND2022/BIO-23597.
- [CAM Industrial PhD] ND2020/AMB-17747 - Evaluation of agricultural systems by means of satellite remote sensing time series and dynamic prediction models (2020 - 2024)
  Evaluation of agricultural systems using remote sensing time series and dynamic prediction models. Industrial doctorate programme, ND2020/AMB-17747.
- [MICIN Industrial PhD] DIN2020-010979 - Algorithms and models to characterize the quality of coastal waters using satellite remote sensing techniques (2020)
  Algorithms and models to characterize the quality of coastal waters using satellite remote sensing techniques. Industrial doctorate programme of the Ministerio de Ciencia, Innovación y Universidades, in collaboration with Universidad de Cádiz, DIN2020-010979.
- [CAM Industrial PhD] IND2019/TIC17146 - Quantum Artificial Intelligence techniques in reinforcement learning (QUARTIC) (2019 - 2024)
  Quantum Computing techniques applied to the Artificial Intelligence field in order to solve industry real problems. Industrial doctorate programme, IND2019/TIC17146.
- [CAM] S2017/BMD-3773 - Genetics and Artificial Intelligence Against Obesity (GenObiA-CM) (2018 - 2021)
  The goal of the project is to develop artificial intelligence, AI, algorithms to utilize socioeconomic, cultural, physical, and nutritional information to predict the risk of obesity and associated health problems. https://genobia.es/
- [ESA BIC - Región Comunidad de Madrid] SIMBAD - A Scientific Exploitation Platform dedicated to the processing of Sentinel imagery and the extraction of EO-based products (SIMBAD) (2018 - 2021)
  SIMBAD (Sentinel Imagery MultiBand Analysis and Dissemination), is a module of our SEP dedicated to the processing of Sentinel imagery and the extraction of EO-based products. SIMBAD integrates the hardware/software infrastructures able to supply the computing and storage resources needed for the exploitation and provision of the tools needed to manage the EO datasets in a distributed environment. SIMBAD facilitates the exploitation of EO data by developing applications to address societal challenges, enabling policymakers, authorities, and environmental agencies to develop long-term strategies as well as to react efficiently to sudden critical situations. Quasar Science Resources s.l. participates in the esa Business Incubation Centre Madrid region. https://simbad.quasarsr.com
- [CAM Industrial PhD] IND2017/IND-7793 - Molecular identification by machine learning analysis of Atomic Force Microscopy images (MAyFAIR) (2017 - 2021)
  Molecular identification by machine learning analysis of atomic force microscopy images. Industrial doctorate programme, IND2017/IND7793.
- [H2020-COMPET-2015] A Gaia and Herschel Study of the Density Distribution and Evolution of Young Massive Star Clusters (STARFORMMAPPER) (2016 - 2020)
  Grant agreement No 687528 - The key aim of the project is to combine data from two of ESA's major space missions, Gaia and Herschel, together with ground-based facilities, to constrain the mechanisms that underlie massive star and star cluster formation. https://starformmapper.org/
- [H2020-MSCA-ITN-2015] MSCA-ITN-2015-EID -STARs that 'R' Young: When do stars form in clustered environments? (STARRY) (2015 - 2020)

Autonomous Emergency System (AES) designed by Quasar for the Robotic Test Bed Telescope (TBT) ESA project

BIG SCIENCE AREAS

ASTRONOMY

TECHNOLOGY AREAS

CONTROL SYSTEMS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

SPACE

CERTIFICATIONS

ISO-9001

Company name: **RDT**
Address: Parque Tecnológico de Bizkaia, edificio 614, planta baja. 48160, Derio (Vizcaya)
Web: https://www.rdtingenieros.com/
Turnover: 97.00 million EUR in year 2023
Employees: 1,785 in year 2023
SME: NO
Phone: [+34] 946 470 647
Email: info@rdtengineers.com

ACTIVITY AND SKILLS

RDT, founded in 2006 in Bilbao (Spain), is an innovative corporation whose scope of action is the development of advanced engineering projects, participating in High-Tech projects where it brings flexibility and competitiveness to the outsourcing strategy of major clients. RDT's experience and the trust of our clients have allowed us to carry out projects in various industrial sectors over the last two decades: Energy & Transport, Aerospace, Automotive, Railway, renewables, Oil & Gas, Defense, IT, Industry Manufacturing, AEC. Currently, RDT has an international presence with its own offices in Spain, Portugal, France, United Kingdom, Denmark, Morocco and Mexico, having developed engineering projects in more than 16 countries around the world.

RDT has grown thanks to its dedication and business diversification. Today, it is a corporation capable of providing innovative, comprehensive and tailored solutions to its clients:

- Engineering Project Management
- Software Engineering
- Digital technologies: Industry 4.0
- Computational Simulation
- Electronics & Photonics
- Digital Transformation & E-learning
- Asset Management & Sustainability
- BIM, Industrial Design & Lighting
- Industry operations management & Sustainability

RDT offers a comprehensive service, tailored to the specific needs of its clients, from technical support to managed services, including talent sourcing and managed services.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] Pipe Design with SP3D and Supports Modelling through LICAD (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] I&C Design FWP Design and Civil Structures Analysis for the Tokamak Complex (Building 11, 14 and 74). (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] I&C Design FWP Design and Civil Structures Analysis for the Tokamak Complex (Building 11, 14 and 74) (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] Piping Design with Catia V5 for the Demonstration Fusion Power Reactor (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] First Wall Panel design studies and project functional support (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] Field Task Force Design of Piping integration using Catia V5 (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] Fusion Power Reactor Structural and Supports Design Studies (2022)
- [ITER ORGANIZATION - EMPRESARIOS AGRUPADOS] ANSYS Analysis for the Tokamak building (2022)
- [ESA - SENER] MELISSA Process Engineering Support (2022)
- [ESA - SENER] SCRIPT Guidance System Development Support (2022)
- [ESA - SENER] SW / Firmware /HW Development services for AURORA and METEOSAT (2022)
- [ESA - SENER] METOP SW development services (2022)
- [ESA - SENER] AOCS/GNC HW development for the JUICE program (2022)
- [ESA - SENER] AOCS/GNC Development for PROBA-3 (2022)
- [ESA - SENER] HW / Firmware Development for EXOMARS, GAIA and ECLID (2022)

RELEVANT R&D PROJECTS

- [HORIZON EUROPE] Easy DC-FOS European project for the development of HVDC cables with voltage above 525 kV (Easy DC) (2024)
- [LIFE PROGRAMME] Innovate technologies to monitor and reduce NonExhaust Emission, particles and microplastics of vehicles and pavements to improve air quality and human health (LIFE NEEVE) (2024).
- [HAZITEK] Innovative fiber optic systems for the monitoring of high-power insulated cables in AC & DC (ZL-2023/0651) (AITXURI) (2023)
- [HAZITEK] IoT system of smart sensors with energy harvesting and drones with artificial vision for the protection of railway infrastructures from a predictive Digital Twin (ZL-2023/00718) (AIOTRAIN) (2023)
- [HAZITEK] Comprehensive solution for the life extension of wind turbine structures through real-time monitoring with advanced artificial intelligence and drones with augmented reality vision (ZL-2023/00616) (ERROTAID) (2023)
- [HAZITEK] Advanced renewable gas hydrogen refueling system for mobility applications (ZE-2022/00038) (AVOGADRO) (2022)
- [HAZITEK] Integration of structural bridge monitoring into the Internet of Things with a digital twin digital twin (ZL-2022/00200) (2022)
- [CDTI] Development of passive EDFA amplifier, integrated in Faraday interrogators (IDI-20210765) (INTERSEN) (2021)
  The main objective of this project is to design and develop the precise technology to reduce the number of fibers required for the interconnection between passive sensors and data acquisition facilitie
- [HAZITEK] Floating Platform, Connector & Cable innovative monitoring solutions (ZE-2021/00042) (FLOAT&M) (2021)
  Development of technologies, products and services to provide a comprehensive solution for Floating Wind O&M through the development of new technologies.
- [HAZITEK] Predictive Maintenance System Development based in Bragg Networks (ZL-2020/00893) (BRAGG)
- Sensor technologies applied to the predictive maintenance of electrical grids (PMEL)
- Predictive Maintenance Platform (PREMAN)
- [HORIZON 2020] Underground cables remote monitoring based on optical sensors. platform (CABLESENS)
- Brillouin Interrogator development oriented to Aerospace Composite Manufacturing
- [CDTI] HV Short-Circuit measuring with optical sensors for Smart-Grid monitoring (INNO-20161052) (PHOSENS)
- [MEIC] Ampacity Predictive System for Dynamic lines monitoring (SPADI)
- [HAZITEK] CMS Blade Monitoring system for Wind Turbines Generators (ZL-2021/00474) (EOMONIT)
- [AEI] Development of innovative solutions for electric vehicle charging with optical current measurement systems (AEI-010500-2021-159) (OPTICHARGER)
- [HAZITEK] Development of an advanced electric current monitoring system based on a fiber optic sensor platform (ZL-2019/00888) (FOCSENS)

Multiplexer Lumiker - RDT Company

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | INFORMATION AND COMMUNICATION TECHNOLOGIES | ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS | DIAGNOSTICS, DETECTORS AND INSTRUMENTS | CIVIL WORKS AND INFRASTRUCTURE

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NUCLEAR | OIL & GAS | SPACE | NAVAL

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-27001 | OSHAS 45001

Company name:	**ROMPAL INGENIEROS S.A.U.**
Address:	C/ Montserrat Roig, 23. Polígono industrial Pedrosa. 08908, L'Hospitalet de Llobregat (Barcelona)
Web:	https://rompal.es/
Turnover:	12.00 million EUR in year 2023
Employees:	50 in year 2023
SME:	YES
Phone:	[+34] 932 618 420
Email:	rompal@rompal.es

ACTIVITY AND SKILLS

ROMPAL is an Electronic Manufacturing Services (EMS) company founded in 1972. Since then, it has been focused on the industrial and scientific sector which allows it to respond to production series of short and large units.

Specialized in high technology and quality. First EMS in Spain that assembles SMD in 1985, BGA in 1999 and also PoP (Package on Package) in 2008.

Ability to assemble all existing packages in the market (PoP, Flip-Chip, ...) and also footprint, up to 01005 in passive components.

To achieve the highest quality, Rompal uses SPI, AOI and Rx machines during the production process. Also, the ability to carry out any type of test (boundary scan -JTAG-, test in circuits, functional test ...) to deliver a final device with all the guarantees.

If necessary, there is the possibility of applying a conformal coating and mechanical mounting.

As Rompal's main activity is focused on EMS, it does not develop R&D projects directly, but can work side by side to provide advice and guidance during the product design phase, to optimize its industrialization.

Front view of the Rompal Facilities

CONTRACTS FOR BIG SCIENCE FACILITIES

- [KM3NET - Granada University] White Rabbit equipment for the Neutrino Telescope under the Mediterranean Sea (2022 - 2026)
- [KM3NET - IFIC] Control and Power circuits (2021 - 2026)
- [KM3NET - CPPM] Control and Power circuits (2019 - 2025)
- [CERN - SEVILLA UNIVERSITY] DAQ-ROC4SENS for CMS Upgrade (2019)
- [CERN] Controllers for high-speed data transmission of collision results (2017 - 2018)
- [CERN] Manufacture of circuits to increase the energy of collisions (2017 - 2018)
- [STARLAB] Equipment to track satellites from land to monitor sea level (2016)
- [CERN] Sensors located in the detectors that discovered the Higgs boson (2007)

Three SMD component assembly lines

BIG SCIENCE AREAS

ASTRONOMY | FUSION

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS

MARKETS

AERONAUTICS | AUTOMOTIVE

ENERGY | NAVAL | NUCLEAR

OIL & GAS | DEFENSE | SPACE

CERTIFICATIONS

ISO-9001

Company name: **SAFRAN ELECTRONICS & DEFENSE SPAIN**
Address: C/ Periodista Rafael Gómez Montero, 2 - Edificio CETIC-UGR, Oficina 5. 18014, Granada
Web: https://safran-navigation-timing.com/
Turnover: 7.90 million EUR in year 2024
Employees: +100 in year 2024
SME: NO
Phone: [+34] 958 285 024
Email: info.spain@nav-timing.safrangoup.com

ACTIVITY AND SKILLS

The headquarters of Safran Electronics & Defense Spain are located in Granada. The division operates as a customer-focused company with more than 15 years of experience in the Spanish market and specialized in Resilient Positioning, Navigation, and Timing (R-PNT) solutions, encompassing both products and services. The company brings extensive expertise in embedded systems, sub-nanosecond time transfer (White Rabbit - IEEE-1588-2019-HA), low phase noise frequency distribution, GNSS simulation, and Inertial Navigation Systems for reliable applications in Aerospace, Defense, Government (ADG), and critical infrastructure sectors such as Fintech, data centers, or science projects.

The company participates from early stages in diverse scientific infrastructures (particle accelerators and distributed radio-astronomy facilities) in Time and Synchronization, as well as frequency distribution.

Our contribution in different scientific infrastructures is the creation of break-through solutions for timing and for advanced control systems and diagnosis in particle accelerators. Among them it is worth mentioning developments such as LLRF, BPM or timing system based on White Rabbit.

Within the particular competences for scientific facilities, the following should be highlighted:

- Design and manufacturing of advanced electronic products: PCBs, Time and RF distribution equipment, costumizable and safety critical platforms.
- Embedded systems programming: DSPs & SoC software, FPGA gateware, drivers development, costumizable firmware for safety-criticial and industrial applications.
- Fast control and system integration: including Hardware (VME, CPCIe, mictroTCA) and Fast Feedback Control System Using FPGA for RF Signals
- Software for control system and remote control based on EPICS

Furthermore, SED Spain solutions for science includes quantum capabilities for compuation and secure data transmission, photonics components and hybrid data & quantum space systems based on disruptive FSOC technologies.

Our expertise:

Resilient PNT:

- Embedded systems
- Timing and Frequency Distribution
- GNSS Simulation
- GNSS Interference, Detection and Mitigation
- Inertial Systems
- Sensor Fusion
- R&D

High Energy Physics:

- Scientific equipment for particle accelerators, fusion reactors and scientific facilities.

Low Level RF Unit

White Rabbit Timing Triggering System

CONTRACTS FOR BIG SCIENCE FACILITIES

- [PLD SPACE] M5 CDHB Avionics TSN System (2024)
  Develops a TSN system for PLD SPACE, based on New Space philosophy, focusing on integrating TSN technologies in space and aviation applications.
- [CEA] Supply of the TITAN Electronic Beam Position Monitor system (2023)
- [UKRI] Supply of a timing and triggering system based on White Rabbit (2023)
- [ALBA] Low Level Radio Frequency (LLRF) (2023)
  Project for the supply of the digital low level radiofrequency system (DLLRF) for the storage ring of the Alba Synchrotron
- [SKAO] Mid & Low Timing Distribution (UTC) Systems (2023 - 2027)
  Design, procurement, manufacturing, integration and commissioning of the MID and LOW telescopes of the Square Kilometre Array Observatory
- [UPC] Reliable TSN services through operator infrastructures (2023)
  Latencies achieved of less than one millisecond. Subcontracted by UPC with Telefónica as a participant, it will influence TSN adoption in 5G/6G.
- [EISCAT] White Rabbit based Time Distribution System (2022)
  Enquiry for White Rabbit based Time Distribution System: *Procurement of WR Switches*
- [F4E] Management specification for the check out and repair of the PSYS of RF modules at LIPAc (2021)
- [ESS BILBAO] Design and supply of eleven local oscillators and two local oscillator distributors for the 352 MHz section of the ESS ERIC accelerator (2020)
- [F4E] Framework contract for the development of new functionalities and support services for LIPAc LLRF (F4E-OFC-093)5 (2018)
- [F4E] Supply of High-Speed digitizer and control system of the beam position monitor for the IFMIF/LIPAc accelerator (F4E-OFC-0911) (2018)
- [CERN] Supply of hardware devices (White Rabbit Switches) (CERN - DO-30856) (2018)
- [CERN] Provision of Electronics Engineering Consultancy Services (CERN - DO-30550) (2018)
- [F4E] Development of new functionalities for LIPAc LLRF (F4E-OFC-0889) (2017)

RELEVANT R&D PROJECTS

- [CDTI - MISIONES] Industrial research in technologies and processes applied to IFMIF-DONES in order to evolve in the fusion program (DONES - EVO) (2024)
- CHRONOS project (2023)
  Enables TSN capabilities via FPGA, including switches and translator nodes for TEU. The system provides synchronization through PTP and a time interface for deterministic transmissions with bounded latency. 5G/6G Telecom.
- [KDT JU] Distributed Artificial Intelligent System (DAIS)
  Faster, more secure, and energy-efficient data processing solutions by combining IoT and AI in distributed systems for applications in Digital Life, Digital Industry, and Smart Mobility. Use case: Power plant with large data flows. TSN enables traffic transmission with different priorities on the same medium and provides a common time reference for various applications.
- [ECSEL] Intelligent Motion Control under Industry4.E (IMOC04.E)
- [CDTI - MISIONES] Industrial research on critical technologies for the operation and maintenance of large scientific facilities applied to IFMIF-DONES to advance on the path of fusion (NEURON-DONES)
- [CHIPS JU] Distributed multi-sensor systems for human safety and health (DISTRIMUSE)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

INFORMATION AND COMMUNICATION TECHNOLOGIES

ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

MARKETS

AERONAUTICS | SPACE | ENERGY | DEFENSE

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**SCHWARTZ HAUTMONT**
Address:	Av. de la Canonja, 9. 43480, Vila-seca (Tarragona)
Web:	http://www.shcm.es
Turnover:	84.91 million EUR in year 2023
Employees:	467 in year 2023
SME:	NO
Phone:	[+34] 977 390 000
Email:	comercialsh@shcm.es

NNO-3 big lift

ACTIVITY AND SKILLS

We specialize in the design, manufacture, and installation of intricate steel structures (including plants, modular units, and unique structures) as well as pressure vessels (such as columns, reactors, and heat exchangers). Our expertise spans across multiple industries, with a primary domain in Oil & Gas (refining, petrochemical, LNG, offshore, and subsea) and Power & Energy (generation and power plants). We also maintain strong and continuous presence in the Big Science and Government sectors.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA] Design of a 35m deep space antenna (2024 - 2025)
  Co-design (structure and mechanical) and pre-fabrication engineering for a new 35m deep space antenna for the ESATRAK network in Malargüe (AR)
- [NRAO] Fabrication of the ng-VLA 18m radio telescope prototype (2022 - 2024)
  Fabrication engineering and manufacturing of the first prototype of the new generation Very Large Array telescope antenna
- [ESA] Design, supply, and installation of a 35m deep space antenna (2021 - 2025)
  Co-design (structure and mechanical), manufacturing, and installation of a new 35m deep space antenna for the ESATRAK network in New Norcia (AU)
- [NASA/JPL] Supply and installation of four (4) off 34m deep space antennas (2011 - 2021)
  Manufacturing and installation of four off 34m deep space antennas for the Deep Space Enhancement project (Canberra (AU) and Madrid (ES))
- [YEBES OBSERVATORY] 40m radio telescope (Instituto Geográfico Nacional) (2002 - 2005)
- [GTC] Supply and installation of 10,4m multimirror telescope (2001 - 2005)
  Fabrication engineering, manufacturing, and installation of the dome and mirror support structures of the Gran Telescopio de las Canarias (GranTeCan).
- Other projects (pre-2000) (2000)
  [Carnegie Inst] - Magellan II Telescope enclosure, fabrication (1998-1999) [Carnegie Inst] - Magellan I Telescope enclosure, fabrication (1994-1996) [NASA / JPL] - Supply and installation of one 34m deep space antenna (1995-1997) [NASA / JPL] - Supply and installation of one 34m deep space antenna (1994-1996)[CARA] - Keck Telescope (California Ass. for Research in Astronomy) (1989) [NASA / JPL] - Supply and installation of one 34m deep space antenna (1986) [NASA / JPL] - Supply and installation of one 34m deep space antenna (1985)

BIG SCIENCE AREAS

ASTRONOMY
FUSION

TECHNOLOGY AREAS

ADVANCED MATERIALS AND MANUFACTURING
CIVIL WORKS AND INFRASTRUCTURE
MECHANICS AND OPTOMECHANICS

MARKETS

OIL & GAS
SPACE
ENERGY
NUCLEAR

CERTIFICATIONS

ISO-9001
ISO-14001
ASME
ISO-45001

Company name:	**SCIENCE ENGINEERING ASSOCIATES S.L.**
Address:	Av. Atenas 75. 28232, Las Rozas de Madrid (Madrid)
Web:	http://www.seaingenieria.es
Turnover:	0.05 million EUR in year 2022
Employees:	2 in year 2022
SME:	YES
Phone:	[+34] 695 183 077
Email:	info@seaingenieria.es

ACTIVITY AND SKILLS

Highly specialized in the analysis of neutron and radiation transport problems by the use of three-dimensional Monte Carlo tools, mainly MCNP familiy of codes. Main capabilities in the area of fusion include:

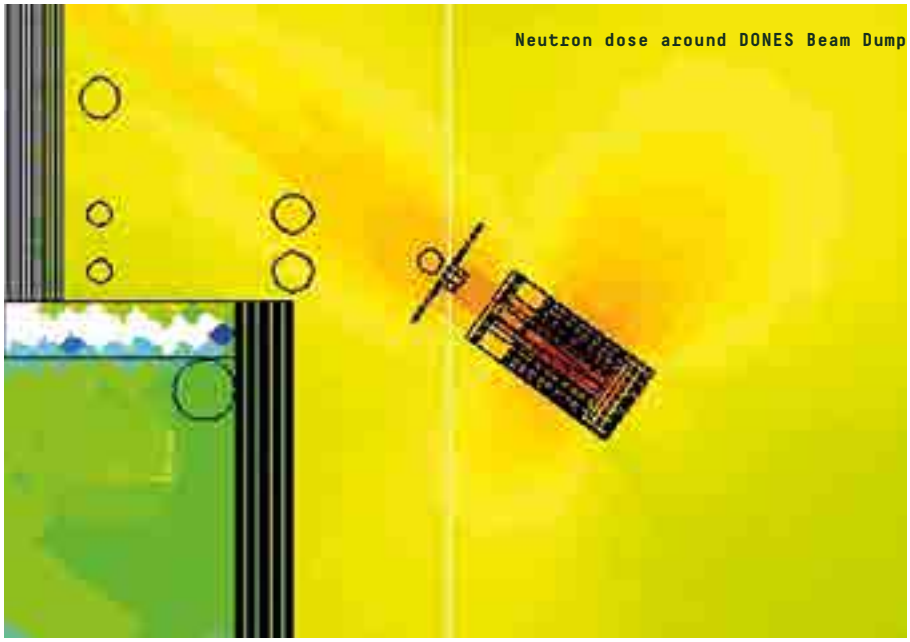
- Design of shielding elements, design of buildings layout for the installation of radiation sources, design of shielding materials for fusion spectrum
- Analysis of neutron damage, neutron activation, neutron heating and gas production
- Analysis of residual dose at shutdown due to the neutron activation of the shielding materials and of the equipment near the source. Waste Management
- Determination of residual dose maps. Design of shielded containers
- Licensing of Nuclear and Radioactive Facilities

CONTRACTS FOR BIG SCIENCE FACILITIES

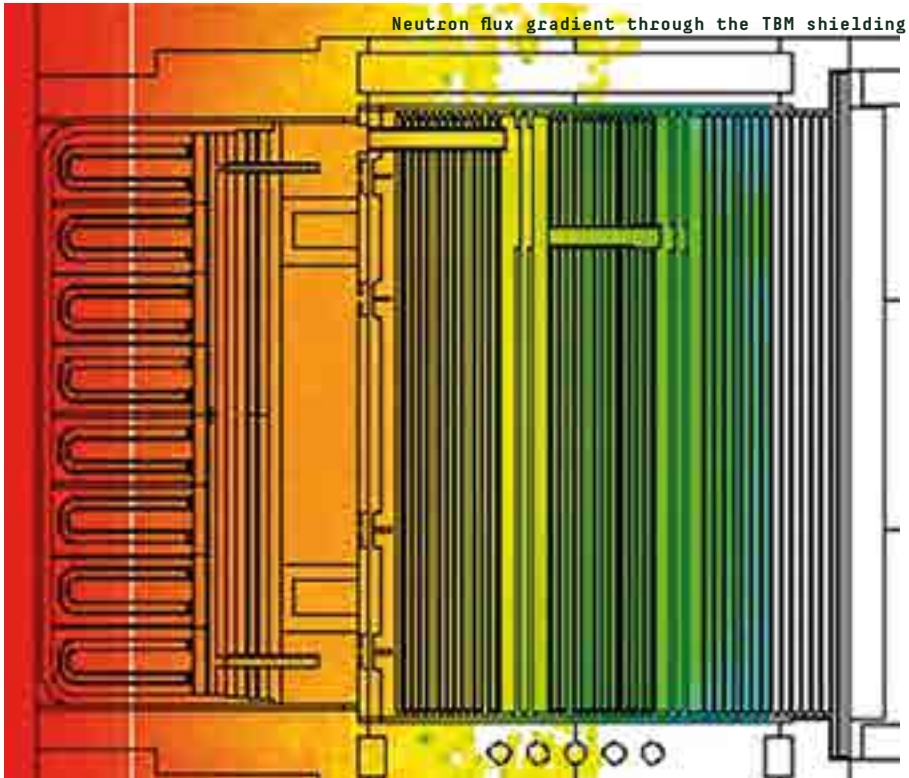
- [ITER ORGANIZATION] Neutronic analysis for H-alpha, CXRS Edge and Dust Monitor diagnostics systems (2020 - 2022)
  Analysis of neutronic damage and heating rate in the vessel inner surface and superconducting magnets due to a cutout in a shielding module around HNB3. Reduction of damage and heat rate in the molibdenum first mirrors by retracting them off plasma in CXRS Edge system.
- [CIEMAT] Support in neutronic analysis services for the IFMIF-DONES safety design (2020 - 2022)
  Preparing the Licensing of the DONES Phase I based on the experience of LIPAc in Japan. Analysis of skyshine at the wall facility. safety design for complementary research lines.
- [LSC] Shielding design and licensing as Radioactive Facility (2019)
  Design of the room shielding and the characteristics of the storage facility for radioactive sources of the Canfranc Underground Laboratory. Preparation of the documentation for the licensing process with Spanish Regulator
- [CIEMAT] Preliminary design of IFMIF beam dump (2016 - 2017)
  Conceptual design of the IFMIF facility defining the thickness of the building walls around and the ceiling over accelerator beam dump. Calculation of dose at operation and after shutdown. Definition of a shielding device to reduce the activation in front of the beam dump opening
- [F4E - IDOM] Shielding design and residual dose analysis for European TBM (2013 - 2014)
  Design of the shield layout for the European Tritium Breeding Modules intended for installation in Equatorial Port Plug #16 of ITER. Includes the study of the different shielding material options, different layouts for the coolant pipes through the shielding, the calculation of the activation of the shielding itself and of the surrounding structural elements and of the equipment located nearby and the final calculation of the residual dose after shutdown.

RELEVANT R&D PROJECTS

- [ITER] Design of shielding material for Diagniostics modules based on vitrified B4C (2016 - 2017)
  Development of a shielding material based on boron carbide with the use of a binding made of boron silicate. Coordination of manufacturing and test performance. Design of the composition and analysis of the shielding effectiveness in a generic diagnostics module. Impact on waste disposal according to French regulation.



Neutron dose around DONES Beam Dump



Neutron flux gradient through the TBM shielding

BIG SCIENCE AREAS

FUSION

TECHNOLOGY AREAS

REMOTE HANDLING AND ROBOTICS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

MARKETS

NUCLEAR

SPACE

Company name:	**SENER AEROESPACIAL S. A.**
Address:	C/ Creu Casas i Sicart, 86-88 - Parc de l'Alba. 08290, Cerdanyola del Vallès (Barcelona)
Web:	http://www.group.sener
Turnover:	135.00 million EUR in year 2023
Employees:	1,050 in year 2023
SME:	NO
Phone:	[+34] 932 283 300
Email:	aeroespacial@aeroespacial.sener

ACTIVITY AND SKILLS

SENER is a private engineering and technology group founded in 1956. It seeks to offer its clients the most advanced technological solutions and enjoys international recognition thanks to its independence and commitment to innovation and quality.

SENER Aeroespacial is the company inside the group for Space, Defense and Science markets with long tradition in mechanical and radio-frequency systems with the incorporation of Tryo Group in 2019. In the field of Large Scientific facilities, SENER Aeroespacial is recognized for its capability to perform multi-disciplinar projects in critical mechanisms, opto-mechanics, instrumentation, electronics and SW and large mobile structures, actuators and control infrastructures.

ELT M2 Cell

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESA] Comet Interceptor: Electronics for EnVis/CoCa/ OPIC/MANIaC Instruments (2023)
- [F4E] Centrifuge Accelerator for JT60SA Pellet Launching System (2022)
- [ESO] ELT M1 Segment Manipulator. Mechanism to handling M1 mirror segments (2021)
- [EST - IAC] M1 Cell. Preliminary design for the EST 4m M1 mirror and support (2021 - 2022)
- [ESO] ELT M5 Cell. Tip-tilt and Aligment mechanisms for 2.7m mirror (2020 - 2024)
- [ESA] ARIEL: M2 Mirror Cryogenic Mechanism (2019)
- [ROSCOSMOS - MICIN] WSO: Far UV Front End Electronics (2018 - 2024)
- [ESO] ELT M2 and M3 Cells. Mechanisms for 4m and 3.5 tons mirrors (2017)
- [ESA] JUICE: Medium Gain Antenna, Magnetometer Boom and JANUS/GALA Instruments Electronics (2016 - 2020)
- [IAC/ING] WEAVE Prime Focus Optical Corrector and Translation System - William Herschel Telescope (2015 - 2020)
- [ALBA] X-Ray Mirror Bender with nanometre correction (2014 - 2018)
- [CIEMAT] Participation in the design and supply of the L3 experiment for LEP (2013 - 2016)
- [CEFCA/Univ Sao Paolo] JPCam Actuator System. High Precision Hexapod at Javalambre Observatory (2012 - 2015)
- [F4E] Micromechanical analysis for the Pre-compresion Rings (2012 - 2019)
- [F4E] Engineering works of the TB08. ITER Site Infrastructure works (2011 - 2015)
- [ESA] SOLAR ORBITER: Antennas & Instruments Subsystems, Booms, EPD/SO-PHI (2010 - 2018)
- [ESO] ALMA radiotelescopes, Amplitude Calibration Robotic Arms: 70 units (2008 - 2012)
- [ESO] E-ELT M5 Field Stabilisation Unit Conceptual design and Demonstrator (2007 - 2010)
- [ESO] VLT GRAAL Main Assembly. Rotator with Adaptative Optics (2007 - 2010)
- [ESS] Studies for ESS preparatory phase and auxiliary equipment (2006 - 2012)
- [GTC] EMIR instrument DTU & CSU Electronics and Control in cryogenics (2005 - 2015)
- [ESO - UK ATC] VISTA Telescope M2 Unit (2002 - 2006)
- [GTC] M2 Drive System. Hexapod and Tip-tilt mechanism (2000 - 2005)
- [ITER ORGANIZATION - EFDA] Remote Handling design studies: Cassette Toroidal Mover (2000 - 2005)

RELEVANT R&D PROJECTS

- [CDTI - MISIONES] Fusion Future. Remote Handling and diagnostics systems (2020 - 2024)
- Ground Telescopes Mirror Cells actuating systems (internal project) (2018 - 2025)
- X-Ray mirror Bender detailed design and prototype (internal project) (2015 - 2016)
- [CDTI] FUSKITE: Tritium recovery experiment Testing (CDTI and internal project) (2011 - 2015)
- [FP7] European Solar Telescope M2 Drive System (2007 - 2010)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE | CONTROL SYSTEMS | CRYOGENICS AND VACUUM | ELECTRICAL AND POWER ELECTRONICS | INFORMATION AND COMMUNICATION TECHNOLOGIES | ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS | MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | SPACE | NUCLEAR | DEFENSE

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-9100

Company name:	**SENER TAFS, S. A.**
Address:	Carretera de Campo Real Km. 2,100. 28500, Arganda del Rey (Madrid)
Web:	http://www.group.sener
Turnover:	41.70 million EUR in year 2023
Employees:	231 in year 2023
SME:	YES
Phone:	[+34] 918 760 699
Email:	info@aeroespacial.sener

ACTIVITY AND SKILLS

Since 1974, SENER TAFS, S.A. (a SENER AEROESPACIAL S.A. company) specializes its activity in the design, industrialization, qualification, manufacturing, tests, commercializing antennas and RF passive components, based on the use of coaxial or waveguide techniques, for several applications on the science, defence, air traffic control and broadcasting business areas, providing customized and turkey solutions and services for customers placed all over the world.

Our current resources and capabilities have been strongly developed over the years leading us to today's market leadership position, with capabilities to manage each project from conceptual design, through manufacturing to on-site installation and commissioning.

Principal products and solutions: complex RF systems for industrial and scientific applications (as particle accelerators or fusion laboratories) customized to the requested environment, RF components and accessories, complete radiating systems (SSR and PSR antennas and pedestals) for primary and secondary air traffic control radars, complex custom-made broadcasting antenna systems, filters and channel combiners for broadcasting purposes and turnkey broadcasting system solutions. We base our high-value-added competitive position on the control of key technology in the markets in which we operate, allowing it to meet the needs of its customers in an innovative, flexible, and cost-efficient way.

Within the scientific business area, SENER TAFS designs and produces equipment for Big Science facilities, such as particle accelerators or fusion laboratories, offering a complete high-technology radiofrequency and electrical product portfolio covering RF transmission lines (coaxial or waveguide), and their accessories (elbows, directional couplers, adapters...) and RF passive components, (cavities, filters, jumper cables, patch panels, RF power couplers for superconducting cavities, combiners for low power SSA, etc.). All products are qualified to work under both standard environment, vacuum conditions and cryogenic or radioactive environments. SENER TAFS's organizational structure, 100% focused on engineering, is optimal for adapting the final characteristics to the specific needs of each project, allowing a rapid and reliable response to the specific requirements of each client.

Resonant-Cavity Combiner for SSAs

Manufacturing Premises for RF Waveguide Manufacturing

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESS BILBAO] Design and Supply of waveguide components for RF distribution networks of RFQ and DTL cavities (2018 - 2021)
- [ESS] Supply of WR2300 straight runs, E elbows, H elbows , Full-height and half-height (2017 - 2019)
- [CERN] Supply of coaxial transmission lines and accessories, adapters and measurement couplers in sizes between 1 5/8" and 6 1/8" (2017 - 2024)
- [CERN] Manufacturing, Integration and Cabling of Output Filters and High Frequency (HF) Transformers for converter R2E-LHC (2017 - 2019)
- [CERN] Several supplies of waveguide and coaxial transmission line components (2017 - 2022)
- [ALBA] Supply of a WATRAX wavw-guide to coaxial adapter, to connect the RF power source to Storage Ring and Booster cavities (2017 - 2021)
- [ITER ORGANIZATION] Supply of several junction boxes for electrical and control cables in hazard environment (2016 - 2016)

RELEVANT R&D PROJECTS

- [CDTI-MISIONES] Industrial research in technologies and applied processes for IFMIF-DONES, oriented to the fusión programme DONES-EVO (2021 - 2024)
  Design of advanced power couplers, test box, flexible RF transmission line, T-stub and several components to build a combiner based on a resonant cavity, beyond the current limits.
- [CDTI-CIEN] Accelerators and associated technologies for large research infrastructure (2018 - 2022)
  Design of an advanced low loss high RF power combiner based in a resonant cavity. The combiner will allow adding more than 100 high power RF inputs in one output reducing the insertion losses and maximizing the efficiency beyond the current limits.

BIG SCIENCE AREAS

ASTRONOMY

PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

MARKETS

AERONAUTICS NAVAL

DEFENSE NUCLEAR

CERTIFICATIONS

ISO-9001 ISO-45001

Company name:	**SGENIA INDUSTRIAL**
Address:	Avenida Zumalakarregi, 48. 46008, Bilbao
Web:	http://www.sgenia.com
Turnover:	0.90 million EUR in year 2023
Employees:	9 in year 2023
SME:	YES
Phone:	[+34] 916 306 388
Email:	sgenia@sgenia.com

ACTIVITY AND SKILLS

SGENIA INDUSTRIAL is a company specialized in the engineering and manufacturing of products and components in different activity areas like Energy, Aerospace and Defence and Industrial. In all these sectors different fields are worked. SGENIA INDUSTRIAL develops, promotes and executes industrial "based-on-technology" projects and works for large European scientific facilities (ITER, ESA,...) and is also involved in international partnerships together with the strongest European research centers and universities.

SGENIA INDUSTRIAL designs, manufactures and tests robotic equipment. Sgenia has capability of full mechanical and electronic design, as well as of development and integration of embedded sensors on robots. Extreme conditions robots have been manufactured for nuclear and military environment. Sgenia develops the control systems and our software department has experience in developing rich graphical interfaces, high quality visualization and augmented reality to assist robot monitorization.

Engineering Capabilities: 1) Thermal, Mechanical and Electrical design of components, devices and equipment, 2) Engineering for ultra and high vacuum, cryogenic and special gasses installation, 3) Pressure equipment services: modelling, design and manufacturing

Manufacturing capabilities: 1) High accuracy machining of metallic and ceramics components, 2) Specials alloys and materials (Inconel, tungsten, ceramics,...), 3) TIG, Brazing, EBW and Laser welding for UHV conditions, 4) Vacuum services: outgassing test and leakage detection in UHV conditions

Advanced software development: 1) Advanced algorithms (machine learning, tomography algorithms,...), 2) Sensor design and integration

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] Manufacturing ITER 55.AG Diagnosis Coils (2023)
  Manufacturing 55.AG diagnosis coils for ITER. Main tehcnologies are high precision machining under UHV compatible *condition and special brazing process*
- [ITER ORGANIZATION] ITER Manufacture Connection Assembly for CER TF-19 (2021 - 2022)
  Manufacturing, inspection and test procedures for the supply of the mechanical connection assembly for the CER-TF19 components for ITER Continuous External Rogowski diagnostics.
- [F4E] ITER Supply of 450 Mechanical Platforms for Diagnostics Magnetic IVCs F4E-OPE-0852 (2018 - 2024)
  The purpose of these platforms is to provide mechanical support, protection and electrical connectivity for the sensors, which incoporate diagnostics sensors
- [ESA] ESA Plasma Bridge Neutralizer based on Radio-Frequency (2017 - 2018)
  Development of a cathode-less RF neutralizer, RF-PBN, based on an inductive coupled RF-plasma discharge neutralizing element
- [ITER ORGANIZATION] ITER Continuous External Rogowsky Coils (2015 - 2017)
  Supply of 6 CER coils, a sensor designed to measure current from 0 to 20MA with a cut-off frequency of 100 Hz, to be installed on a large steel structure housing the main magnets of the ITER tokamak and enclosing the ITER plasma and vacuum vessel
- [F4E] E006 ITER Diagnosis Pressure Gates (2012 - 2014)
  Design and optimization of Diagnosis Pressures Gate (DPGs) for the main vacuum vessel of the ITER

UHV Magnetic Diagnosis Sensor

BIG SCIENCE AREAS

- ASTRONOMY
- FUSION
- PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

- ELECTRONICS AND OPTOELECTRONICS
- ADVANCED MATERIALS AND MANUFACTURING
- CRYOGENICS AND VACUUM
- DIAGNOSTICS, DETECTORS AND INSTRUMENTS
- REMOTE HANDLING AND ROBOTICS
- MECHANICS AND OPTOMECHANICS

MARKETS

- ENERGY
- HEALTH
- NUCLEAR
- SPACE

CERTIFICATIONS

- ISO-9001
- ISO-14001

Company name:	**SOGECLAIR AEROSPACE, S.A.**
Address:	C/ Francisco Gasco Santillán 2B. 28906, Getafe (Madrid)
Web:	http://www.sogeclair.com
Turnover:	3.36 million EUR in year 2023
Employees:	63 in year 2023
SME:	YES
Phone:	[+34] 916 652 870
Email:	comdir.sgae@sogeclair.com

SOGECLAIR

ACTIVITY AND SKILLS

SOGECLAIR is an international leader in the design, manufacturing and integration of high added value solutions in the fields of aeronautics, space, science installations, civil and military transportation systems.

We are located in Spain, France, Germany, UK, North America and Tunisia. In Spain, SOGECLAIR aerospace S.A. has developed different projects in the frame of R&T and Big Science Installations appling the group quality system and policies to ensure the integrity of the project.

We are recognized experts in:

- Mechanical Design and manufacture of structures and systems, tooling for Nuclear/Energies Industry, Design and Manufacturing for pipelines and Systems Installations
- Simulation and stress analysis
- Manufacturing engineering and support
- Configuration management at program, engineering and industrial levels
- Design and manufacturing of aircraft interiors
- Design and manufacturing of onboard and simulated equipment
- Thermoplastics
- Additive manufacturing
- Simulation and Training solutions

Through our technical expertise of big volume projects and our all-integrated resources SOGECLAIR can present an efficient end-to-end offer to meet customer needs in Big Science Installations domain.

Other certifications: EN-9100 extended ISO-9001 requirements for Aerospace Industry

SOGECLAIR ITER project - Equatorial render

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION - OBUU TECH] IO/19/17922/DAL: Lot 7: VVTS Port Shroud Assembly Tools (2019)
  Awarded with this contract with the objective of delivery, from the design to the manufacture, and testing of 3 tools for the assembly of the upper, equatorial and lower port shroud. The main challenge of this contract is to create the most optimal design form the design-to-cost point of view to be able to deliver all the sets within a limited budget.
- [ITER ORGANIZATION] Assembly Processes, Equipment and Machining Contracts supplier approval process (2019)
  We were prequalified as Lead contractors for ITER Assembly Processes, Equipment and Machining Contracts Lot6 (Lifting Equipment and Related Accessories) and Lot7 (Assembly Equipment)

RELEVANT R&D PROJECTS

- [HORIZON 2020 – Clean Sky] HYGIEIA Project (HYGIEIA) (2020 - 2022)
  The objective of the HYGIEIA project is to design and manufacture a greywater container with reduced biofilm growth, based on appropriate surface coatings. HYGIEIA evaluates two surface coating technology solutions that incorporate broad-spectrum antimicrobial materials plied through wet and dry approaches: nano-particle paints and physical vacuum coatings (PVD).
- [LAB4PYMES – CAM] iceAIs Project (iceAIs) (2020 - 2021)
  Project developed in cooperation with the Carlos_III University of Madrid. Artificial Intelligence and Neuronal networks applied to aerospace runway conditions. The technical ambition of the project is to develop a pilot test of a system based on a neural network and optical sensor technology from UC3M that will be capable of processing significant input data related to the parameters that influence the presence of ice on airports pavements, in order to carry out an automatic real-time assessment of the level of risk and classify it according to the RWYCC codes of the harmonized Runway Condition Assessment Matrix (RCAM).
- [HORIZON 2020 – Clean Sky] HEFESTO Project (HEFESTO)
  The goal of the HEFESTO project has been to develop a novel multi-layer coating that effectively thermally insulates and flameproof CFRP to withstand operational conditions and fire hazards in the immediate area of a helicopter engine.

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | ENERGY | NAVAL | NUCLEAR | DEFENSE | SPACE

CERTIFICATIONS

ISO-9001

Company name: **SUPRASYS**
Address: Av. Lehendakari Aguirre, 11, 7º Dpto. 7. 48014, Bilbao
Web: http://www.suprasys.es
Turnover: 0.37 million EUR in year 2023
Employees: 9 in year 2023
SME: YES
Phone: [+34] 946 855 837
Email: suprasys@suprasys.es

ACTIVITY AND SKILLS

SUPRASYS is a technology-based company with wide expertise in the fields of cryogenics, vacuum and superconductivity. Its capacities are focused in multiphysics analysis, electromagnetic systems and laboratory instrumentation and testing.

It is oriented to give support in technical challenging projects to Large Scientific Facilities, Universities, Research Institutes and Enterprises for Big Science Industry. SUPRASYS also gives support for the whole process of technological solutions development.

3D FEM model of a Mars atmosphere simulation chamber

CONTRACTS FOR BIG SCIENCE FACILITIES

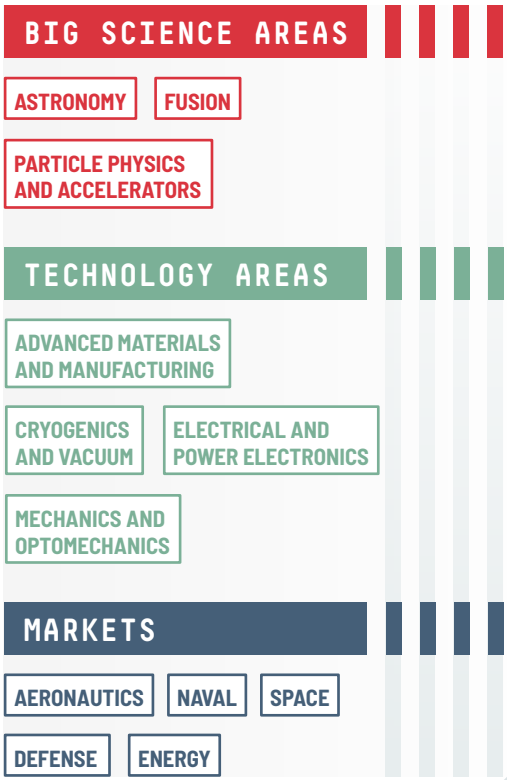
- [Centro de Física de Materiales (CFM - MPC)] Development of a calorimeter for the neutron environment (2023)
  Development of a high-sensitivity isothermal calorimeter specifically designed for its use in-situ during neutron experiments. The assembly of this novel sample-environment equipment combines high-precision isothermal calorimetry with the capability to collect high-quality neutron data at high-flux facilities like the ISIS Pulsed Neutron & Muon Source or the Institut Laue-Langevin. The development has been made in collaboration with the Material Physic Center from the conceptual design to the manufacturing of the first prototype.
- [ITER ORGANIZATION - AVS] Electromagnetic analysis for the Charge-Exchange Recombination Spectroscopy - CXRS (2022)
  Includes In-vessel and Ex-vessel components, from PDR to FDR
- [ITER ORGANIZATION - BERTIN TECHNOLOGIES] Thermo-mechanical analysis for the DIP Active Doglegs (2022)
  Required to ensure structural integrity under normal and accidental conditions and deformations under normal conditions as regards to the alignment requirements of the optical beams.
- [F4E - ALTER Technology] MSDL Magnetic Shield calculation and design (2022)
  Calculation and design of the magnetic shielding of the Mass Spectrometer Leak Detection (MSLD) units, from the conceptual design to the manufacturing drawings of the magnetic shield.
- [INFN - ANTEC] Calculation of solenoid for C-Band gun (2022)
  Electromagnetic calculation and optimization of the INFN solenoid for the C-Band gun
- [CIEMAT - IFMIF-DONES] Technical support for the design and construccion of superconducting solenoid for IFMIF-DONES (2021)
  Review of the design and manufacturing process of the solenoid package component, in accordance with ASME Boiler and Pressure Vessel Code.
- [ITER ORGANIZATION - ALTER TECHNOLOGY] Magnetic test bench simulation (2021)
  Simulation of EM fields in a modified magnetic test bench
- [ITER ORGANIZATION - BERTIN TECHNOLOGIES] EM loads assessment for 55.FA Active Dog Legs (2021)
  Detailed analysis of the EM forces applied on the mirror mounts of the active doglegs of the Density Interferometer Polarimeter (DIP) during the plasma operation and disruption.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [Granada University] Customized cryogenic pump (2021)
  Manufacturing, design and supply of a customized cryogenic pump for the Penning line of Ion Traps and Lasers Laboratory
- [CERN - CIEMAT] Technical support for the assembly process for the MCBXF magnet (2019 - 2020)
  Technical support (in assembly and manufacturing of tooling) for the manufacturing of an orbit corrector prototype for the "HiLumi HL-LHC".
- [UKAEA] Superconducting magnet feasibility study (2018)
  Analysis of the superconducting magnet feasibility for a large-scale fusion test bench: MTF (Module Test Facility), renamed as CHIMERA.
- [STFC-ANTEC] Technical support for the modifications in a dipole for CLARA linear accelerator (2018)
- [Malaga University - The Vacuum Projects] Technical support for the development of a Mars atmosphere simulation chamber (2018)
  Thermal and structural analysis, supporting in the definition of some critical components.
- [CERN - ANTEC] Technical support for QUACO Phase II (2017)
  Support in detailed design, including Magnet conceptual and detailed design, Multiphysics FEM simulations including structural and EM analysis, Mock-up design and testing

RELEVANT R&D PROJECTS

- [CDTI-MISIONES] Industrial Investigation in Technologies and Processes Applied to IFMIF-DONES to Evolution in the Fusion Programme (DONES-EVO) (2021 - 2024)
  The role of SUPRASYS is to perform the RF calculations and the conceptual design of the meander prototype, as part the *studies to produce a secondary 40 MeV deuteron beam line.*
- [HAZITEK] High Field Magnetic Systems for the Sample Environment (SIMACEM) (2019)
  Study of the state-of-the-art and market survey of high field magnets and conceptual design of a magnet for a MOKE system.



Company name:	**TALLERES HILFA**
Address:	Barrio Arteagoiti, 8. 48970, Basauri (Vizcaya)
Web:	http://www.hilfa.com/
Turnover:	3.01 million EUR in year 2023
Employees:	41 in year 2023
SME:	YES
Phone:	[+34] 944 493 750
Email:	comercial@hilfa.com

ATST telescope dome

ACTIVITY AND SKILLS

- Manufacturing of telescope domes.
- Manufacturing of heavy mechanical equipment including welding, machining and final integration (assembly).
- Precision machining.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESO - IDOM] Prefocal Station for ELT (2021 - 2022)
- [TECNALIA] Harslab flotating offshore laboratory (2021)
- [CEA] Structures containers et et des bancs méchaniques du tomographe Tomis (2021)
- [SIEMENS] Wind turbine main bearing test bench (2020)
- [VMC TECHNOLOGY CENTRE] Onshore wind turbines rotor rig for LM wind power (2018)
- [GTC] Manufacturing of bogies (2016)
- [CERN] Vacuum chamber support (2015)
- [ITER ORGANIZATION] Toroidal Field Coils Bench (2014 - 2015)
- [ATST] Manufacturing of telescope dome (2012 - 2013)

ATST telescope dome

BIG SCIENCE AREAS

ASTRONOMY | FUSION

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE

DEFENSE | ENERGY | NUCLEAR

OIL & GAS | SPACE | NAVAL

CERTIFICATIONS

ISO-9001 | ASME

Company name: **TECNALIA RESEARCH & INNOVATION**
Address: Parque Científico y Tecn. de Gipuzkoa. Mikeletegi Pasealekua, 2. E-20009, Donostia-San Sebastián (Gipuzkoa)
Web: http://www.tecnalia.com
Turnover: 137.00 million EUR in year 2023
Employees: 1,492 in year 2023
SME: NO
Phone: [+34] 946 430 850
Email: info@tecnalia.com

tecnalia
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

ACTIVITY AND SKILLS

TECNALIA is the largest centre of applied research and technological development in Spain, a benchmark in Europe and a member of the Basque Research and Technology Alliance. We collaborate with companies and institutions to improve their competitiveness, people's quality of life and achieve sustainable growth. We do it thanks to a team of more than 1,500 people (44% women – 56% men) who are passionate about technology and committed to building a better society. Our main scopes of action are: smart manufacturing, digital transformation, energy transition, sustainable mobility, health and food, urban ecosystem and circular economy.

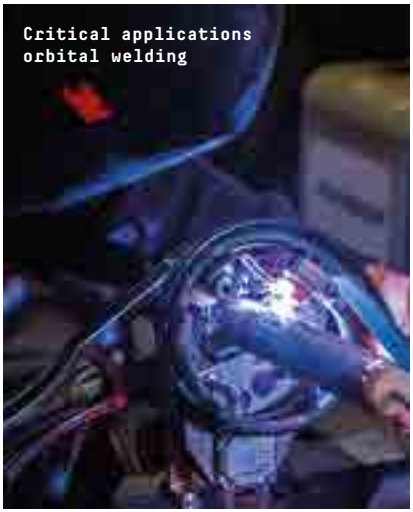
Our mission is to transform technological research into prosperity; TECNALIA's research has a real impact on society and generates benefits in the form of quality of life and progress. And we work with the purpose of building a better world through technological research and innovation. TECNALIA's research has a real impact on society and provides specific solutions to the major global challenges.

Its revenue in 2023 amounted to 137 million euros, 47% in revenue from activity with companies. In terms of impact, for every Euro invested by a company in R&D with TECNALIA, an average turnover increase of €13.6 is obtained.

In 2023, the Sale of Industrial Property Rights section recorded 7,2 million euros in income, with a portfolio of 741 patents. It took part in 17 start-up deeptech with a capital attracted of 6,5 million euros. They generated a total of 104 jobs and a turnover of 9.6 million euros. TECNALIA is the fourth private Spanish organisation in European patent applications. In Europe, TECNALIA has consolidated its position as the first private organisation in Spain in project contracting, participation and leadership under the European Commission's HORIZON EUROPE programme, in partnership with over 100 Spanish companies.

Companies need multi-sector and multi-technology responses that are impossible to satisfy without the hybridization of technologies. TECNALIA has a multidisciplinary team and a network of strategic alliances at an international level to anticipate current and future needs among others:

- Advanced joining solutions (electron beam welding, brazing, friction welding, disimilar materials joining ...).
- Surface engineering (PVD, sol-gel, Thin and Thick films, electrodeposition, ionic nitruration, plasma assisted treatments,....).
- Thermal spraying.
- Materials and Mock-Ups Characterization (mechanical testing, pressure testing, chemical and metallographic analysis, determination of TCC -Thermal Contact Conductance-, He leak tests, ...)
- Prototipes manufacturing.
- Validation of prototypes for ITER (Electrical Feedthroughs, Optical Feedthrough, Diagnostic Shield Modules (DSMs)...)
- Remote handling. Robotics.
- Pd based membranes for tritium recovery.
- Carbon Molecular sieve membranes for gas separation (Hydrogen, Helium, etc).
- Polymeric membranes for coolant gases recovery.
- Diamond based quantum chips: material growing, doping, characterization, functionalization.
- Cybersecurity.


Critical applications orbital welding

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E] FIBER OPTIC (2024)
  Test campaign for fiber optic feedthrough (FOFT).
- [CERN] Tuber (2023)
  Berilium tubes machining.
- [ITER ORGANIZATION] Electrical Insulating Breaks Qualification and Production IO/21/OT/19477/ADC IVC (2022)
- [CERN] Fusion Future (2022)
  New develpments for fusion reactors.
- [F4E] FWP. Coating Technical Services (2021 - 2024)
- [ITER ORGANIZATION] Remove_1 (2021)
  Development activities for graphite removal process definition.
- [F4E] Supply of the beam line components composed of the Neutraliser and Electron Dump ("NED"), the Electrostatic Residual Ion Dump ("ERID"), the Calorimeter, and the Component Common Equipment ("CCE") for the MITICA experiment F4E-OMF-0795-01 (2020 - 2025)
- [ITER ORGANIZATION] FWP MANUFACTURING. (2020)
  Development and manufacturing of FWP
- [F4E] F4E-08 (2020)
  Validation and Prototyping of the First Mirror Multi-Layer Structure for the EP-WAVS Diagnostic.
- [F4E] Proof-of-principles testing of First Wall Tile Repair Techniques F4E-OPE-0893-01 (2019 - 2022)
- [F4E] Procurement of the Beam Line Components for the MITICA Experiment Stage 2 (2019)
- [F4E] Application of an alumina coating on sections of pipes to be used in the Blanket Cooling Manifold System F4E-OPE-089-01 (2018 - 2021)
- [F4E] Provision of destructive and non-destructive testing of materials at room and elevated temperatures F4E-OFC-618 (2017 - 2020)
- [CERN] Quadrupole Corrector First-of-a- kind for HL-LHC (QUACO Pre-commercial Procurement) IT-4191/TE/HL-LHC (2016 - 2018)

RELEVANT R&D PROJECTS

- [HORIZON EUROPE] PROtotypes of Magnetic Imaging Systems for Europe, HEP (PROMISE) (2025)
  Grant Agreement (number 101189611)
  https://www.promise-quantum.eu/ Coordinator: TECNALIA
- [HORIZON EUROPE] QUantum-ENhanced benCHtop NMR spectrometer, HEP (QUENCH) (2024)
  Grant agreement (No 101135742)
  https://quench-project.eu/
- [HORIZON (CINEA)] Advanced POwer conversion technologies based on onboard ammonia cracking through novel membrane reactors (APOLO) (2024)
  https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/h... - Coordinator: TECNALIA
- [CDTI - MISIONES] NEURON-DONES (2023)
- [CDTI - MISIONES] Security and advanced manufacturing for the development of critical technologies for the construction of DEMO and the advancement of the fusion roadmap, based on challenges identified during the design and construction of ITER (ROAD2DEMO) (2022 - 2025)
  MIG-20221013
- [HORIZON 2020] Open Innovation Test Bed for nano-enabled Membranes (INNOMEM) (2020 - 2024)
  https://cordis.europa.eu/project/id/862330 - Coordinator: TECNALIA - *https://www.innomem.eu/*
- [HORIZON 2020] Advanced materials and Reactors for Energy storage tHrough Ammonia (ARENHA) (2020 - 2025)
- [HORIZON 2020] Membranes And Catalysts Beyond Economic and Technological Hurdles (MACBETH) (2019 - 2024)
- [HORIZON 2020] Advanced MEMBranes and membrane assisted procEsses for pre- and post- combustion CO_2 captuRe (MEMBER) (2019 - 2022)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ADVANCED MATERIALS AND MANUFACTURING | CONTROL SYSTEMS

REMOTE HANDLING AND ROBOTICS

INFORMATION AND COMMUNICATION TECHNOLOGIES

MECHANICS AND OPTOMECHANICS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | SPACE | NAVAL | NUCLEAR | OIL & GAS | HEALTH

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-17025 | UNE-166002

Company name:	**TECNOBIT - GRUPO OESIA**
Address:	C/ Marie Curie, 19. 28521, Rivas-Vaciamadrid (Madrid)
Web:	http://www.grupooesia.com
Turnover:	89.95 million EUR in year 2023
Employees:	609 in year 2023
SME:	NO
Phone:	[+34] 669 86 45 85
Email:	marketing@oesia.com

ACTIVITY AND SKILLS

Tecnobit is the engineering company of Oesía Group. Its constant innovative effort has made it a clear international reference in Communications, Security and Defence. Tecnobit supplies the main countries of the world the most advanced developments in Avionics, Optronics, Tactics and Secure Communications, Simulation and inhibitors.

Tecnobit's solvency has enabled it to provide components to 1 out of 3 new transport aircraft built in the world, participate in the Eurofighter program, build the largest simulation center in Latin America or develop the world's safest mobile phone (with accreditation of international institutions like NATO).

Rivas corporate headquarters (Madrid) and the emblematic plant in Valdepeñas (Ciudad Real) are the international operations centers of Tecnobit.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [JAL] LINPRO evolution program (C4I) (2022)
- [INTA] Support for National benchmark for a certifiable POC-SM, TECNOESPRES8 (Aeronautics and Space) (2021)
- [JAL] LINPRO LINK 22 capabilities for frigates class F-100 (C4I) (2021)
- [INTA] POC-SM tecnoespres7 certification (Aeronautics and Space) (2020)
- [DGAM] Technological demonstrator design, manufacturing and operational testing for an IRST system for the F110 (IRST F110, MC121504 Program). (C4I) (2020)
- [JAL] LINPRO TDL capabilities for secure modes and RE. (C4I) (2020)
- [DGAM] STAC-IS and TSVCIS voice communication secure modes on the portable crypto-devices (C4I) (2019)


Eurofighter FLIR

RELEVANT R&D PROJECTS

- Internal optoelectronics project (FALCATOS) (2024)
- [CDTI - PID] Datalink (NEXPRO) (2024)
- [CDTI - MISIONES PERTE CHIP] Photonics project (INSPIRE) (2023)
- [CDTI - PTA] On-Board Computing (CORSARIO) (2023)
- [COINCIDENTE] IRST (DATIA) (2023)
- [EDF-21] Human Machine Interface (EPIIC) (2022)
- [PCP - Xunta de Galicia] Unmanned Aerial Vehicles (CUI) (2022)
- Airworthy National crypto computer (internal project) (CNE) (2020)
- IRST (internal project) (2020)
- SpainSAT (internal project) (2016 - 2020)
- Onboard computer (internal project) (2016 - 2020)
- ICU / PSU especial (internal project) (2016 - 2020)
- Computer integrated displays (internal project) (2016 - 2020)
- CASTOR (internal project) (2016 - 2020)
- DISPLAYS COCKPIT AERONAVES (internal project) (2016 - 2020)
- ORIZON AND LEDA optronic modules (internal project) (2016)
- PRESENCE (internal project) (2015 - 2020)


AIRBUS A400-M AMS

BIG SCIENCE AREAS

ASTRONOMY

FUSION

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

NAVAL

SPACE

CERTIFICATIONS

ISO-9001

ISO-14001

Company name:	**TEKNIKER**
Address:	C/ Iñaki Goenaga 5. 20600, Eibar (Gipuzkoa)
Web:	https://www.tekniker.es/en
Turnover:	32.80 million EUR in year 2024
Employees:	279 in year 2024
SME:	NO
Phone:	[+34] 943 206 744
Email:	marketing@tekniker.es

ACTIVITY AND SKILLS

TEKNIKER is a technological centre with almost 300 highly trained staff of which 20% hold a PhD degree, 50% hold MSC, engineering or equivalent long-course degrees, being the rest technicians. Its mission is to help industry increase its innovative capacity by means of generating and applying technology and knowledge to compete. TEKNIKER likes to define itself as a technological partner in mechatronics and manufacturing technologies.

TEKNIKER is a multidisciplinary one-stop supplier for ad-hoc mecatronic complex solutions thanks to, mainly, specialising in the following six areas:

- Design and manufacturing of advanced mechatronic products.
- Remote handling, control and automation. advanced calculations, simulations, design, development, manufacture, and integration of tailor-made remote applications in challenging environments.
- Vacuum expertise: design, development, manufacture, and integration of tailor-made high and ultra-high vacuum solutions.
- Multi-funtional surfaces: design, and development of ad-hoc surfaces and functional coatings for different applications: reduced friction and wear, EM shielding, reduced H2 permeation, protection against radiation, antireflective coatings, optical filters.
- Inspection and measurement: precision engineering and metrology expertise from the micro-nano to the large scale for the development of industrial applications with challenging requirements.
- Process knowledge on a wide range of manufacturing technologies. All this is offered as a industrial-scale solution to the customer.
- Knowledge on radiation simulations considering different scenarios and for different purposes and radioactive facilities supervisor.

FACILITIES AND SINGULAR EQUIPMENTS

- Ultraprecisión workshop: Surface: 30m. x 13,7m. x 6m. Humidity and temperature controlled (± 1º) in the entire volume of the workshop. Crane, Lift capacity 16Tn.
- HEAVY assemblies workshop: Surface: 90x14x12,2m. lifting capacity: 2 cranes of 40 and 10 tons to handle large and heavy parts.
- BUNKER for hazardous tests: Surface: 7m. x 4,5m. x 3,2m. Cover of 150 Tn. Impact capacity 15MJ.
- CLEAN ROOM: 270 m2, class 100/1000 (ISO5/6).
- CRITICAL condition lab: Characterisation of extreme conditions of use related to mechatronic systems and materials.

Tekniker has a long experience collaborating directly with large-scale facilities such as ESS Lund, CERN, ISS, ILL, UKAE, LSST, ESO, IAC, ITER, F4E, IFMIF-DONES, and also, collaborating with industry as a strategic technological partner in tenders.


MuVacAS

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IFMIF-DONES - Empresarios Agrupados Internacional, S.A. (EAI)] CPP 01/2024 AB (DCCPI/OCPI) VATIST: Design of the TEST CELL (2025 - 2026)
- [IAC] METROTOWER (LIC-23-026) (2024 - 2026)
  Metrology tower located over a polishing machine, for the Advanced Optical Systems Center (CSOA), Instituto de Astrofísica de Canarias
- [IFMIF-DONES] UGR/2021/0135 (LCSP 2017) ERDF-Supply of Manufacture including Design, Construction, Integration, Commissioning and Handover of MuVacAS experimental station (2022 - 2024)
- [F4E - Asturfeito] Electric and Control System for a Tower System (2022 - 2023)
- [F4E - Sgenia] 55AJ00-MHF- RK3S8P SENSOR COVER AJ-I, 55AJ00-MHF- JFBY5B SENSOR COVER AJ-II (2022 - 2023)
- [ESO - ELT – Asturfeito] M1 Segment Crane electrical and control system development (2022 - 2023)
- [ESA] Micro-pump for ball bearing liquid re-lubrication (2022 - 2024)
- [ESA] HISRU, Photoelectrochemical system for CO2 reduction to produce fuels and sewage treatment (2022 - 2023)
- [ESS BILBAO - AERNNOVA] Neutron Chopper (2021 - 2022)
- [GMTO] Enclosure Device Control System: Control, Field Bus and Device Layers (2021)
- [ESA] Euro Material Ageing Opportunity (2021 - 2025)
- [ESA] HORACE, Triboelectric energy harvesting for Mars exploration (2021 - 2022)
- [ESA] In-orbit surface metrology for deployable reflectors (2021 - 2022)
- [ESS] Remote Clamp UHV. Test stand and Accessories (2020 - 2021)
- [ILL] XtremeD monochromator shielding (2020 - 2021)
- [ESS] Lifting & Handling for 660kVA Modulator (2019 - 2020)
- [ESO - ELT – Asturfeito] Servo control analysis of M1 Crane (2019)
- [F4E] Divertor, Multilink inspection tool (2018 - 2019)
- [LSST – Empresarios Agrupados Internacional, S.A. (EAI)] LSST Global Safety Interlock Systems Design, Control and safety systems (2015 - 2020)
- [DKIST – Idom] Dimensional commissioning of the dome sub-component (2015)

RELEVANT R&D PROJECTS

- [CDTI - TRANSMISIONES] Research, design, study and testing of components subjected to Extreme Environments for industrial validation of REgenerator Envelope Technologies associated with the development of Magnetic Fusion Reactors (E4EXTREM) (2025 - 2025)
  2025-2028
- [CDTI - MISIONES] Industrial research in critical technologies for the operation and maintenance of large scientific facilities applied to IFMIF-DONES (Neuron Dones) (2023 - 2025)
- [CDTI - MISIONES] Development of thin-film coating technologies for advanced component development (ROAD2DEMO) (2022 - 2025)
- [ELKARTEK] Technologies for the development of compact particle accelerators. (Basque Government) (LINAC-7) (2018 - 2025)
- [HAZITEK] Linear compact particle accelerator. (Basque Government) (IKERTU) (2018 - 2021)
- [HAZITEK] Neutron science research equipment (Basque Government) (NIZE) (2018 - 2019)
- [Plan de Reactivación Económica] Interferometric measurement in vacuum (Uncertainty of 10 nm/m (NanCEL) (2016 - 2017)

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM
ELECTRONICS AND OPTOELECTRONICS
MECHANICS AND OPTOMECHANICS
REMOTE HANDLING AND ROBOTICS
ADVANCE MATERIALS AND MANUFACTURING
CONTROL SYSTEMS

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY | NUCLEAR | SPACE | HEALTH

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-13485

Company name:	**TEKNOSERVICE S. L.**
Address:	Avda. Albaida, 1, P.I. PIBO Bollullos de la Mitación, Sevilla
Web:	http://www.teknoservice.es
Turnover:	33.00 million EUR in year 2023
Employees:	104 in year 2023
SME:	YES
Phone:	[+34] 954 541 212
Email:	info@teknoservice.es

ACTIVITY AND SKILLS

Teknoservice is a 100% Spanish owned company with more than 35 years of experience in the new technologies sector. We provide comprehensive solutions while taking great care to ensure the quality and excellence of our services. Under our TTL brand, we use cutting edge technology to produce a wide range of professional desktop computers, laptops, tablets, workstations, servers, and massive storage enclosures. Our products are constantly monitored and updated by the engineering and networking laboratory, which manages the R&D projects. Every single one of our products is tested thoughtfully during at least 8 hours. Our broad IT solutions portfolio includes our own developed tailored operating system TTLOS and desktop & applications virtualization TTLVD.

Teknoservice is the only Spanish CERN supplier for servers, massive storage systems, high performance desktop PCs, and the only one provider of NUCs computers for CERN to date.

Teknoservice has multiple certifications guaranteeing its commitment. We developed a work methodology that distinguishes us from others, offering an unprecedented level of personalization while covering all our clients' requirements. This work model gives to Teknoservice a very high level of loyalty from its clients.

As an example of our commitment with the research community, we signed a contract with CIEMAT and Seville University at the end of 2019 (see R&D Projects). In the last two years, we have also succesfully implemented our TTLVD and TTLOS software solutions in some strategic customers like SAS (Andalusian Health Care Public Company), Granada City Council or Historical Public Consultory.

Other certifications: EMAS III, Epeat, Ecolabel.

Teknoservice products

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] IT-4584/IT >1000 27" and 32" monitors (2021)
- [CERN] IT-4584/IT 400 Ultracompact high performance NUC Computers (2020)
- [AGQ TECHNOLOGICAL CORPORATE] Several contracts of Computers, Laptops, Monitors and Storage Components (2019)
- [CERN] DO-30931/IT 340 Ultracompact high performance NUC Computers (2018)
- [CERN] IT-4350/IT 92 (23 quad) CPU Servers for Physics Data Processing (2017)
- [CERN] IT-4299-IT 1000 High Performance Computers (2017)
- [ALTER TECHNOLOGY] Several contracts of Computers, Laptops, Monitors, Switches, SAIs, Storage Arrays, and Servers (2013)
- [CENTRO NACIONAL DE ACELERADORES] Computers, Laptops, Monitors, Servers, Storage, Virtualization Infrastructure and Services (2013)
- [CSIC] Several contracts of Computers, Monitors, Tablets, Audiovisual Systems, Storage Arrays, and Servers (2011)

RELEVANT R&D PROJECTS

- TTLOS

  A GNU/Linux based system tailored to our clients' needs with a focus on embedded devices and thin clients. It is extremely lightweight and modular and features a complete ecosystem. This Operating System is not base under any other Linux Distribution, is working on more than 40.000 machines used by the biggest public and private companies in our country. This project was proposed to participate in CERN's OpenLAB. One of the main values for this product is its security: With a very low attack surface, and high frequency updates.

- TTLVD

  VDI and IaaS system inspired by the same philosophy behind our TTL O.S. project: very lightweight and highly customizable solution. Highly available from the start, agent/client less, lightweight, GPU Accelerated. As TTL O.S. every single aspect of the product is minded with security: Any communication is secured by high quality TLS encryption.

- Panoramik

  A complete solution to support "good management" legislations. Capable of streaming multiple sources, 180º HD video recording and with one button operation, scheduled recordings, and plays well with the audio systems that are already in place.

- IA Based Storage Failure Prediction

  This project involves the Seville University and CIEMAT in a close industrial research collaboration. It predicts the failures of storage devices using artificial intelligence with enough time to replace it and avoid data loss.

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

TECHNOLOGY AREAS

CONTROL SYSTEMS | INFORMATION AND COMMUNICATION TECHNOLOGIES

MARKETS

AERONAUTICS | AUTOMOTIVE | DEFENSE | ENERGY

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-20000 | ISO-27001 | ISO-45001 | SR10

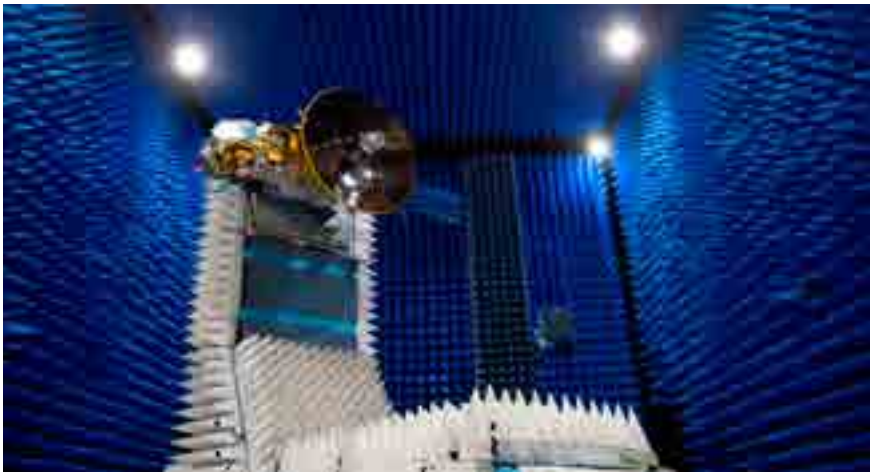
Company name:	**THALES ALENIA SPACE ESPAÑA**
Address:	C/ Einstein, 7. 28760, Tres Cantos (Madrid)
Web:	http://www.thalesaleniaspace.com
Turnover:	91.00 million EUR in year 2023
Employees:	450 in year 2023
SME:	NO
Phone:	[+34] 918 077 900
Email:	comunicacion.espacio@thalesaleniaspace.com

ACTIVITY AND SKILLS

Thales Alenia Space in Spain is the leading Spanish company in space communications and the natural partner in Spain for communication payloads and Earth observation optical instruments. With 37 years of experience in the design, development and commercialization of advanced space systems and equipment, the company has contributed to more than 650 satellites, space probes and space vehicles from satellite operators and space agencies around the World, devoted to Earth observation, telecommunication, navigation, science, exploration and orbital infrastructure missions. It has delivered 4,500 equipment accumulating 250,000,000 hours of flight operations.

Investing some 15% of sales in R&D, Thales Alenia Space in Spain offers a wide range of solutions spanning the design and integration of payloads and subsystems for telecommunications, data transmission and TT&C (tracking, telemetry and command), optical observation instruments, radiofrequency equipment, data processing and digital electronics, network management systems for the ground segment, telemetry transmitters for launchers and communication systems for spaceports. The company has 2500 m^2 of clean room area (ISO 8) with the capacity to produce more than 250 equipment per year; an optical detection lab (ISO 5) for the integration of optical instruments; and a 600 m^2 and 12.5m free-height satellite AIT facility for the integration and test of large space systems.

Thales Alenia Space in Spain has a solid background in designing, manufacturing and testing critical systems for space applications devised to survive the harsh thermal and radiation environment of outer space and planetary missions. This background comprises a deep knowledge of the effects of radiation on electronic components as well as RAMS assessments for data processing and robotic systems.



Euclid_High Gain Antenna

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ESO] ALICE and LISA cameras for ELT in Chile (2022)
- [NASA] CLPS TT&C transponders for NOVA-C and GRIFFIN lunar landers (2021)
- [ESA] HERA TT&C subsystem for ESA contribution to the joint asteroid deviation experiment with NASA-DART mission (2020)
- [NASA] VIPER communications subsystem for NASA's Lunar Rover to search for water ice on the Moon (2020)
- [NASA]] WFIRST TT&C Transponders for NASA's Next Generation Space Telescope (2019)
- [CNES] STFO Fiber Optic infrastructure for remote access to satellite on the Guyana Launch Center (2018)
- [ESA] Euclid Dark Energy Space Observatory: Data Transmission and TT&C Subsystem (2018)
- [ESA - IAA] Main Electronics Unit (MEU) For the Plato Mission Instrument (2017)
- [ESA] ExoMars Rover Actuator Drive Electronics (2016)
- [ESA] Scallable Sensor Data Processor (SSDP) Development of a rad hard MPSoC chip for sensor data processing (2016)
- [ESA] Sentinel 3 satellite Radiation Analysis Responsible (2015)
- [ESA] JUICE Mission to Jupiter : Radiation and Charging Analysis for B2 phase (2015)

RELEVANT R&D PROJECTS

- [H2020] Radiation Characterization of a Sàce Ethernet Physical Layer Transceiver (SEPHY) (2018)
- [H2020] Verification and Radiation Tests of High Capacity European FPGA (VEGAS) (2017)
- [H2020] Cross-layER multi-oBjective design EnviROnment for critical cyberphysical systems (CERBERO) (2017)
- [ECSEL] Aggregated Quality Assurance for Systems (AQUAS) (2017)
- [H2020] Integrated 3D Sensors suite (I3DS) (2017)

Communications subsystem

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

MARKETS

SPACE

TECHNOLOGY AREAS

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRONICS AND OPTOELECTRONICS

REMOTE HANDLING AND ROBOTICS

CERTIFICATIONS

ISO-9001 | ISO-14001

Company name:	**THUNE EUREKA S. A.**
Address:	Rúa Pedroso, 67. 36618, Vilagarcía de Arousa (Pontevedra)
Web:	http://www.thuneeureka.com
Turnover:	15.10 million EUR in year 2023
Employees:	100 in year 2023
SME:	YES
Phone:	[+34] 986 501 810
Email:	thuneeureka@thuneeureka.com

ThuneEureka

ACTIVITY AND SKILLS

Thune Eureka is a full service supplier of complex metal goods manufacturing. Our sections include Boilermaking, Welding, Machining, Assembly, Integration and Operational Tests.

Our competitive advantage stems from the fact that our product manufacturing encompasses the complete cycle, from the acquisition of raw materials to the delivery to the customer, including the different intermediate phases, with equipment subjected to demanding acceptance tests, and the entire process carried out by highly qualified workers.

ESS Tuning Beam Dump

ESS Target Shaft

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] MMB Mould Impregnation System (2023 - 2024)

  Mould designed for the impregnation of new spare coils for SPS main dipoles manufactured at CERN. Large dimensions 7m (long) x 1m (width).

- [IFMIF-DONES - ALTER] STUMM (Start-up monitoring module) for IFMIF DONES Prototype (2023 - 2024)

  1:1 Scale Prototype. Manufacturing similar to final STUMM. More than 240 sensors installed. STUMM will allow the characterization of Neutron radiation and Gamma radiation fields produced by nuclear reactions resulted from the incidence of Deuterons beam on the Lithium target.

- [ESS BILBAO] Proton Beam Instrumentation Plug - PBIP (2023 - 2024)

  Measuring properties to determine that protons arriving to the target do it with the proper shape, energy, frequency, and other parameters, etc.

- [F4E - ALTER] IRBOL (IR-bolometer) Liberty System (2022 - 2023)

  Neutron irradiation testing and associated services to assess the performance and reliability of bolometer sensor prototypes to contribute to a decision on which types are suitable for use in ITER to measure plasma radiation.

- [ESS BILBAO] Shielding Collar (2022)

  Carbon steel machined and coated for nuclear shielding.

- [ESS BILBAO] Connecting Pipe (2021 - 2022)

  Stainless steel machined, welded and vacuum and pressure tested.

- [ILL] H1 Roof (2021 - 2021)

  Carbon steel and stainless steel machined and coated for nuclear shielding.

- [ESS BILBAO] Target Shaft (2019 - 2022)

  Machining, welding, assembly, vacuum and pressure testing and functional testing of the target shaft. Provides the target wheel with coolant (helium): After cooling the hotspot, the coolant goes upwards until it gets to the rotary seal. Therefore, there have to be designed two concentrically separated channels for the inlet and for the outlet helium flow, respectively. A requirement that the design needs to meet: the maximum pressure drop along all the loop must be lower than 0,85 bars.

- [ESS] Tuning Beam Dump (2018 - 2019)

  Machining, welding, vacuum and pressure testing of copper and stainless steel component. The Tuning Beam Dump (TBD) is a device dedicated to stop the proton beam during accelerator tuning operations. On tuning conditions, the beam produced by the accelerator is limited inpower (12.5 kW) compared with the nominal beam power, however its shape is unpredictable. Due to this uncertainty on shape, there is a significant risk if the beam goes to the target wheel. On this conditions, the beam goes to the TBD.

- [ESS] Ground Shielding (2018 - 2019)

  The Ground Shielding and Vessel support consists of a number of steel blocks that provide a shielding function of the Monolith as well as the support ring below the Monolith Vessel. Figure below shows a cross section of the Monolith and the position of the Ground shielding and Vessel support.

- [ESS BILBAO] Vessel Support and Ground Shielding (2018 - 2018)

  Carbon steel machined and coated for shielding. Stainless steel machined for support.

BIG SCIENCE AREAS

FUSION

MARKETS

AERONAUTICS | DEFENSE | NUCLEAR | OIL & GAS

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS

CERTIFICATIONS

ASAME | ISO-9001 | ISO-14001 | ISO-45001 | ISO-2834

Company name: **TWOPTICS SYSTEM DESIGN, S. L.**
Address: Carrer Cerdanya, 44. 08820, El Prat de Llobregat (Barcelona)
Web: http://www.aseoptics.com
Turnover: 1.90 million EUR in year 2023
Employees: 17 in year 2023
SME: YES
Phone: [+34] 937 379 863
Email: info@aseoptics.com

ACTIVITY AND SKILLS

Twoptics Systems Design SL was created in 2011 and develops its activity using the commercial name ASE Optics Europe (ASE). The company is founded on the desire to have freedom to innovate. The main specialty is optical systems design and integration, with founders being experienced professionals in optomechanical engineering and optics business, accumulating over 30 years of technical and business experience. The firm has developed complex optics and photonics enabled systems, integrating physics, photonics, optics, and mechanics, electronics, scientific imaging, and systems design. ASE has provided solutions for its customers in various industries, principally in: Optical Metrology and Industrial inspection, Defence, Astrophysics, Biotechnology, and Large Scientific installations in applications in both imaging and non-imaging.

ASE has provided R&D services to programs or installations such as: ESRF, CIEMAT, ITER and IAC-IACTEC.

Additionally, ASE serves the private market as well, pulling innovation from one area to the other, allowing ASE to go beyond the state of the art.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [IAC-IACTEC] Design and development of custom SWIR Objectives for DRAGO 2 (2021)
- [BROOKHAVEN NATIONAL LAB – COLIAT] Design and fabrication of an optical attachment to an autocollimator to increase divergence for measuring large radii at short distances (2020)
- [ITER ORGANIZATION - Bertin Technologies] Transfer of MS prototype, Measurements of in-vessel components tiles with the TARMS and TARMS measurement deployment (2020)
- [ESRF] 0.8X projection objective design, manufacturing and test (2020)
- [F4E - Veolia Nuclear Solutions Ltd] F4E-OMF-0633-01-08, T08, Preliminary Design of the IVVS - Phase 1 (2018)
- [F4E - Oxford Technologies Ltd] F4E-OMF-0633, 1550 nm, Engineering support in the area of Remote Handling (2016)
- [ESRF] Objective Lens 150 mm objective to image at infinity a fluorescent screen. Design, manufacturing, assembly and test (2015)
- [F4E - Oxford Technologies Ltd] F4E-574-CON-03-B. 800 nm, Re-design, prototype and test the IVVS probe optical system (2014)
- [ESRF] Objective Lens, 400mm collimation objective lens. Design, manufacturing, assembly and test (2014)
- [ESRF] Objective Lens 0.5X - Design, manufacturing, assembly and test (2013)


Laser systems integration - NDT

RELEVANT R&D PROJECTS

- [CDTI - PTEP] Fostering a more robust and sustainable space race by developing treatments that ensure high-quality observations and efficient communication (TRATASAT) (2024 - 2025)
- [CDTI - MISIONES] Ultra-compact SWIR camera onboard UAVs for remote identification and sensing in very low visibility conditions (SWIRFIRE) (2024 - 2025)
- [CDTI - MISIONES PERTE CHIP] Innovative chip design for the first high-performance, low-power multifunctional integrated board in stratospheric balloons (CHIP-NESE) (2023 - 2025)
- [CDTI - MISIONES PERTE CHIP] Promotion of the semiconductor value chain in Spain through research on components for a 3D system based on SWIR images (ECOSWIR) (2023 - 2025)
- [CDTI - MISIONES] Industrial research aimed at optimising the efficiency of a large scientific fusion facility such as IFMIF-DONES (DONES-FLUX) (2022 - 2025)
- [CDTI - MISIONES] System for Efficient Irrigation Monitoring and Agricultural Performance (MORERA) (2021)
- [Eurostars] Micro and Nano optical structures for high efficient technical emergency and general lighting (MINALEM) (2017)
- [H2020 - NMP] H2020-NMBP-2016-2017 - Optogenetic Protein Therapy for Multiple Sclerosis, new interferon-ß (IFN-ß) drug delivery system to revolutionize Multiple Sclerosis treatment (OPTOGENERAPY) (2016)
- [FP7-NMP-ICT-FoF] FP7-2013-NMP-ICT-FOF (RTD) - Fabrication and functionalization of BioMedical Microdevices. WP10: optical inspection (FABIMED) (2013)

New ATS machinery acquisition

BIG SCIENCE AREAS

ASTRONOMY | FUSION | PARTICLE PHYSICS AND ACCELERATORS

MARKETS

AERONAUTICS | DEFENSE | NUCLEAR | SPACE

TECHNOLOGY AREAS

ELECTRONICS AND OPTOELECTRONICS | REMOTE HANDLING AND ROBOTICS

CERTIFICATIONS

ISO-9001

Company name: **VAC-TRON S. A.**
Address: C/ Juan de la Cierva, 6, Nav. G-H. 08420, Canovelles (Barcelona)
Web: http://www.vac-tron.es
Turnover: 2.90 million EUR in year 2024
Employees: 20 in year 2024
SME: YES
Phone: [+34] 938 494 612
Email: franc.moreno@vac-tron.es

VAC-TRON
GLASS-To-METAL Seals

ACTIVITY AND SKILLS

VAC-TRON, S.A. started its activity 40 years ago and is specialized in developing hermetic interconnections to pass electrical signals between two hostile atmospheres. Our core technology is to fuse glass to have a hermetic seal between the electrical conductor pin and the external shell or bulkhead. This is accomplished using the technology of Glass to Metal Seals (GTMS) to produce high-quality hermetic components.

This tecnology gives an extra of performace to our connectors:

- Temperature: -195ºC to 300ºC
- Pressure: up to 2.500 bar
- Hermeticity: <2,69.10-10Pa.m3/s
- Dielectric Strength: 500 V -6.000 V DC
- Electrical Resistivity: >1.000MΩ

At VAC-TRON we try to understand what really needs our customer in order to offer the best solution, manufacturing bespoke Glass to Metal Seals components for a wide range of areas.

Our multidisciplinary team guarantees the needs of our customers.

We have a presence in many sectors as aeronautic, aerospace, automobile, gas industry, medical, military, nuclear and petroleum industry, railroad and telecommunication. We manufacture feedthroughs, relays bases, connectors, sensors and microsensor, bases and lids for filters and oscillators and pyrotechnic igniter bases. To guarantee customer requirements our Quality System is based on the requirements of EN 9100, ISO 9001 and ISO 14001.

Since 2025, we have a clean white room ISO 7 for Ultra High Vacuum projects.

Our facilities include presses and a furnace to produce glass preforms, presses for the stamping of metal components, continuous belt and vacuum furnaces to produce GTMS components, and an area of surface treatments including nickel, tin and gold plating.

Ultra High Voltage 50kV

CONTRACTS FOR BIG SCIENCE FACILITIES

- [F4E - ALSYMEX] Supply of the In-Vessel Electrical Feedthroughs (2024 - 2027)
  The specification covers the manufacturing, testing and delivery of Bulkhead assemblies for the In-Vessel. Those components are classified as PIC, and the manufacturing activities as PIA . The grade of quality is QC1 and the Safety Relevance SIC1.
- [ITER ORGANIZATION] Electrical feedthrough prototyping for irradiation test (2022)
- [F4E - IDOM] Integration Design of Diagnostics Into ITER Ports (2017 - 2020)
- [CERN] HV Feedthroughs fo ToF (2017)

RELEVANT R&D PROJECTS

- [CDTI] Development of a new manufacturing processes for hermetic components with high electrical conductivity (2021)
- Cryogenic Feedthrough for LNG vessel (internal project) (2019)
- [CDTI] New processes to manufacture hermetic components by glass-to-metal sealed technologies (2017)
- [F4E – IDOM] Design of a double glass barrier in a solid bulkhead (2017 - 2019)
- [CDTI] Technologies and/or methodologies for surface treatments on glass-to-metal sealed components (2014)

Hermetic 103 signals CF40

GTMS Section view

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

MARKETS

AERONAUTICS

AUTOMOTIVE

DEFENSE

ENERGY

NAVAL

NUCLEAR

OIL & GAS

SPACE

TECHNOLOGY AREAS

CRYOGENICS AND VACUUM

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRICAL AND POWER ELECTRONICS

ELECTRONICS AND OPTOELECTRONICS

CERTIFICATIONS

ISO-9001

ISO-14001

ISO-9100

Company name:	**VALTRIA ENGINEERING**
Address:	C/ Torrent Tortuguer, 54-60, Nave 7. 08210, Barberá del Vallés (Barcelona)
Web:	http://www.valtria.com
Turnover:	118.20 million EUR in year 2023
Employees:	290 in year 2023
SME:	YES
Phone:	[+34] 937 379 924
Email:	info@valtria.com

ACTIVITY AND SKILLS

Valtria is specialized in customized cleanrooms for controlled environments, biosafety facilities and process-oriented turnkey solutions

We deliver tailored, functional technical solutions for each project entrusted to us by our clients, aligning with their needs, expectations, and resources. Our commitment ensures the achievement of agreed-upon objectives in terms of quality, safety, and timelines.

Our mission is offer quality, efficient and safe installations that meet the highest national and international standards.

Valtria has carried out about 300,000 m^2 of cleanrooms in more than 15 countries since the last 10 years.

Valtria has offices in Finland, France, Switzerland, Scandinavia, Germany, Portugal, México, Chile, Argentina and Spain (Barcelona, Madrid and Bilbao.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [CERN] SXNS5 CMS Experimental Area P5, complete HVAC system (2022)
- [CERN] HVAC Contract Frame (2021 - 2025)
- [CERN] EHN Galleries Ventilation (2021)
- [CERN] ECAL Laser Lab Cabins (2021)
- [CERN] High Luminosity (HiLumi) surface buildings HVAC system and underground smoke extraction (2020 - 2023)
- [CERN] ATLAS Magnets & Dumps. Demineralized water cooling System (2019)

Cutting edge clean rooms technology

RELEVANT R&D PROJECTS

- [SILEX Microsystems AB] New Back End HUS5-Sweden (SILEX) (2021)
- [LEITAT Managing Technologies] Lentivirus Lab (BSL2) Spain (LEITAT) (2021)
- [MSD- Merck Serono] Reforma Virus II (BSL2) Spain (MSD) (2021)
- [IQM Finland OY] HVAC & Clean Utilities-Quantum Computer Finland (IQM) (2020)

National Biotechnology Centre (BSL, level 3. Contaminant effluent containment). Madrid, Spain

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

MARKETS

AERONAUTICS | AUTOMOTIVE | ENERGY | NUCLEAR | OTHER

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

CRYOGENICS AND VACUUM

ELECTRONICS AND OPTOELECTRONICS

MECHANICS AND OPTOMECHANICS

REMOTE HANDLING AND ROBOTICS

CERTIFICATIONS

ISO-9001 | ISO-14001 | ISO-45001

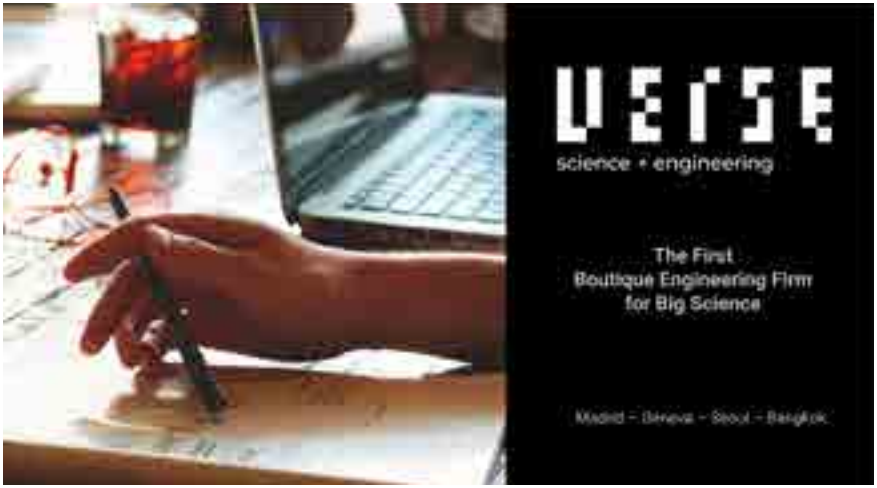
Company name:	**VERSE EUROPA S. L.**
Address:	C/ Aragón, 235. 08007, Barcelona
Web:	http://www.verse-europa.com
Turnover:	0.80 million EUR in year 2024
Employees:	13 in year 2024
SME:	YES
Phone:	[+34] 609 985 248
Email:	verse@verse-europa.com

ACTIVITY AND SKILLS

Founded in 2019 as a Swiss-Spanish start-up, VERSE is a boutique engineering firm specialised on providing customised technological solutions for particle accelerators and nuclear fusion projects.

VERSE clients include research institutes, start-ups and engineering firms located in France, Switzerland, UK, Spain, USA, South Korea, Thailand and Japan.

We are a team of engineers and scientists working for the largest scientific projects currently in operation or under construction in Europe, Asia and the Americas. Our areas of expertise cover most of the technologies in the Big Science area, such as mechanical engineering, integrated control, mission-critical systems, safety solutions, thermohydraulic models, applied superconductivity, artificial intelligence and machine learning, among many others.



First page of our marketing pitch

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] ITER Tokamak Monitoring Systems (2025 - 2026)
- [ITER ORGANIZATION] Mechanical Integration and Manufacturing of ITER Electron Cyclotron Heating Systems (2024 - 2025)
- [ITER ORGANIZATION] ITER Central Interlock System On-Site Support (2023 - 2025)
- [F4E] Upgrade of the Machine Protection System for LIPAc Accelerator in Rokkasho (Japan) (2022 - 2026)
- [ITER ORGANIZATION] Mechanical Engineering for Port-Plug Interfaces and In-vessel Supports (2022 - 2025)
- [KFE-Mobiis] Consulting Services on Particle Accelerators and Fusion Technologies - (2017 - 2023)

RELEVANT R&D PROJECTS

- [CDTI] Advanced Safety Sytems for Commercial Fusion Plants (SAFU) (2025)

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

FUSION

MARKETS

ENERGY

NUCLEAR

TECHNOLOGY AREAS

CONTROL SYSTEMS

INFORMATION AND COMMUNICATION TECHNOLOGIES

DIAGNOSTICS, DETECTORS AND INSTRUMENTS

ELECTRONICS AND OPTOELECTRONICS

MECHANICS AND OPTOMECHANICS

CERTIFICATIONS

ISO-9001

ISO-14001

Company name:	**WESTINGHOUSE ELECTRIC SPAIN**
Address:	Avda. Montes de Oca, 1. 28703, San Sebastián de los Reyes (Madrid)
Web:	https://westinghousenuclear.com/
Turnover:	160.30 million EUR in year 2023
Employees:	950 in year 2023
SME:	NO
Phone:	[+34] 916 598 600
Email:	wessalesdept@westinghouse.com

ACTIVITY AND SKILLS

Tecnatom was set up in 1957 as a Spanish engineering company specialized in guaranteeing the operation and maintenance of nuclear power plants to the highest levels of safety. The company supplies services and products with a high technological content, frequently designed and developed in-house, tailored to the needs and requirements of different clients and markets, in the following areas: Inspection Services, Training, Long-term Operation, Operation Support, Simulation Services, Control Rooms, Fuel Inspection, Component Engineering, Testing Service, Emergency Management, Decommissioning and Plant operation.

Tecnatom has been involved in the European Fusion programme (specially in ITER) providing support in the field of Non Destructive Testing, Remote Handling, Robotics activities, Nuclear Safety and Simulation of processes.

Since December 2023, Tecnatom is a company of Westinghouse Group, as a subsidiary of Westinghouse Electric Spain, joining their capabilities to increase market opportunities. Data of turnover and number of employees include both companies.

CONTRACTS FOR BIG SCIENCE FACILITIES

- [ITER ORGANIZATION] ITER VV Assembly. Optimization of PAUT acceptance criteria investigation, IO/25/CT/ 4300003251 (2025 - 2025)
- [ITER ORGANIZATION - ISQ] ITER-BCM. Development of ultrasonic inspection procedure for Blanket Cooling Manifold (BCM) (2023 - 2024)
- [ITER ORGANIZATION] ITER I&C Cable Supply and Qualification support (2021 - 2025)
- [ITER ORGANIZATION] ITER simulation platform (2021 - 2024)
- [ITER ORGANIZATION - FBL] ITER-FWP. Development of a robotic inspection cell and the ultrasonic inspection procedures for the inspection of HIP joints in FWP (2021 - 2026)
- [ITER ORGANIZATION - ENSA] ITER-VV. Development of ultrasonic inspection procedures and mechanical scanners for the inspection of welds during vacuum vessel (VV) assembly (2021 - 2024)
- [ITER ORGANIZATION] ITER lip seal. Structural design criteria for the lip welded seals refinement and validation (2020 - 2021)
- [ITER ORGANIZATION] ITER-VV. Analysis of Phased Array Ultrasonic Testing Data of Welded Joints for Vacuum Vessel Sector (IO/CT/19/4300002015) (2019 - 2025)
- [F4E - SIMIC S.p.A.] ITER-TFCC. Development of ultrasonic inspection procedures and manual guided scanners for the inspection of Toroidal Field Coil cases closure welds, F4E-OPE-414: Supply of the ITER TF COIL Cold test and Coil Insertion (2014 - 2016)
- [ITER ORGANIZATION] Workshop on Safety Culture Campaign – External communication on safety related topics (2013 - 2014)
- [ITER ORGANIZATION] Safety Culture Survey of the ITER Organization, IO/CT/4300000993 (2013 - 2013)
- [CIEMAT - DEMO] DEMO. Development of ultrasonic and visual testing inspection procedures for DEMO, WPRM-AWP2015-RM-5-1-3-T001 (2012)
- [ITER ORGANIZATION - IBERINCO] ITER VV. Feasibility study of automatic inspection of ITER Vacuum Vessel (VV) welds (TW6-TVV-HPRIB) (2012 - 2014)

- [F4E - EADS Casa Espacio] ITER-Precompression rings. Development of ultrasonic inspection procedures for the inspection of precompression rings, ITER-F4E-OPE-345) (2011 - 2013)
- [F4E - Ansaldo Nucleare-Mangiarotti-Walter Tosto] ITER-VV. Development of ultrasonic inspection procedures and manual guided scanners for the inspection of ITER Vacuum Vessel welds, F4E-2010-OPE-068: Supply of seven vacuum vessel sectors (2010 - 2025)
- [ITER ORGANIZATION - CIEMAT] ITER . Development of NDE Inspections of Divertor Joints (2006 - 2007)
- [CIEMAT] ITER. - Feasibility study of automatic maintenance of NBI's components (2006 - 2007)

RELEVANT R&D PROJECTS

- [CDTI] Advanced manufacturing technology for science industry. Application in the field of fusion / IDI-20151084. (2015 - 2018)
  The project comes about as a result of the needs detected in the new joining processes under development in ITER reactor and the high quality requirements demanded during their manufacturing . Research on non-destructive testing (NDT) inspection technologies is focused in two critical components: FWP's (First Wall Panels) and RFVW's (Radio Frequency Vacuum Windows). Tecnatom's role in the project is the development, fine-tuning, industrialisation and application of innovative NDT techniques and products for the inspection of the FWP joints produced by the hot isostatic pressing (HIP) process, and of essential items whose joints are made using the welding process known as brazing.

Qualification of UT inspection procedures for precompression rings (ITER)

ITER FWP UT inspection cell

BIG SCIENCE AREAS

FUSION

MARKETS

AERONAUTICS | DEFENSE | ENERGY | NUCLEAR | OIL&GAS | SPACE

TECHNOLOGY AREAS

CIVIL WORKS AND INFRASTRUCTURE

REMOTE HANDLING AND ROBOTICS

ADVANCE MATERIALS AND MANUFACTURING

CERTIFICATIONS

ISO-9001 | ISO-14001 | ASME | CEFRI | RCC-MR

National Big Science Research Infrastructures

Hosting Organisation: **ALBA SYNCHROTRON**

Address: Carrer de la Llum, 2-26. 08290, Cerdanyola del Valles (Barcelona)

Web: http://www.albasynchrotron.es/

Phone: [+34] 935 924 300

Email: industrialoffice@cells.es

DESCRIPTION

ALBA Synchrotron is a Research Infrastructure based on a 3 GeV 3rd generation synchrotron facility, supporting national and international scientific communities, both academic and industrial. It presently has 14 operating beamlines and capability for another dozen. Available techniques are dedicated to advanced matter characterization in life science and material science. It is managed by the Consortium for the Construction, Equipping and Exploitation of the Synchrotron Light Source (CELLS) which is owned 50% by the Spanish Government and 50% by regional Catalan Government.

The ALBA Synchrotron has started its upgrade project towards the fourth generation, ALBA II, which is in the design and prototyping phase.

The core of ALBA is a complex of electron accelerators that reach an energy of 3 GeV and emit synchrotron light, covering a wide range of photon energies, from soft X-rays of a few eV to hard X-rays of 70 keV.

It has fourteen beamlines which receive synchrotron light to visualize the atomic and molecular structure of materials and study its properties. Every year more than 2,500 life sciences and materials science researchers use their advanced technologies, detectors and data infrastructures to make progress in understanding phenomena and developing devices and technologies for an innovative, sustainable, clean and smart economy and a more efficient health system.

©ALBA Synchrotron

ALBA belongs to the Singular Scientific and Technical Infrastructures (ICTS) network, that groups large facilities, resources, equipment and services, unique in their kind, which are dedicated to cutting-edge and technological research and development of the highest quality, as well as to promote the transmission, exchange and preservation of knowledge, technology transfer and innovation.

MAIN EQUIPMENT OR FACILITIES

- Structural characterization of materials: X-ray powder diffraction, both with high resolution and high pressure; X-ray magnetic dichroism; X-ray scattering and reflectivity; X-ray photoemission microscopy; X-ray angle resolved photoemission spectroscopy; Fast X-ray Tomography & Radiography.
- Structural characterization of bio samples: macromolecular crystallography; X-ray scattering at small and wide angle; soft X-ray cryomicroscopy and tomography, IR spectromicroscopy.
- Chemical characterization of bio and material samples: X-ray absorption spectroscopy; X-ray fluorescence; IR spectromicroscopy; X-ray photoemission microscopy, including Near Ambient Pressure Photoemission.
- Others: magnetic measurement laboratory; radiofrequency laboratory; vacuum laboratory; optics and metrology laboratory; electronic laboratory; bio laboratory.

PROJECTS UNDER DEVELOPMENT

- ALBA upgrade to 4th generation synchrotron facility (ALBA II), including development of accelerator techniques, optics, metrology, detectors.
- Beamlines dedicated to protein crystallography for micro crystals, instrumentation and detector with powder diffraction and absortion spectroscopy
- Fast hard X-ray tomography and radioscopy
- X-ray optics metrology
- Surface Spectroscopy and Structure at 1 Bar
- Battery laboratory

TECHNOLOGY CAPABILITIES

- Accelerator technology (magnet, radiofrequency, vacuum, diagnostics, services, controls)
- IT capabilities
- Scientific data management
- Optics and metrology
- Mechanical engineering including high precision design and realization
- Civil infrastructures for high-tech research facilities
- Technology transfer

SUMMARY OF RESEARCH SERVICES

Academic and industrial access to all scientific instruments and laboratories, technology transfer, innovation, scientific outreach to society.

PROCUREMENT PROCESS

The main steps of the ALBA procurement procedure are the following:

- Identification of need
- Specs definition
- Tender publication
- Bidder offers
- Offer evaluation
- Awarding
- Contract

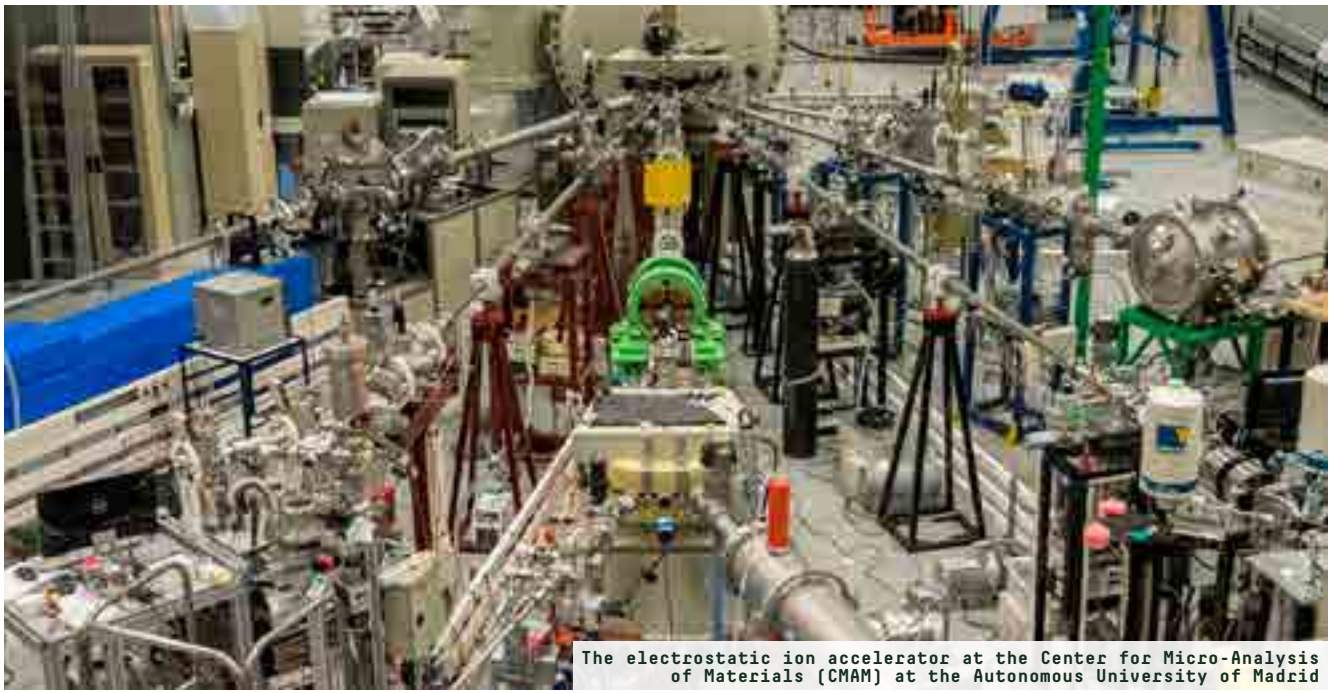
BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

Hosting Organisation: **CENTRO DE MICROANÁLISIS DE MATERIALES-UAM**
Address: Universidad Autónoma de Madrid - Campus de Cantoblanco
C/ Faraday, 3. E-28049, Madrid
Web: https://www.cmam.uam.es/
Phone: [+34] 914 973 621
Email: cmam@uam.es

DESCRIPTION

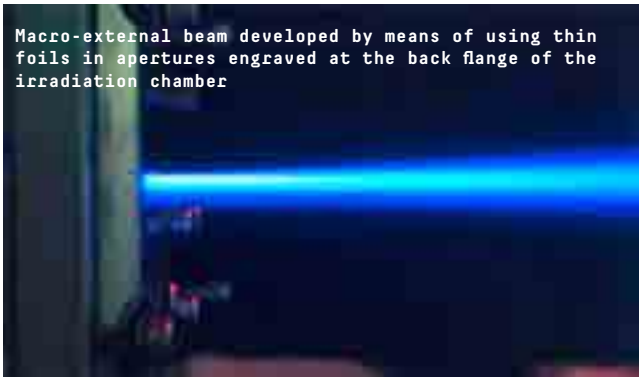
CMAM is an ICTS (Infrastructuras Científicas y Técnicas Singulares) integrated into the UAM-CSIC excellence campus. CMAM has large multidisciplinary potential, for instance, for Nuclear Physics studies, for testing of instrumentation, Proton therapy, and characterization of wide range of advanced materials with ion beam for different technological applications such as fusion, medical, archeological and those related to circular economy. Moreover, CMAM is very well connected to ARIE (Analytical Research Infrastructures of Europe) and can develop a relevant status in European projects and the European Research Area, as an active member of the ion beam network.



The electrostatic ion accelerator at the Center for Micro-Analysis of Materials (CMAM) at the Autonomous University of Madrid

MAIN EQUIPMENT OR FACILITIES

The main facility of our center is a 5MV terminal voltage tandem accelerator which reaches energy ranges up to 10 MeV for protons, tens of MeV for heavy ions (practically any ion, reaching Bi). CMAM operates six beamlines (STD, LuB, TOF, IMP, EuB and NUC) which are aviable to users for analysis and modification of materials. Some highlighted features of these lines are that samples of large size can be measured in air, possibility of 2D mapping, depth profiling and sample's irradiation with a raster. The analytical techniques herein so-called "IBA techniques" are used to analyze the elemental composition (at different levels: elemental, molecular, spatial, depth...) of a sample through atomic or nuclear reactions by ion irradiation.



Macro-external beam developed by means of using thin foils in apertures engraved at the back flange of the irradiation chamber

PROJECTS UNDER DEVELOPMENT

Related to radiobiology, we have three different projects ongoing, and it is considered one of the key strategic areas for the scientific development of CMAM for the coming decade. One of the topics of interest is the so called FLACH effect, wherein radiation treatment with a particularly high dose rate has some evidence in good tumor control with a better preservation of healthy tissue. The flash effect is not fully understood, and it is not yet implemented as part of usual clinical practice. CMAM is active and has projects in several other areas related to materials analysis and irradiation.

SUMMARY OF RESEARCH SERVICES

Academic and industrial access to all scientific instruments and laboratories, technology transfer, innovation, scientific outreach to society.

During the lifetime of CMAM, the facility has provided beam time for houndreds of scientifist from different fields, making IBA and IBMM accesible to a broad communitiy. In the last years, several technical improvements have been incorporated to the pre-existing beam lines and experimental stations. As a result, nowdays more sophisticated experiments can be carried out at the six operative beam lines.

TECHNOLOGY CAPABILITIES

- RBS: Ion species: He | Ion Energy: 2 MeV | Detected particle: He | Depth resolution: 3-5 nm | Detection limit: 1%-100 ppm
- ERDA: Ion species: Si, I, Au | Ion Energy: 20-50 MeV | Detected particle: Atoms | Depth resolution: 50-3 (TOF) nm | Detection limit: 1%-100 ppm
- NRA: Ion species: H, D, He | Ion Energy: 1-5 MeV | Detected particle: H, D, He | Depth resolution: 1-10 nm | Detection limit: 0.1%-100 ppm
- PIXE: Ion species: H | Ion Energy: 3 Mev | Detected particle: X rays | Detection limit: ppm
- PIGE: Ion species: H, D, He | Ion Energy: 1-5 MeV | Detected particle: Y rays | Detection limit: 0.01%

PROCUREMENT PROCESS

CMAM follows public procurement procedures adopted by UAM according to the Spanish Law (Law 9/2017 of 8 November on public sector contracts). This policy applies to all contracts signed with regional, national and international companies.

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

Hosting Organisation: **CENTRO NACIONAL DE ACELERADORES**

Address: C/ Thomas Alva Edison, 7. 41008, Sevilla

Web: https://cna.us.es/index.php/es/

Phone: [+34] 954 460 553

Email: cna@us.es

DESCRIPTION

The Centro Nacional de Aceleradores (CNA) is a joint research center of the University of Seville, the regional government of Andalucía and the Spanish National Research Council CSIC. It is recognized by the Spanish government as a one of the two nodes of the Singular Scientific-Technical Facility IABA (Insfraestructura de Aplicaciones Basadas en Aceleradores = Accelerator Based Applications Infrastructure), dedicated to interdisciplinary research in the particle accelerator area and open to external users.

Centro Nacional de Aceleradores (Seville, Spain)

MAIN EQUIPMENT OR FACILITIES

CNA has six major facilities: a Van de Graaff 3 MV Tandem accelerator, a 18/9 MeV Cyclotron accelerator, an Accelerator 1MV Mass Spectrometer, a PET / CT scanner, a radiocarbon dating system called MiCaDaS and a 60Co Irradiator. The application of these six infrastructures covers fields as diverse as material sciences, environmental impact, nuclear and particle physics, nuclear instrumentation, medical imaging, biomedical research and preclinical molecular imaging, 14C dating and irradiation in samples of technological and biological interest, among others.

PROJECTS UNDER DEVELOPMENT

- Accelerator Mass Spectroscopy (AMS) development: establishment of methodology for Cl-36, Ca-41, consolidation of techniques for U-234. U-235, U-236, U-238, NP-237, AM-243 and measurement development for C-14 in liquids (3788/0223)
- Dosimetry monitor FLASH therapy (HR23-00718)
- EUROpean Laboratories for Accelerator Based Science - EURO-LABS (4598/1176 - another researcher)
- Explotation of European nuclear physics research facilities (ASTRO21/1.3/3)
- Neutron physics, nuclear instrumentation and hadrontherapy developments in CNA and international facilities (PID2021-1238790B-C21)
- Shear flux impact in the transport of magnetically confined fusion plasma particles (PID2020-116822RB-I00 - research team)
- Irradiation of detectors with accelerators (ASTRO21/1.1/1)
- Neutrons, nuclear instrumentation and protontherapy-related research in CNA and international research facilities (RTI2018-098117-B-C21)
- New developments for Low Energy Accelerator Mass Spectroscopy (LEAMS) applied to new environmental challenges and nuclear waste management (PID2022-140680NB-I00)
- Recyclable Materials Development at Analytical Research Infrastructures (ReMade-at-ARI) (GRANT AGREEMENT NO. 101058414)
- Recyclable Materials Development at Analytical Research Infrastructures (ReMade-at-ARI) (GRANT AGREEMENT NO. 101058414)
- Supplying Accurate Nuclear Data for energy and non-energy Applications - SANDA (H2020-847552)
- Towards ultra-high dose rates in proton therapy: an ionoacoustic approach for in vivo dose monitoring - RAPID (101146938)
- WPSA: Preparation and Exploitation of JT-60SA (CFP-IPH-AWP19-SA-05-CIEMAT-01)

TECHNOLOGY CAPABILITIES

1. Nuclear physics beam line This line includes a high-volume vacuum chamber, where nuclear instrumentation (detectors, electronics, etc.) that will be used in international Nuclear Physics facilities, can be developed and tested.
2. Microbeam chamber Manufactured by Oxford Microbeam Ltd., in this line it is possible to focus the beam down to size of a few microns using a magnetic quadrupole triplet. The scanning system, synchronized with the data acquisition, allows the formation of maps from different signals with a maximum size of a few mm2. One of our main research lines is the analysis by PIXE and RBS of the actinide elemental distribution in microscopic particles originating from the hydrogen bombs involved in several nuclear accidents, where the results are similar to those obtained by confocal X-Ray fluorescence (XRF) in a synchrotron facility.
3. Multipurpose IBA chamber This chamber is equipped with a set of particle, gamma and X-Ray detectors and a large target holder to carry out simultaneously different IBA experiments (RBS, PIXE, NRA and PIGE). In this chamber, we have recently investigated the use of novel solid 4He targets for experimental studies on nuclear reactions, the composition of solid-state hole conductor in solar cells prepared by vacuum processing and a novel ionizing particle detector based on thin films multilayers.
4. Ionoluminescence chamber Located behind the multipurpose chamber, this vacuum chamber has black coating walls and is equipped with a heatable sample holder up to 500ºC and a photonic diagnostic system that allows mainly ionoluminescence studies. The first application of the chamber has been the characterization of different scintillator materials used for fast-ion loss detectors in nuclear fusion reactors.
5. Irradiation chamber This beamline has been designed to allow the irradiation of large areas (up to 16×20 cm^2) by raster scanning of the beam through magnetic deflection. It is mainly used by companies and research centers to perform irradiation tests of electronic devices and to test radiation detectors.
6. Channeling chamber Manufactured by Charles-Evans, this line is dedicated to channeling analysis of single crystalline samples using a 4-axis goniometer. A parallel beam is obtained with a telescopic system formed by two sets of slits. The chamber is equipped with particle, X-Ray and γ -Ray detectors. Through experiments in the implantation and channeling beamlines, we have recently studied the formation of magnetic SiC substrates for spintronic applications.
7. External beam This line is mainly used for cultural heritage studies, since the use of in-air ion beam techniques (in combination with a good lateral resolution) presents numerous advantages for the analysis of inhomogeneous objects. The use of some elements purchased from Oxford Microbeams, like a magnetic quadrupole doublet, a precision four jaw object slit and an exit nozzle set with micrometer adjustment, allow to obtain a spatial resolution of about 60 µm. Recent applications include the study of the manufacturing of gold jewels of the Carambolo treasure and of gold electroplating techniques on silver substrates.
8. HiSPANoS line HiSPANoS, from Hispalis Neutron Source, is the first accelerator based neutron source in Spain. At HiSPANoS, neutrons are produced in a high-energy range covering from thermal to fast neutrons up to 9 MeV through the reactions p(7Li, n), d(7Li, n), d(D, n), p(9Be, n) and d(9Be, n). The main research application of the new neutron source is related to astrophysics, medical physics, detector characterization, electrical devices irradiation for aerospace purposes and neutron radiography, among others. In 2018, a buncher and chopper system and a new experimental line dedicated to neutron time of flight (TOF) measurements were installed. The pulsing system was designed to produce protons and deuterons pulsed beams with a pulse width of 1–2 ns at the target position at a frequency that can be varied from 32.5 kHz to 2 MHz.

SUMMARY OF RESEARCH SERVICES

- Ion Beam Analysis (IBA) technique measurements
- Actinide and Iodium-129 measurements with Accelerator Mass Spectroscopy (AMS)
- Radiocarbon dating
- Radiopharmacy and medical imaging
- Photon irradiation
- Basic nuclear physics
- Neutron beams
- Radiation detectors development

PROCUREMENT PROCESS

Access to the CNA's facilities is open to the scientific community and to national and international society. This access is articulated through open periods for applications (four per year). Any request submitted to the service must be duly justified and sent to the scientific committee, which evaluates the scientific quality of the proposal. Once accepted, a specialist technician from the CNA is assigned and the date of the proposed experiment is coordinated with the rest of the planned measures. The CNA has a series of official tariffs that apply to all users and that are aimed at contributing to the basic expenses that occur in the activities. These rates are published on the internet (http://institucionales.us.es/solicitudescna/index.php/es/). The admissions are managed by the University of Seville and are made available to the centre.

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

Hosting Organisation: **CONSORCIO CENTRO DE LÁSERES PULSADOS**
Address: Edificio M5. C/ Adaja, 8. Parque Científico de la Universidad de Salamanca
37185, Villamayor (Salamanca)
Web: http://www.clpu.es
Phone: [+34] 923 338 121
Email: director@clpu.es

CLPU
CENTRO DE LÁSERES PULSADOS

DESCRIPTION

The Spanish Center for Pulsed Lasers (CLPU) was born to be the Spanish facility at the forefront in the field of ultra-intense ultra-short pulsed lasers, which could meet the demand of the scientific, technological and industrial community to develop frontier research and projects, through a policy of competitive open access.

It was established in December 2007 as a Consortium composed of the Ministry of Science, Innovation and Universities (former Ministry of Science and Education), the Regional Government of Castilla y León, and the University of Salamanca. It belongs since then to the "Spanish Roadmap for Unique Research and Technology (https://www.ciencia.gob.es/en/) (ICTS by its Spanish initials) and right now it is part of the General State Administration. Its uniqueness is given by VEGA, a high-repetition-rate (HRR) Petawatt-Class (PWC) laser system. VEGA is the most powerful laser system in Spain and it is one of the three HRR-PWC system operating in the world. The advent of the PWC lasers has revolutionized the physics of particle accelerations. Compared to conventional accelerator, lasers can produce ultra-short particle beams with high brilliance, low emittance and broad energy spectrum.

The in-house scientific expertise guarantees a cutting-edge top-quality service, working side by side with users from all over the world, while also pursuing its own experimental challenges.

MAIN EQUIPMENT OR FACILITIES

From the very beginning, CLPU has looked for a versatile identity to accommodate more users, more experiments and more technological, scientific and innovative developments without compromising quality. This is why CLPU is equipped with a unique laser system named VEGA, embracing three synchronized femtosecond Titanium-Sapphire (Ti:Sa) lasers: VEGA-1 (20 TW), VEGA-2 (200 TW), and VEGA-3 (1 PW). In addition to its high power and the ability to deliver very short pulses of around 25-30 femtoseconds at a high repetition rate (1 Hz at the PW output and 10 Hz at the TW outputs), VEGA laser system at CLPU also offers a high temporal contrast.

Additionally, a CPA Titanium: Sapphire laser system has been integrated into the VEGA laboratory. This system is able to provide at 1 kHz repetition rate, 2 mJ, 20 fs pulses or 0.6 mJ 6 fs pulses after a post-compression setup with CEP (Carrier EnvelopePhase) stabilization control.

VEGA, the HRR-PWC laser system (2018)

PROJECTS UNDER DEVELOPMENT

CLPU encloses a research center and a unique scientific and technical infrastructure which are in the cutting-edge of knowledge and technology through the development of projects from the European, Spanish and regional calls.

The projects promote actions falling into the strategic lines of CLPU and those that are aligned with the Spanish National Plan for Scientific and Technical Research and Innovation proposed by the Ministry of Science, Innovation, and Universities and the guidelines set by the Horizon Europe Program, among others. Thus, for example, CLPU is a partner in the EU-funded RADNEXT project, led by CERN, which aims to create a network of facilities and related irradiation methodology for responding to the emerging needs of electronics components and system irradiation. This community brings together a collection of facilities and skills to address worldwide user needs for space and high-reliability ground-level applications, including automotive, defence, medical, and high-energy physics accelerators.

In summary, right now, the CLPU is involved in seven European projects and eight national projects, one of them to boost the capabilities of the ICTS, by building a new experimental area (AREX2).

Please visit our webpage to see more about our projects:

- ***https://www.clpu.es/en/proyectos-infraestructura/***
- ***https://www.clpu.es/en/proyectos-investigacion/***
- ***https://www.clpu.es/en/proyectos-innovacion/***

TECHNOLOGY CAPABILITIES

The Spanish Center for Pulsed Lasers is a unique scientific and technical infrastructure thanks to VEGA, the only laser system in Spain capable to reach one petawatt of peak power. A laser system with singular architecture, as it has three synchronized outputs of different powers that offer services to scientific, and industry users worldwide. The entire VEGA system is currently installed, operating, and open to competitive and non-competitive access. A complementary ultrashort laser system with Carrier Envelope Phase (CEP) stabilization control has been assembled. The CLPU is also equipped with a large ensemble of detectors for primary and secondary beams. beams (electron, proton, neutron...).

One advantage of the newly emerging laser acceleration is its unique ability to reach extremely high energies that are far beyond in any other conventional methods. Another advantage is the possibility of producing rather compact machines, at least when compared to very big synchrotron.

The CLPU also host a CPA Ti:Sa laser system operating at 1 Hz repetition rate with a pulse energy up to 7 mJ and 120 femtoseconds of temporal pulse duration offered by the Ultrashort Laser Applications and Micromaterial Processing (ULAMP) Service. Currently, ULAMP service is being upgraded with new laser systems and optical equipment through the DOLEV infrastructure improvement project. It also has an electronic microscopy and analysis tools, mechanical, electronic, magnetic elements workshop, laser micro machining, and targetry station, calibration sources, etc. To design, maintain, and operate these cutting-edge technologies, the infrastructure contributes to the development of new innovative technologies related to lasers as vacuum systems, beam transport equipment, high-powerful electronic devices, radioprotection, targetry design and diagnostics.

SUMMARY OF RESEARCH SERVICES

CLPU offers these main services to users:

1. VEGA, the HRR-PWC laser system; through competitive and non-competitive access researchers and companies can get access to a cutting-edge technology, an innovative experience and highspecialized knowledge. It has multiple purposes in several fields as Medicine (Flash protontherapy), Fusion, Plasma Physics, Material Science, etc.

2. Innovation Laboratories:

- ***https://www.clpu.es/en/ulamp-technical-features/***
- ***https://www.clpu.es/en/litel-technical-features/***
- ***https://www.clpu.es/en/microscopy-features/***
- ***https://www.clpu.es/en/mechatronics-technical-features/***

3. Consulting Service for laser technologies: including support for laser development, ultrashort pulse laser metrology and laser safety procedures. CLPU extensive knowledge and practical training in the field allows us to offer cutting-edge solutions to ensure precision and safety in short pulse laser laboratory operations.

All CLPU services can be requested through the CLPU webpage and its FARO (Facilities Access Request On line) Platform:
https://faro.clpu.es/facilities/servicerequest/

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS | FUSION

Hosting Organisation: **CIEMAT - LABORATORIO NACIONAL DE FUSIÓN**

Address: Av. Complutense, 40. 28040, Madrid

Web: https://www.ciemat.es

Phone: [+34] 913 466 555

Email: secredg@ciemat.es

DESCRIPTION

LNF is the Spanish partner of the EUROfusion consortium which manages the European Integrated Fusion programme. In addition to its research in this field, LNF coordinates the work of around fifteen "linked third parties", universities, R&D centers and industries within EUROfusion.

In addition, LNF participates in experiments and developments for the international projects JET, W7X , JET, JT60, ITER, DEMO, IFMIF-EVEDA and IFMIF-DONES.

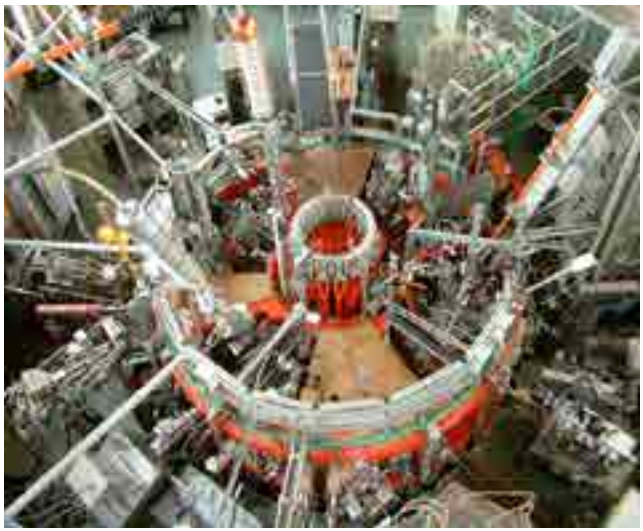
MAIN EQUIPMENT OR FACILITIES

The group is presently formed by around 140 people (physicists, engineers, technicians and support personnel). LNF operates the TJ-II stellarator facility and a number of fusion technology facilities. Altogether the facilities form the "LNF" ICTS (singular scientific-technical facility), included in the Spanish ICTS programme.

PROJECTS UNDER DEVELOPMENT

- JET (UK, owned by the European Union). Participation in experiments, DT plasma scenarios, development of fast camera systems and development of disruption prediction algorithms.
- W7X (Germany). Participation in experiments, development of pellet injector and microwave reflectometer.
- JT60 (Japan). Desing and procurement of the cryostat, participation in diagnostic developments.
- ITER (International partnership). Working on: data archiving and visualization, visible/infrared viewing system, Collective Thomson Scattering (CTS) diagnostic system, neutronics, tritium transport calculations.
- DEMO (conceptual design phase). Materials (structural & functional), irradiation experiments and modeling, liquids metals (lithium, lead-lithium), breeding blankets (dual coolant), remote handling, neutronics, nuclear safety, stellarator reactor configurations, socioeconomic studies (with CIEMAT Energy Department).
- IFMIF-EVEDA (Japan). Accelerator components: RF power system, beam diagnostics, high energy beam transmission line, medium energy beam transmission line, beam dump. IFMIF integrated design, medium flux irradiation modules.
- IFMIF-DONES (desing phase). Project leadership in the Work Package Early Neutron Source (EUROfusion) and participation in most of the systems: control system, building and plant systems, accelerator systems, lithium systems, irradiation modules and safety.

TJ-II experiment



TECHNOLOGY CAPABILITIES

- Mechanical engineering. Finite elements calculations, CAD-CATIA, design, vacuum systems, leak detection, cooling systems.
- Fabrication & assembly. Own workshop, limited size components.
- Electrical engineering. Power electronics, signal electronics.
- High power radiofrequency (RF) and microwave systems, solid-state amplifiers, Low Level RF systems.
- Nuclear calculations. Neutronics.
- Sensors: X-ray, UV, Visible, Infrared, Millimeter wave radiometry, Microwave. Fast particles.
- Materials characterization: SIMS, FUB milling, nanoindenter, ductility test, optical & electrical properties.
- Liquid metals: lithium, lead-lithium.
- Data management, data mining.

SUMMARY OF RESEARCH SERVICES

Services related to the above technologies.

BIG SCIENCE AREAS

FUSION | PARTICLE PHYSICS AND ACCELERATORS

JT 60 cryostat body manufactured at Asturfeito, Asturias

Hosting Organisation: **CONSORCIO IFMIF - DONES ESPAÑA**

Address: Palacio de Quinta Alegre. Av. de Cervantes, 27. 18008, Granada

Web: https://ifmif-dones.es/

Phone: [+34] 958 243 007

Email: contact@ifmif-dones.es

DESCRIPTION

The use of energy, extracted from different sources, is essential for our survival. However, current energy sources are not enough for a planet that has abused of its natural resources to unsustainable limits, for the sake of development and progress. This is the reason why we are facing the great scientific and technological challenge of looking at the sun trying to replicate its fusion processes and make them possible in a controlled way here on earth as a way to find a practically unlimited source of energy that is environmentally-friendly, this is the fusion energy.

The development of materials capable of withstanding high neutron fluxes in fusion energy is a significant challenge. The European Fusion Roadmap (2018) identifies the creation of IFMIF-DONES to address this need. The European IFMIF-DONES Facility is the central element of the DONES Programme, which aims to establish an extensive database on fusion materials.

EURATOM, together with several European countries, has been supporting the preparation for IFMIF-DONES; first, in collaboration with Japan, through the IFMIF-EVEDA project initiated in 2007 and implemented by the European Joint Undertaking for ITER and the Development of Fusion Energy (F4E) and, second, since 2015, through the EUROfusion Consortium that develops the advanced engineering design of IFMIF-DONES. Since 2018, the preparation of IFMIF-DONES is carried also out under the ESFRI (European Strategy Forum on Research Infrastructures) framework.

After F4E issuing a call for proposals in 2016, the Region of Granada in Spain was selected to host and build the IFMIF-DONES facility in Europe, as proposed jointly by Spain and Croatia. The proposal received approval from the F4E Governing Board and the Council of Ministers of the EU in December 2017 and April 2018, respectively, emphasizing the need to maintain successful cooperation with Japan within the Broader Approach.

On 16 March 2023 the first DONES Steering Committee was held in Granada, the highest governing body of the DONES Programme, and agreed, among others, to start of the construction phase of the IFMIF-DONES Facility in Escúzar (Granada).

IFMIF-DONES Facility Mission

The IFMIF-DONES Facility is defined to provide an accelerator-based D-Li neutron source to produce high energy neutrons at sufficient intensity and irradiation volume to simulate as closely as possible the first wall neutron spectrum of future nuclear fusion reactors. The IFMIF-DONES Facility ("The Facility") should then be understood as the set of Buildings and Systems that will become the fusion relevant neutron source and that will help to fulfil the objectives of the DONES Programme.

The accelerator facility will produce a 125 mA deuteron beam, accelerated up to 40 MeV and shaped to have a nominal cross section in the range from 100 mm x 50 mm to 200 mm x 50 mm. The beam will impinge on a liquid lithium curtain 25 mm thick and cross-flowing at about 15 m/s. The stripping reactions will generate a large number of neutrons which will interact with the materials samples located immediately behind the lithium curtain, in the Test Modules.

Outside view of IFMIF-DONES (recreation)

SUMMARY OF RESEARCH SERVICES

One of the key challenges in the realization of fusion energy is the development of neutron tolerant materials that can withstand a flux of neutrons up to 14 MeV while maintaining adequate structural and other physical properties over long periods. Currently, engineering material data, both properties and rules, are based on fission neutron irradiation campaigns, not fully covering the neutron energies, temperature and other operational conditions.

To test materials, and produce this knowledge, it is therefore necessary to develop a fusion material neutron source with a fusion-like neutron spectrum. The International Fusion Materials Irradiation Facility or IFMIF, will provide a fusion-spectrum device for fusion material testing at high neutron doses, being the only alternative considered technically feasible to address this issue. The conceptual design of this facility was developed in the framework of an international collaboration up to 2004 and was designed to fulfil the needs of future fusion reactors. A simplified version focused on DEMO needs, known as IFMIF-DONES (DEMO-oriented Neutron Source), was agreed in 2014 as the European reference and integrated into an overall strategy to develop fusion material testing including fission and fusion-like irradiations.

The IFMIF-DONES facility could be also used by other (i.e. non-fusion) scientific communities, such as health-related (mainly for isotopes production), basic physics (astrophysics, solid state physics) or nuclear physics. It can also provide some unique technological-related services for industry.

For more information:
https://ifmif-dones.es/dones-users-2/

PROCUREMENT PROCESS

The contributions to the DONES Programme from the Parties will take the form of in-kind contributions.

Any acquisition of goods or services is made in accordance with the following rules:

- The different in-kind contributions of the Parties will be channeled through Implementing Agencies (IA).
- Consequently, the Implementing Agencies (IA) will manage the tender process for the in-kind contribution in compliance with their own financial regulation.

For more information:
https://ifmif-dones.es/dones-programme/members/

MAIN EQUIPMENT OR FACILITIES

- Accelerator Systems
- Lithium Systems
- Test Systems
- Buildings and Plant Systems
- Instrumentation and Control Systems

PROJECTS UNDER DEVELOPMENT

- IFMIF-DONES Facility: Buildings and Plant Systems, Accelerator Systems, Lithium Systems, Test Systems, Instrumentation and Control Systems).
- EUROfusion Workpackage WPENS (Work Package Early Neutron Source).
- DONES Consolidation Phase funded by the European Commission (DONES-ConP1).
- Innovation Pre-commercial Public Procurement contracts for developing systems and materials validators in fusion energy (VATIAC and VATIST), CDTI.
- Innovation projects with industry: NEURON DONES, E4XTREM, OPTIMA-DONES.

TECHNOLOGY CAPABILITIES

- Basic material technologies and advanced manufacturing techniques
- Complex building, constructions, and safety related systems
- Cryogenics, vacuum, and leak detection technologies
- Diagnostics, detectors, sensors, optics, and instruments
- Electrical, power electronics, electromechanical and RF systems
- High precision and large mechanical components
- Information and communication technologies
- Instrumentation, control and CODAC
- Remote handling systems
- Superconductivity and superconducting magnets

BIG SCIENCE AREAS

FUSION | PARTICLE PHYSICS AND ACCELERATORS

Hosting Organisation: **LABORATORIO SUBTERRÁNEO DE CANFRANC**

Address: Paseo de los Ayerbe, S/N. 22880, Canfranc-Estación (Huesca)

Web: https://www.lsc-canfranc.es

Phone: [+34] 974 373 474

Email: info@lsc-canfranc.es

DESCRIPTION

The LSC (Laboratorio Subterráneo de Canfranc), second largest deep underground scientific laboratory in Europe, is run by a Consortium between the Spanish Ministry of Science, Innovation and Universities, the Government of Aragon and the University of Zaragoza. The LSC is part of the Spanish network of ICTS (Unique Scientific and Technological Facilities). It offers to researchers, about 300 from all over the world, the opportunity to carry out cutting-edge science on physics, astrophysics as well as biology, geophysics and environmental science in its facilities of unique characteristics. The underground facilities at the LSC are located at 800 meters below ground and excavated between the Somport road tunnel and the old railway tunnel in Canfranc Estación, about 8 km on the Spain-France border. Their uniqueness opens the possibility to discover very rare phenomena.

MAIN EQUIPMENT OR FACILITIES

The LSC is a unique multidisciplinary scientific and technical facility with a surface area of 1600 m^2 and a volume of 10,000 m^3 in the underground laboratory equipped with an outstanding number of facilities. The main underground infrastructure, called LAB2400, is divided into Hall A, the largest experimental area with 600 m^2, Hall B and C and services area.

To support the construction of the experiments in the LSC, there is a Radiopurity Service for ultralow level measurements. On one hand, LSC hosts several high purity Germanium detectors, leading the highest sensitivity in gamma detection worldwide (below 0.01 mB/kg). Additionally, LSC hosts two Inductive Coupled Plasma Mass Spectrometry (ICP-MS) facilities, the one placed in a clean room underground is leading the highest sensitivity worldwide (ppq sensitivity in Uranium). The underground laboratory also provides reduced background environments with radon-free air (1 mBq/m^3) and five ISO6/ISO7 Cleanrooms. Among the production services, LSC provides ultrapure lead and copper, improved with the Copper Electroforming Facility.

PROJECTS UNDER DEVELOPMENT

- ANAIS: Dark matter search based on looking for the annual modulation of the expected interaction rates in a target of sodium iodide.
- DArTinArDM: Experiment to measure the radioactive activation of argon, part of the international collaboration in searching for dark matter with argon detectors.
- TREX-DM: Aims for the detection of WIMPs with a very low mass (below 10 GeV), which could have passed unnoticed in other dark matter experiments.
- CROSS: Bolometric detection technique of doble beta decay events with pulse-shape discrimination capability enabling the rejection of surface radioactive events.
- HYPER-KAMIOKANDE: An international neutrino telescope with a neutrino beam and near detectors which aims to discover differences between matter and antimatter in the neutrino sector. LSC is leading the design and procurement of industrial products for the photomultiplier detectors (anti-chain reaction covers and data processing electronics) and the geomagnetic compensation and ventilation systems.
- NEXT: World leading experiment studying the nature of the neutrinos (on if the neutrino is its own antiparticle) searching a rare type of decay called double beta decay.
- Ten experiments are taking data at the LSC Biology Platform to address scientific questions as the impact of radiation in cellular growth, viral infection, multicellular development or cellular aging (https://lsc-canfranc.es/en/biology/), relevant in biology and space science.
- CADEx: The Canfranc Axion Detection Experiment aims at detecting very light dark matter in form of axions with a strong magnet and superconducting circuits at mK temperatures.
- ICRQ: The project addresses the problem of the impact of ionizing radiation on superconducting qubits and how to develop a resilience against it, such that stable and sensitive sensors can be built out of qubits to detect low background events.

TECHNOLOGY CAPABILITIES

The LSC leads various technologies in low radioactivity materials:

- Materials: Among others, LSC leads the development of copper, lead, doped polyethylene and scintillator crystals. One of the key services, unique in Europe, is the production of ultralow radioactive electroformed copper.
- Screening of samples: world-leading sensitivity in gamma rays with Germanium detectors in small and large samples. World-leading sensitivity in radioactive components (at the ppq level for Uranium and Thorium, and at the pub level for potassium).
- Cleaning and low background environments: Robust methods of surface cleaning and host materials in low background environments to reduce radioactive activation.
- Detection of radiation: high sensitivity detection of radon in air (mB/m^3) and radon emanation of materials. High sensitivity gamma detectors based on various technologies.
- Biology experiments simulating life in space: cellular and small organisms experiments in low muon radiation, microgravity and proton radiation to mimic experiments in space missions or other planet environments.

Hall A: Main Experimental Hall

SUMMARY OF RESEARCH SERVICES

The LSC hosts large experiments to search for rare events. The research services provided to the LSC experiments include materials screening, cleaning services and clean room environments with a nitrogen gas or radon free air atmosphere, management of heavy components (10Tn crane and lift facilities) and safety control underground. Expressions of interest by external research groups from public or private institutions can request the use of the LSC research facilities on ***https://lsc-canfranc.es/en/access-rules/.***

The LSC signed a number of research collaboration agreements with national and international research groups, underground laboratories and industrial partners to develop products focused on high sensitivity gamma detection, development of ultra-pure materials or monitoring of trace metals in various materials. The control of the radon content in gases and of the radon emanation in materials is a highly demanding service. LSC has developed new services to measure radon traces in air and to measure the radon emanated by samples with industrial interest.

PROCUREMENT PROCESS

The LSC is involved in the tendering of various industrial components for the large experiments underground and for the Hyper-Kamiokande experiment. In the period 2025-27, LSC main procurement processes include:

- 20500 UVT-PMMA 50 cm thermoformed domes.
- 20500 steel 50 cm conical bodies with reinforced rings.
- 41000 silicone bands and metal rings.
- Large machined pieces in steel, lead and copper.
- Logistics and Storage services in Spain and Japan.
- A 10-Tesla magnet, a large dilution fridge and auxiliary systems.
- A liquid nitrogen generator and various cryogenic installations.
- Electronics and high sensitivity particle detectors.

BIG SCIENCE AREAS

ASTRONOMY | PARTICLE PHYSICS AND ACCELERATORS

Hosting Organisation: **CENTRO ASTRONÓMICO HISPANO EN ANDALUCÍA**

Address: Sierra de los Filabres, S/N. 04550, Gérgal (Almería)

Web: https://www.caha.es

Phone: [+34] 950 632 503

Email: director@caha.es

DESCRIPTION

CAHA operates the Calar Alto Observatory. It is a partnership between the Spanish National Research Council (CSIC) and the Council of Economic Transformation, Industry, Knowledge and Universities of the Junta de Andalucía Regional Government (JA). Presently, each partner contributes with 50% of the operational costs and consequently gets 50% of the observing time. The role of the observatory is to provide world-class observing facilities to optical and near-infrared astronomers. The Calar Alto Observatory is located at an altitude of 2168 m above the sea level, in the Sierra de los Filabres (Almeria-Spain), 45 km far from the Mediterranean Sea. It is the second largest European astronomical site in the northern hemisphere, just behind the Observatorio del Roque de los Muchachos (located in the island of La Palma), and the most important in the Continental Europe, with excellent communications, making logistics easy, un-expensive and reliable

MAIN EQUIPMENT OR FACILITIES

Currently there are seven telescopes located in the complex, three of them belonging to Centro Astronómico Hispano en Andalucia A.I.E. (CAHA, the ICTS). The other four telescopes belong to the IAA-CSIC, Instituto Nacional de Técnica Aeroespacial (INTA, the Spanish Space Agency), the Observatorio Astronómico Nacional (OAN), and Hamburg University. Several experiments are also located at the observatory (Noctilucent clouds monitor from Leibniz Institute for Atmospheric Physics -IAP-; Camera for the observations of Transient Luminous Events -TLEs- from IAA; Weather station and monitors of seeing (RoboDIMM), extinction (CAVEX) night-sky surface brightness ASTMON), and a meteor monitoring station.

PROJECTS UNDER DEVELOPMENT

Two projects are highlighted, TARSIS and MARCOT.

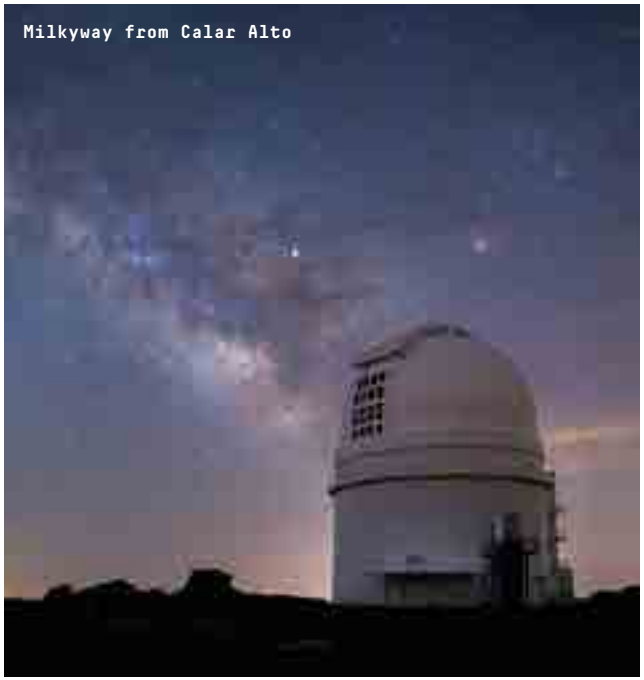
- TARSIS is the next generation instrument for the Calar Alto 3.5 m telescope. UCM and IAA-CSIC co-lead TARSIS, the future instrument for the Calar Alto 3.5 m telescope. TARSIS stands for Tetra-ARmed Super-Ifu Spectrograph, due to its optical design based on four arms (three optimized in blue, one in red). It is an instrument co-directed by the Complutense University of Madrid (UCM) and the IAA-CSIC, with the participation of three Andalusian universities (Almeria and Seville), the INAOE of Mexico, the industrial partner Fractal SLNE and the Astrobiology Center (CAB/INTA-CSIC) in Madrid. The combination of a wide field of view (2.8x2.8 arcminutes) and a high sensitivity from ultraviolet (in the so-called UV-A range) to red wavelengths makes TARSIS a unique instrument. The design of TARSIS and the exquisite transparency of the Calar Alto sky make possible observations in the full UV-A range, a domain almost unexplored from the ground.
- The MARCOT project is the acronym for Multi-Array of Combined Telescopes, a modular astronomical infrastructure facility for high-resolution spectroscopy and large field-of-view and high dynamic range imaging with subarcsecond spatial resolution. The main objective of the MARCOT Project is to carry out the conceptual design and establish a plan for the construction of a new European telescope concept with large effective aperture and low cost. The idea consists in the combination of multiple identical optical elements (identical mirrors or optical assemblies within manufacturing tolerances) resulting in a new infrastructure with a large effective aperture. Photons are collected by individual optical fibers connected to each optical assembly, which are finally combined by a novel multimode photonic lantern into a single fiber, which feeds a high-resolution spectrograph. In addition, each optical array is equipped with a low-noise readout detector (used for guiding and focusing), and the detector images can be subsequently combined. In this way, a single frame is generated with a signal-to-noise ratio identical to that of a large-aperture telescope, but with better resolution, dynamic range, and larger field of view.

TECHNOLOGY CAPABILITIES

The observatory operates a very large array of optical and near-infrared astronomical instrumentation, including imagers and spectrographs with different fields-of-view (FOV) and resolutions. See more details at ***https://w3.caha.es/observing-mainmenu-148/telescopes-aamp-instruments-mainmenu-155*** and the services provided by the ICTS can be found at ***https://w3.caha.es/access-and-services/brief-description.***

Additionally there some aspects we highlight as following:

- We foster the use of the facilities by national and international research groups that have expressed interest in the observatory's telescopes, such as the consortia of the Kepler, TESS, Gaia and Plato space missions of the European Space Agency, and the Space Situational Awareness program (focused on Near-Earth Objects) of the same Agency, which is currently using CAHA's Schmidt telescope.
- The observatory was the result of an international collaboration between the Max-Planck Society (Germany) and the CSIC. The investment in the scientific infrastructure has been appraised in 2019 at a value of approximately 150 million euros and is fully amortized in economic terms.
- The participation of the Spanish science industry in the design, manufacture and maintenance of the facilities and instruments at the observatory is very notable and helps to develop high-tech industrial capabilities that subsequently position our country's industry in a more advantageous situation in international markets.
- The multiplier effect of the science industry in innovative industrial activities of high added value is very important. Facilities such as this one provide technology companies with experience and references to present as credentials in international tenders and bids.
- Specific developments such as the spectrographs and cameras TARSIS, CARMENES, CAFÉ, PLANETCAM, PANIC, which have been, or are currently being, developed for the 2.2m and 3.5m telescopes, create a highly specialized and valuable network of Spanish companies and research centers (many of them rooted in Andalusia), in a context of full international cooperation.



Milkyway from Calar Alto

SUMMARY OF RESEARCH SERVICES

1. Observing time
2. Mirror coating services
3. Data archive

PROCUREMENT PROCESS

Procurement details can be found at
https://www.caha.es/images/stories/Tenders/Instrucciones_Contratacion_CAHA_Ley_9-2017_v1_signed.pdf

Call for proposals can be found at
https://www.caha.es/APPS/CfP/public/

BIG SCIENCE AREAS

ASTRONOMY

Hosting Organisation: **GRAN TELESCOPIO DE CANARIAS S.A.**

Address: C/ Vía Láctea, s/n. 38205, San Cristóbal de La Laguna (Tenerife)

Web: http://www.gtc.iac.es

Phone: [+34] 922 425 720

Email: gtc@gtc.iac.es

DESCRIPTION

The 10.4m Gran Telescopio Canarias (GTC) is currently the world's largest optical-infrared telescope. The GTC is an initiative of the Instituto de Astrofísica de Canarias, and is funded by the Spanish Administration and the Canary Islands Autonomous Community with the international participation of institutions in Mexico (UNAM and INAOE) and in the US (University of Florida). The public company Gran Telescopio de Canarias, S.A. (GRANTECAN) is responsible for its construction, operation, maintenance and development. GTC is fully operational since 2009.

Outside view of Gran Telescopio de Canarias

MAIN EQUIPMENT OR FACILITIES

The GTC was designed to be a versatile telescope, able to simultaneously host different instruments at its multiple focal stations, whose use can be switched in few minutes. Three to six instruments, covering the optical and near infrared domains at different spectral resolution and with multiplexing capabilities, are currently installed at the telescope and routinely offered to the scientific community. Present instruments are:

- OSIRIS, now located at the main Cassegrain focus of the GTC, is an imager and spectrograph for the optical wavelength range. It allows broad-band imaging and long-slit spectroscopy, as well as narrow-band imaging using tunable filters and multi-object spectroscopy (MOS). Its field of view is 7x7arcmin2.
- EMIR is a near-infrared camera and spectrograph equipped with several state-of-the-art high-technology subsystems, such as a cryogenic robotic system of reconfigurable slits able to simultaneously obtain spectra of 50 targets. EMIR capabilities include broad-band and narrow-band imaging, and long-slit and MOS spectroscopy over a field of view of 6.7x6.7 arcmin2.
- MEGARA is a MOS and IFU visible spectrograph with R up to 20,000.
- HORuS is a R=25000 single source fibre spectrograph for the visible range (visiting instrument).
- HiPERCAM is a high-speed (up to 1000 Hz), multi-band (ugriz) camera (visiting instrument

PROJECTS UNDER DEVELOPMENT

New common-user scientific instruments are under development. They are:

- MIRADAS, a MOS near-IR spectrograph with R=20000. It is under construction at the University of Florida and expected to be mounted at the GTC during 2022.
- FRIDA, a near-IR imager and IFU spectrograph (up to R=30000), which is being developed at UNAM, México. It is expected at the GTC in 2023. It will be fed by an Adaptive Optics system under development at the IAC. A laser guide system will be also implemented at a later stage.

For the list of instruments available at a given time, see ***www.gtc.iac.es/instruments/instrumentation.php.***

Other undergoing projects are the upgrade of the GTC IT facilities and software arquitecture, the automatization and optimization of the operations, a strong obsolescence control, the implementation of energy-efficient and sustainable solutions in all acitvities , and the progressive digitalization of the whole infrastructure within an Industry 4.0 paradigm.

TECHNOLOGY CAPABILITIES

GRANTECAN has a wide expertise in the design of telescopes and their instrumentation. This includes various related technologies such as optics, mechanics, optomechanics, optoelectronics, visible and IR detectors and related systems, cryogenics, control systems and related software, etc.

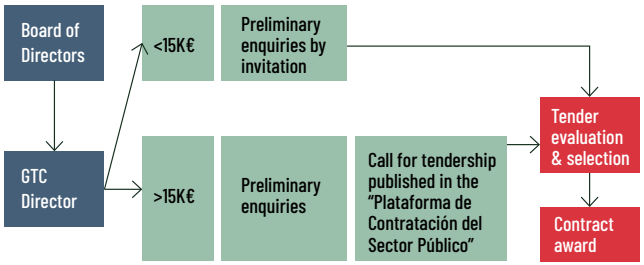
SUMMARY OF RESEARCH SERVICES

The GTC provides advanced observing capabilities to the astronomical community. While formal partners are Spain, Mexico and the University of Florida, GTC is open to the interest of other user communities, both via scientific and technical collaborations and agreements. Along these lines, a collaboration agreement was signed in 2016 with the Academy of Science of China. Access to GTC observing time is done via the corresponding Time Allocation Committees. Data are obtained in service-queue mode, or in visiting mode. More information at ***www.gtc.iac. es/observing/observing.php***

BIG SCIENCE AREAS

ASTRONOMY

PROCUREMENT PROCESS



Inside view of the Gran Telescopio de Canarias dome

Hosting Organisation: **IRAM - INSTITUT DE RADIOASTRONOMIE MILLIMETRIQUE**

Address: Pico Veleta, Sierra Nevada (Granada)

Web: http://www.iram-institute.org/

Phone: [+34] 958 805 454

Email: info@iram.es

DESCRIPTION

The Institut de Radioastronomie Millimétrique (IRAM) was founded in 1979 and is operated as a French-German-Spanish collaboration. Its partner institutions are the Centre National de la Recherche Scientifique (CNRS) in France, the Max Planck Gesellschaft (MPG) in Germany and the Instituto Geográfico Nacional (IGN) in Spain. The IGN participates with a fraction of investment and operation expenses and, in return, IGN gets a fraction of the observing time on each IRAM telescopes and a participation in Administrative and Technical Committees. The observatories are supported by the IRAM offices and laboratories in Granada and Grenoble.

IRAM operates two observatories, the NOEMA Interferometer at the Plateau de Bure (France) and the observatory at Pico Veleta located in Sierra Nevada (Granada, Spain), 2850 m high.

Partnership with national and international space research organisations includes ESA, NASA and CNES. IRAM also is a major partner in the international ALMA project, the giant radio observatory in the Chilean desert.

MAIN EQUIPMENT OR FACILITIES

The observatory at Loma de Dílar, close to Pico Veleta in Sierra Nevada hosts an open air, millimeter single-dish radio telescope of 30 m diameter with a paraboloidal main reflector. The mount is Alt-azimuth and fully steerable, made of steel on a concrete pedestal. The telescope has a homologous design and is thermally controlled and the reflector surface precision is 55 microns. The total weight of the moving parts is 800 tons. The frequency range of operation 73 to 350 GHz and the angular resolution 30 to 7.5 arcsec. Backends for continuum, spectroscopy and VLBI observations are available.

The instrumentation comprises two high-performance receivers: EMIR (Eight MIxer Receiver) is a four-band heterodyne receiver with dual-polarization covering the range between 73 and 350 GHz. Instantaneous observation of two bands with a usable bandwidth of 16 GHz and two polarisations are possible. NIKA2 (New IRAM KID Array 2) is a dual-band camera operating with three frequency-multiplexed kilopixels arrays of Lumped Element Kinetic Inductance Detectors (LEKID) cooled at 150mK. NIKA2 is designed to observe simultaneously the intensity at 1.15 mm (260 GHz, 2 x 1140 pixel arrays -one per polarisation) and 2.0 mm (150 GHz, 1 x 616 pixel array). In addition, it allows for polarisation observations at 1.15 mm. NIKA2 is built by an international consortium, led by the Institute Neel (Grenoble, France).

In addition to the receivers, several spectrometers are available for the heterodyne receivers: the Fast Fourier Transform Spectrometer (FTS) with 32 GHz bandwidth and 200 kHz resolution or 8 GHz bandwidth and 50 kHz resolution. The WILMA autocorrelator with 18 units of 1 GHz bandwidth and 2 MHz resolution; and the VESPA autocorrelator with a very high resolution of up to 3.3 kHz. In addition, the telescope is equipped with a Very Long Baseline Interferometry (VLBI) terminal.

PROJECTS UNDER DEVELOPMENT

IRAM is currently carrying out an ambitious upgrade of the 30m telescope in two areas: (a) modernisation of the servo-control system, including azimuth and elevation trains, subreflector control and wobbling system, and (b) improvement of the primary mirror (reflector) surface accuracy, thermal behaviour and gain-elevation curve. The activities started in 2.021 and will extend well within 2.023. Moreover, IRAM is currently developing new multi-beam heterodyne receivers in two bands at a wavelength of 3 mm (5 x 5 pixel) and 1 mm (7 x 7 pixel). Prototype instruments are currently in development. A 3 mm HEMT prototype is currently undergoing tests at the observatory.

TECHNOLOGY CAPABILITIES

Design of parabolae and their control systems, design and production of ultra-sensitive super conducting detectors and complex receiver systems, high-speed digital electronics and advanced data reduction software. Groups and laboratories at IRAM: Frontend team; SISLab; Backend team; Mechanical workshop group; Computer group. The IRAM workshop is equipped with the latest generation of CNC lathes and milling machines and non-contact measuring microscopes.

IRAM MRT 30m Observatory View from the East

IRAM MRT 30m Sky

SUMMARY OF RESEARCH SERVICES

The observing time must be obtained by international competition. Proposals for observations with the IRAM telescopes may be submitted twice per year through the Proposal Management System PMS. The submission period starts about three weeks before a deadline. Submission deadlines are currently around mid-March and mid-September each year for the Summer (01 June-30 November) and Winter (01 December-31 May) scheduling periods.

PROCUREMENT PROCESS

Main contracts are awarded by IRAM-Grenoble. Moreover, the local contracts related to the operation of the IRAM 30-m radiotelescope (both for goods and services) are awarded by IRAM-Granada. In both cases, IRAM performs as a private company subjected to the French or the Spanish law, respectively.

BIG SCIENCE AREAS

ASTRONOMY

IRAM MRT 30m Observatory

Hosting Organisation: **OBSERVATORIO ASTROFÍSICO DE JAVALAMBRE**

Address: Plaza San Juan, 1 - Planta 2. 44001, Teruel

Web: http://www.cefca.es/

Phone: [+34] 978 221 266

Email: cefca@cefca.es

OAJ Observatorio Astrofísico de Javalambre

DESCRIPTION

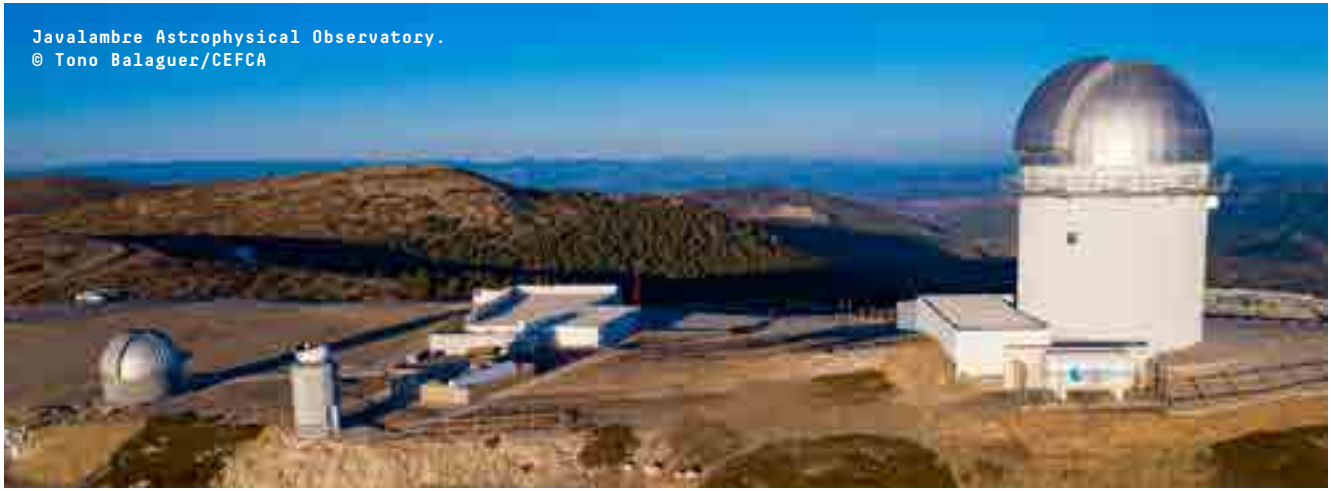
The Observatorio Astrofísico de Javalambre (OAJ) is an astronomical observatory built and operated by the Centro de Estudios de Física del Cosmos de Aragón (CEFCA). It is located at an altitude of 1956m within the municipality of Arcos de las Salinas (Teruel, Spain). The observatory's main purpose is the compilation of large-scale multi-filter astronomical surveys used as the basis for leading-edge research on astrophysics and cosmology.

More information:
http://oajweb.cefca.es

MAIN EQUIPMENT OR FACILITIES

The observatory is fundamentally structured around two large field-of-view, world-class optical telescopes:

- Javalambre Survey Telescope (JST250), a 2.55 m aperture, F#3.5 alt-azimuthal telescope designed to optimize image quality over the 3 degrees diameter field of view. The main scientific instrument is JPCam, a 1.2Gpixel instrument conceived to carry out the J-PAS survey. JPCam is equipped with a mosaic of 14 9.2k-by-9.2k, 10μm pixel detectors plus 12 auxiliary detectors for auto-guiding and image quality control. The cryostat is actuated by a hexapod system to optimise optical alignment during operation. The instrument, that admits up to 70 filters, began its science observations in the spring of 2023.
- Javalambre Auxiliary Survey Telescope (JAST80), an 83 cm, F#4.5 telescope that provides a 2 degrees diameter field of view. The telescope is equipped with T80Cam, a panoramic CCD camera conceived to carry out the J-PLUS survey.



Javalambre Astrophysical Observatory.
© Tono Balaguer/CEFCA

TECHNOLOGY CAPABILITIES

The main OAJ technology capabilities are:

- Coating facility: composed by a coating chamber and a mirror cleaning unit. The coating chamber is a 4m diameter vacuum chamber that admits mirrors up to 3m diameter.
- Class 100.000 clean room.
- Opto-mechanical equipment: metrology equipment, spectrophotometer and reflectometer.
- OAJ has expertise in several areas of technological development for astronomical telescopes and instrumentation, such as control (hardware and software), mechanics, electronics and optics.

The OAJ vacuum chamber for aluminizing mirrors of up to 3m diameter

PROJECTS UNDER DEVELOPMENT

The auxiliary detectors of JPCam are being commissioned to improve observing efficiency. These detectors are used for auto-guiding and image quality control.

The Global Observatory Control System (GOCS) is a global tool under development to manage, monitor, control and maintain all observatory systems including, not only astronomical, but infrastructure and general facilities as well.

SUMMARY OF RESEARCH SERVICES

Open time observation projects: The OAJ offers 20% of Open Observing Time to the astronomical community through periodical calls for proposals. Detailed information can be found in:
https://oajweb.cefca.es/observingtime/applying_observing_time.
Observations are executed in queue mode by the observatory staff.

Long term, legacy observation projects: CEFCA/OAJ can sign agreements with other institutions and/or consortia to carry out long term, legacy observation projects. At present, the following Memorandums of Understanding exist:

- EUCLID: between Euclid Consortium of the European Space Agency (ESA) and CEFCA for the provision of data with JPCam to complement Euclid space telescope observations.
- J-PAS: collaboration agreement between ON (Rio de Janeiro), IAG/USP (São Paulo), IAA-CSIC and CEFCA to carry out the J-PAS survey.

Four 2nd generation legacy surveys with JAST80 were approved and are being executed (2023 – 2027).

A new call for 2nd generation legacy surveys with JST250 is planned to be released at the end of 2025.

PROCUREMENT PROCESS

The OAJ belongs to and is managed by CEFCA. Therefore, CEFCA's procurement process applies entirely to the OAJ.

BIG SCIENCE AREAS

ASTRONOMY

Hosting Organisation: **OBSERVATORIOS DE CANARIAS**
Address: Observatorio del Roque de los Muchachos.
Carretera al Roque de los Muchachos, s/n.
38728, Villa de Garafía (Santa Cruz de Tenerife)
Web: http://www.iac.es/
Phone: [+34] 922 605 200
Email: contacto@iac.es

DESCRIPTION

The Instituto de Astrofísica de Canarias (IAC) administers this Singular Scientific and Technical Infrastructure (ICTS), formed by the Observatorio del Roque de los Muchachos (ORM) in La Palma island, and the Observatorio del Teide (OT) in Tenerife island. The excellent astronomical quality of the sky at the Canary Islands -thoroughly characterized and protected by law- makes these observatories astronomical reserves, open to the international scientific community since 1979. Currently the OCAN host telescopes and instruments belonging to more than 75 institutions from 25 countries, being the most important set of astrophysical infrastructures within the territory of the European Union for visible and infrared nocturnal and solar research, and the largest collection of multinational telescopes worldwide. Other experiments for high-energy astrophysics and the study of the cosmic microwave background complete the infrastructures available.

MAIN EQUIPMENT OR FACILITIES

ORM offers one of the most complete telescope arrays around the world. There are a number of night-time observation telescopes: GTC, WHT, TNG, NOT, INT, LT, Mercator and JKT. It also has one solar telescope: SST and other infrastructures like the Cherenkov telescopes, MAGIC I and II, SuperWASP, two DIMMA, SHABAR, CILBO and the ESFRI Research Infrastructure CTA-North.

OT is ideally suited for studying the sun, concentrating on of the best European solar telescopes in operation: GREGOR and THEMIS. In addition, it also has a number of night-time observation telescopes: TCS, Stella I and II, OGS, ATLAS, SONG, IAC80, MONS, SLOOH I and II, BRT, EarthShine, TST, TTTs, MASTER, LCOGT CILBO, EAST and TIZON. Most of them are remote or robotically operated. The OT also has a Solar Physics Laboratory with some instruments; two telescopes –QUIJOTE I and II-, TMS GROUNDBIRD and STRIP, to study the Cosmic Microwave Background Radiation, the ASTRI mini array for High Energy Physics and several experiments to check the sky quality: DIMMA, SHABAR, SQM-LE, AstMon.

Panoramic view of Roque de los Muchachos Observatory

PROJECTS UNDER DEVELOPMENT

The IAC conducts projects on the operation and viability of telescopes (EST, FDI, OGS, OPTICON), infrared (EMIR, MIRADAS, FRIDA, HARMONI, HIRES), and visible (HORUS, ESPRESSO, GREGOR, WEAVE, DESI) instrumentation, adaptive optics (GTCAO and LGS, EDiFiSE, FastCam, AOLI) or microwave (QUIJOTE). Major research infrastructures projects include CTANorth, EST and NRT among others

TECHNOLOGY CAPABILITIES

The IAC develops much of the technology used for its research programmes in-house. The Technology Division is responsible for designing, developing and building the instruments needed for astrophysical observation. The IAC Instrumentation Area provides technology, development and production support for research and technological development projects. This area has staff who are highly qualified in the disciplines of mechanics, optics, electronics and software and have access to advanced development and production techniques. The Division is organized into Engineering and Production and structured as a matrix, with project managers coordinating the resources.

The expertise of the division includes the following areas: Optical system design and testing, Mechanical and opto-mechanical system design and development, Cryogenic and vacuum system design and development, Precision mechanics, Adaptive optics, Fibre optics, Control systems, Sensor characterisation, Project management, Systems engineering, Electronic systems, Software design and Laser communications.

Requests from individuals or public or private entities outside the IAC which relate to require human or material resources administered by the IAC Instrumentation Area are managed by the OTRI office.

SUMMARY OF RESEARCH SERVICES

Under the terms of the Agreement on Cooperation in Astrophysics, Spain provides the site in return for a percentage of the available observing time at each of the telescopes or instruments. Observing time is awarded through the Time Allocation Commission (CAT), comprising a Solar Committee and a Night Time Committee.

There are different schemes to apply for observing time: ordinary calls (twice a year); Spain-Mexico GTC collaborative time; IAC-Nordic collaborative time; Director Discretionary Time; International Time Programme. Every semester, a number of nights of CAT time are available to service observations of short scientific programmes. The Sevice Time observations are carried out by the IAC's Support Astronomers Group and the presence of the user astronomer in the telescope is not required. The service time is available for six telescopes: WHT,INT,NOT and TNG at ORM, under CAT time, and TCS and IAC80 Telescopes at the OT, under non-CAT time.

Pure research activities at the IAC are organized into six subject areas covering most fields within Astrophysics whether theoretical, observational or instrumental. The IAC conducts projects on earth and space telescopes, high resolution, infrared instrumentation, optics and microwaves, as well as technological support.

PROCUREMENT PROCESS

Law 9/2017, of 8 November 2017, on Public Procurement, which transposes Directives 2014/23/ EU and 2014/24/EU of the European Parliament and of the Council, of 26 February 2014, into Spanish law

BIG SCIENCE AREAS

ASTRONOMY

Hosting Organisation: **OBSERVATORIO DE SIERRA NEVADA (IAA/CSIC)**

Address: Loma de Dilar, Parque Natural de Sierra Nevada (Granada)

Web: https://www.osn.iaa.csic.es/

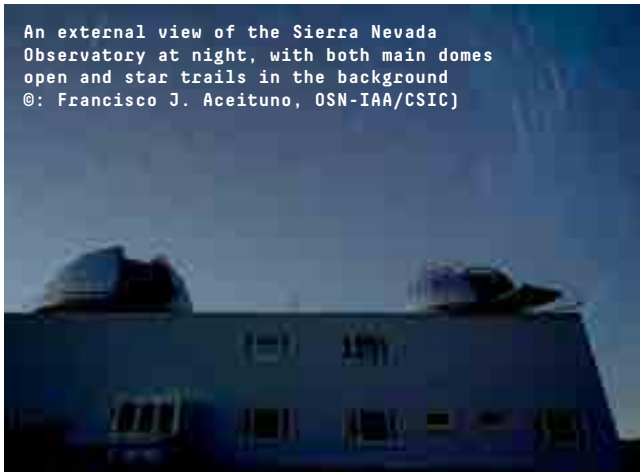
Phone: [+34] 958 121 311

Email: direccion.osn@iaa.es

INSTITUTO DE ASTROFÍSICA DE ANDALUCÍA

DESCRIPTION

The Observatorio de Sierra Nevada (OSN) is a high mountain observatory located at 2896m altitude in the Sierra Nevada National Park (Granada, Spain). It belongs to the Instituto de Astrofísica de Andalucía (IAA-CSIC), which operates and manages it. To compensate for the limited access to observing time at larger observatories, the OSN offers excellent flexibility to serve programs that require rapid response or intense temporal coverage, either in terms of sampling or extension. Its southernmost high-altitude location in continental Europe and the dry climatic conditions of Sierra Nevada make the OSN an excellent place for carrying out astronomical observations and other experiments and studies, like mid-upper atmosphere sounding and test bed for external instrumentation. For this, secondary facilities complete the available infrastructure in addition to the main building.



An external view of the Sierra Nevada Observatory at night, with both main domes open and star trails in the background ©: Francisco J. Aceituno, OSN-IAA/CSIC)

MAIN EQUIPMENT OR FACILITIES

The OSN has a main building that shelters the living quarters and two optical telescopes with Ritchey-Chrétien configuration and two Nasmyth foci:

- A 1.5 m telescope (T150), equipped with a commercial 4Mp CCD Peltier Camera and the Spectrograph (ALBIREO). ALBIREO is under commissioning after a recent technical update.
- A 90 cm telescope (T90), equipped with a commercial 4Mp CCD Peltier Camera and a polarimeter (DIPOL1).

Furthermore, the smaller outbuildings contain:

- MIMA, a Fabry-Perot imaging interferometer measuring atmospheric airglow.
- Five high-sensitivity robotic CCD cameras monitoring the sky for meteors and fireballs within the SMART Project (University of Huelva).
- A GPS Topo-Iberia station (University of Barcelona) is a GPS station used for integrated topography and 4-D evolution studies.
- A DIMM seeing monitor.
- An All-Sky Transmission Monitor, four Sky Quality Meters and a TESS-4C sensor from the IAA Sky Quality Office.

PROJECTS UNDER DEVELOPMENT

A project to upgrade and reactivate the 60 cm infrared telescope, which has been inactive for many years, is currently under consideration.

TECHNOLOGY CAPABILITIES

The OSN technical support and maintenance are provided by its staff and the IAA's Instrumental and Technological Development Unit (UDIT) across various areas:

- Electronics: control of the telescopes, domes, and instruments developed in-house, complemented by the design and development of circuits, power electronics or PCBs.
- Mechanics: development of mechanical structures, optomechanics, high precision positional systems and thermal analysis of mechanical components.
- Optics: optical design of instruments and components and regular maintenance of the telescopes' mirrors and instrument optics.
- Software: maintenance of data archives and control software for instrumentation.

SUMMARY OF RESEARCH SERVICES

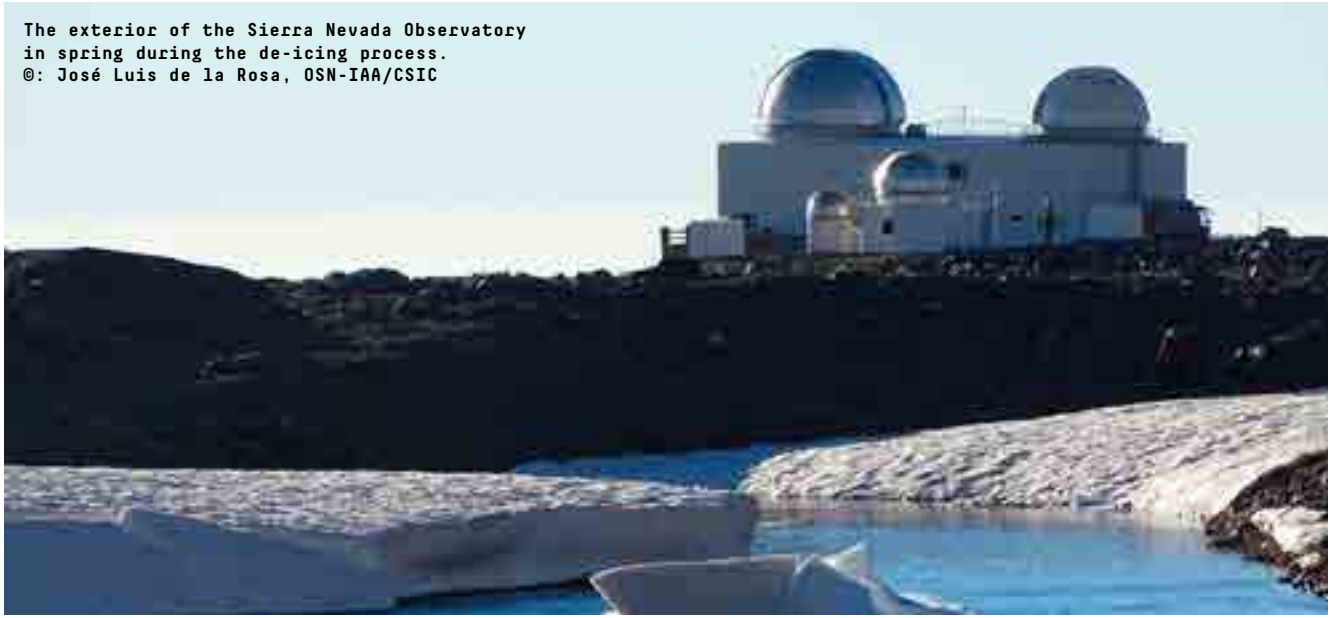
The OSN provides astronomical observations in the visible using the CCD detectors, the polarimeter and the spectrograph at both telescopes. The OSN Time Allocation Committee (TAC) evaluates the proposals for observing time twice a year. In addition to standard open-time proposals, the TAC evaluates Target of Opportunity proposals: unpredictable observations requiring a quick response. A small fraction of time is also available to be assigned by the OSN director to unexpected and urgent observations of high scientific interest (Director's Discretionary Time). There are three possible observing modes: service, remote and visitor. OSN also provides essential maintenance of instruments and experiments hosted at OSN in collaboration with other institutions and astronomical observations for master students of external universities.

PROCUREMENT PROCESS

As part of the Instituto de Astrofísica de Andalucía (IAA/CSIC), the OSN procurement process is governed by the Royal Legislative Decree 3/2011, November 14th, which approved the consolidated text of the Spanish Law of Public Sector Contracts.

BIG SCIENCE AREAS

ASTRONOMY

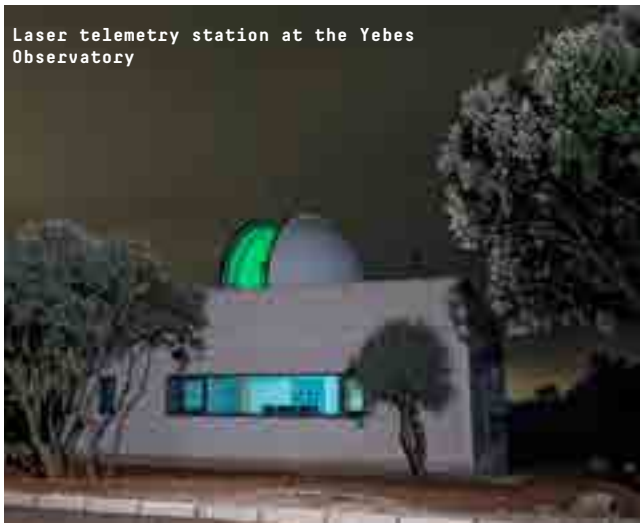


The exterior of the Sierra Nevada Observatory in spring during the de-icing process.
©: José Luis de la Rosa, OSN-IAA/CSIC

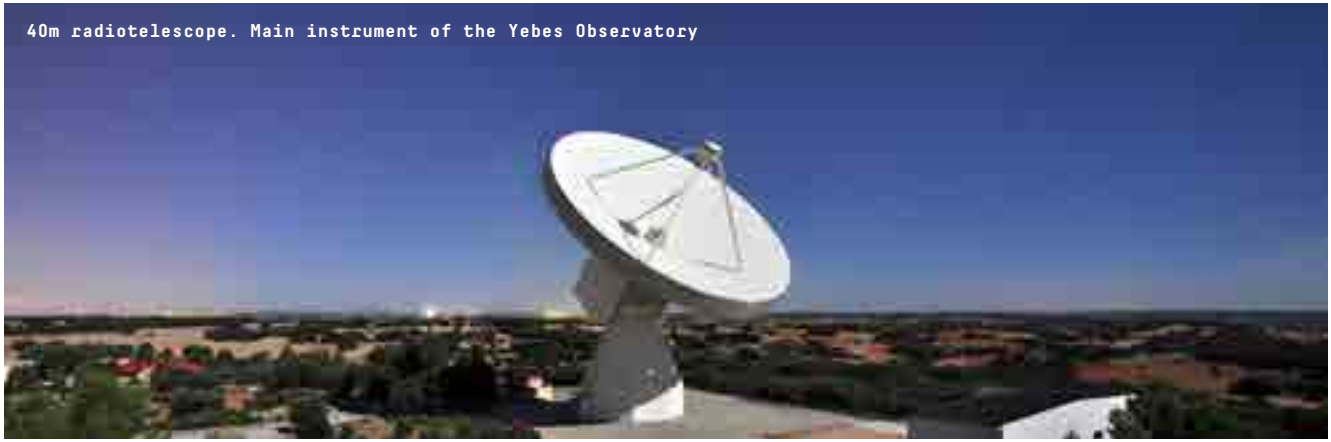
Hosting Organisation:	**OBSERVATORIO DE YEBES**
Address:	Cerro de la Palera s/n. 19141, Yebes (Guadalajara)
Web:	https://astronomia.ign.es/web/guest/icts-yebes/acercade/que-es-el-observatorio-de-yebes
Phone:	[+34] 949 290 311
Email:	director_yebes@oan.es

DESCRIPTION

Yebes Observatory, located in the municipality of Yebes (Guadalajara) is a research institute which belongs to the Spanish National Geographic Institute (Ministry of Transportes y Movilidad Sostenible). The Observatory is devoted to observing astronomical sources in the radio spectrum to achieve a better understanding of our Universe and our Earth as well as to developing and constructing instrumentation in the field of radio astronomy.



Laser telemetry station at the Yebes Observatory



40m radiotelescope. Main instrument of the Yebes Observatory

MAIN EQUIPMENT OR FACILITIES

1. The 40m radio telescope is a Nasmyth-Cassegrain antenna which operates in the centimetre and millimetre wave range. It is the most important observing instrument of the Observatory of Yebes and it is currently equipped with high sensitivity cryogenic dual polarization receivers which cover the following bands: 2.1-2.4 GHz, 4.5-9 GHz, 8.1-8.9 GHz, 18-32 GHz, 32-50 GHz and 72-90 GHz. The telescope works in two different modes: as a single dish telescope and as an element of several international interferometric networks like the European VLBI Network and the Global Millimeter VLBI Array. As a single dish element, it is equipped with an ultra-wide 18 GHz spectral backend, state of the art, connected to the 32-50 GHz and 72-90 GHz receivers and a 14 GHz spectral backend connected to the 18-32 GHz receiver. For the second type of observations the telescope is equipped with instrumentation that allows to record, store and transfer big volumes of data at very high speed to the correlator centers. The telescope, and the rest of the Observatory is connected at 100 Gb/s to the high velocity Spanish scientific network Rediris-NOVA.
2. The 13.2 m radio telescope of the Observatory of Yebes, is one of the most active and important elements of the VLBI Global Observing System (VGOS) within the Internationa VLBI Service (IVS). It is also the main node of the Red Atlántica de Estaciones Geoespaciales (RAEGE) composed of 4 telescopes: Yebes, Santa María (Açores Islands), Gran Canaria in the Canary Islands (still under construction) and Flores (only projected). The telescope is specially designed to perform geodetic VLBI VGOS observations, and as such it is equipped with a high wide band receiver between 2 and 14 GHz. The data is recorded and stored locally and transferred later to the corresponding geodetic correlator.
3. Microwave and Millimeter Wave Cryogenic Laboratory. The Observatory of Yebes is a center for the development of radio astronomy devices and is considered an international reference in this area for its quality and reliability. The developments are mainly performed at these laboratories which are equipped with microwave, millimeter and cryogenic instrumentation for the characterization of microwave and millimeter components. The frequency range extends from DC to 140 GHz and the characterization of the devices is done in a wide temperature range: from ambient to cryogenic temperatures (4 K).

TECHNOLOGY CAPABILITIES

The different facilities of Yebes infrastructure provide capabilities focused on the design, assembly and characterization of active and passive microwave and millimeter wave devices at ambient and cryogenic temperature, development of cryogenic receivers, design and characterization of antennas, microwave circuits, gravity measurements and time and frequency measurements. The experience of the staff also provides a big expertise in software control and analysis.

PROJECTS UNDER DEVELOPMENT

ORP is a 15 M€ ERC project that manages funding for all European optical and radio telescopes. The IGN takes part in several activities related to the proposal tool and the influence and mitigation of RFI on the radio observations

RADIOBLOCKS project, granted 10 M € by the European Commission, is focused in developing "common building blocks" for technological solutions in radio astronomy beyond state-of-the-art, that will enable a broad range of new science and enhance European scientific competitiveness. The IGN takes part in several work packages of this project.

YDEAS is a next generation EU project funded with 675 k€ for the development of cryogenic low noise amplifiers and optical elements for radio astronomy receivers.

SUMMARY OF RESEARCH SERVICES

Astronomical observations with the 40 m radio telescope in VLBI and single dish modes. Geodetic VLBI Observations with the 13.2m radio telescope and the RAEGE network. Design, construction, assembly and characterization of microwave circuits, devices and radio astronomy cryogenic receivers.

PROCUREMENT PROCESS

In accordance with Spanish Law 9/2017, November 8th, of Public Sector Contracts ***https://www.boe.es/buscar/pdf/2017/BOE-A-2017-12902-consolidado.pdf***

BIG SCIENCE AREAS

ASTRONOMY

National Big Science Research Entities

Hosting Organisation: **CIEMAT - DEPARTMENT OF TECHNOLOGY, ACCELERATORS AND ELECTRIC DRIVES**

Address: Av. Complutense, 40. 28040, Madrid

Web: https://www.ciemat.es

Phone: [+34] 913 466 403

Email: contacto@ciemat.es

DESCRIPTION

CIEMAT is a public research center focused on energy, environment, technology and specific areas of fundamental research. Aimed at developing activity on research and development in collaboration of public and private institutions and innovation within collaborative projects and contracts with industry.

MAIN EQUIPMENT OR FACILITIES

- The SMART Laboratory for developing superconducting magnet prototypes, including winding, reacting, collaring and assembling facilities.
- Facility for testing immersion-cooled small superconducting magnets
- Facility for testing conduction-cooled superconducting magnets
- Facility for testing ion sources for particle accelerators
- Facility for the characterization of RF Cavities
- Facility for testing kinetic energy storage systems
- Facility for testing big linear generators and power converters

The MCBXF at the SM-18 inside one cryomodule for the HL-LHC (CERN)

PROJECTS UNDER DEVELOPMENT

1. **Area of Superconducting Magnets:**

PRISMAC (Very High Field Superconducting Magnets Program):

- Development of the MCBXF magnets for HL-LHC@CERN
- Development of the SMART Laboratory
- Starting activities in the High Field Magnet Program
- Extension to activities in HTS magnets for Fusion

MAGNEXT (Next Generation Magnets for the Next Generation of Particle Accelerators): development of a split magnet for the ILC project

HITRI PLUS (Heavy Ion Therapy Research Integration): development of a curved canted cosine theta LTS Magnet

iFAST (Innovation Fostering in Accelerator Science and Technology):

- Development of a straight canted cosine theta LTS magnet
- Development of a dipole based on permanent magnets

2. **Area of Particle Accelerators:**

LIPAC-DONES: commissioning & control systems

DONES-EVO:

- Participation in the development of magnets
- Participation in beam dynamic analysis
- Participation in the development of RF systems (buncher & BPMs) and other components

WPENS: beam dynamics analysis for the DONES accelerator and the liquid lithium target

MEDICAL ACCELERATORS: participation in the RFQ, IH tanks and BPMs of an accelerator for radiobiological studies

3. **Area of energy generation and management:**

POSEIDON: development of three energy storage systems adapted for their application in maritime transport

MARES: development of a superconducting generator for wave energy conversion

SCALE: development of components for an ultrahigh speed ground transportation system (Hyperloop)

HYBRIDHYDRO: hybrid energy storage for hydraulic power stations

STORIES: establishing a network of industries and research centres for the analysis of hybrid storage

GREENH2CM: power electronics for H2 generation from renewables

TECHNOLOGY CAPABILITIES

- Calculation & simulation of particle accelerators for medical uses and other societal applications
- Design, fabrication and testing of accelerator components including magnets, beam position monitors, RF cavities, control systems, etc.
- Design, fabrication and testing of superconducting magnets for particle accelerators or any other application in sectors like energy & transportation
- Applications of energy storage in electric power systems, including hybrid energy storage systems for isolated of grid-connected applications
- Development and dimensioning of energy storage systems, including the storage device, the power converters and the control system
- Design and fabrication of electromagnetic devices and the associated power converters and control systems for high-speed ground transportation

SUMMARY OF RESEARCH SERVICES

- Research in particle accelerators participating in collaborative projects in medical accelerators and also in international collaborations in high energy physics accelerators and colliders.
- State of the art superconducting magnets for high energy physics facilities and their social applications. This includes high field magnets and high critical temperature magnets.
- Advanced energy storage systems including superconducting magnetic, kinetic, supercapacitor and battery based devices with the corresponding power converters and control systems.
- Advanced electromagnetic devices for energy generation and transportation.

PROCUREMENT PROCESS

Government Procurement Platform

CIEMAT Contractor Profile web.

Link: ***https://www.ciemat.es/portal.do?IDM=264&NM=2***

BIG SCIENCE AREAS

FUSION | PARTICLE PHYSICS AND ACCELERATORS

Hosting Organisation: **CENTRO DE ESTUDIOS DE FÍSICA DEL COSMOS DE ARAGÓN**

Address: Plaza San Juan, 1 - Planta 2. 44001, Teruel

Web: http://www.cefca.es/

Phone: [+34] 978 221 266

Email: cefca@cefca.es

DESCRIPTION

The Centro de Estudios de Física del Cosmos de Aragón (CEFCA) is a foundation of public interest of the Government of Aragón that was created in 2008 (i) to define and construct the Observatorio Astrofísico de Javalambre (OAJ), (ii) to implement the data center "Unidad de Procesado y Archivo de Datos" (UPAD), with capacity to provide raw, reduced and calibrated data to the whole scientific community, and (iii) to carry out and promote the scientific exploitation of the data produced by OAJ and UPAD. The main scientific topics of CEFCA focus on Galaxy Formation and Evolution and Cosmology.

MAIN EQUIPMENT OR FACILITIES

- The Observatorio Astrofísico de Javalambre (OAJ), managed and operated by CEFCA.
- Unit for Processing and Data Archiving (UPAD): this data center has been designed to process and archive all the images collected by the OAJ telescopes. With capacity for 5.1 PB of storage and a total of more than 20 nodes with more that 500 cores, the UPAD provides the hardware infrastructure needed to provide raw, reduced and calibrated data on a quasi-real time basis and keep data backup.
- External Data Access Machine (EDAM): this is a system with 2 web servers (16 cores, 128 GB RAM, 28 TB storage, each server) and 2 database servers (12 cores, 256 GB RAM, 16TB storage, each server), to allow efficient access to the scientific database and sky images for the astronomical community and the general public.
- Scientific High Performance Computing system: this is a computing cluster made of 20 nodes summing up to 540 cores and more than 200 TB of storage, available for scientific analysis carried out by researches at CEFCA.
- GALÁCTICA: this is a visitor center for the outreach and promotion of Astrophysics, conceived to host and operate up to nine telescopes and their domes. Three of them (of 80cm, 40cm and a solar telescope of 15cm with professional instrumentation) will be devoted to activities for the general public, schools, universities, amateur astronomy and research centers. The other six domes will be used for the hosting of external telescopes.

Night-time view of the Observatorio Astrofísico de Javalambre (OAJ, Credits: CEFCA / Óscar Blanco Varela)

PROJECTS UNDER DEVELOPMENT

- CEFCA is developing several technological projects directly related with the operation of the OAJ, such as the panoramic camera JPCam, the OAJ Global Observatory Control System, the JPCam@JST250 image quality control system, the OAJ events and alarms system, among other
- As part of the UPAD, CEFCA is developing specific T80Cam and JPCam data pipelines, data analysis, calibration and verification tools, value added catalogues and data access tools (VO compatible), among others. In addition, the required hardware and software to allow for external data storage at the UPAD's facilities is under development.
- CEFCA is in charge of the developments in GALÁCTICA: domes and telescopes, communication and network facilities, control room and control hardware and software for the operation of the telescopes and domes. Outreach exhibition material is under CEFCA responsibility as well.
- CEFCA is part of the ARRAKIHS space mission consortium and is leading the developments associated with the mission data pipelines, the mission on-ground demonstrator and several scientific work packages.
- CEFCA is involved in the development of the Baby-IAXO (an intermediate experimental stage before International Axion Observatory - IAXO).

TECHNOLOGY CAPABILITIES

CEFCA has expertise in several areas of technological development for astronomical telescopes and instrumentation: 1) Control (hardware and software), mechanics, electronics and optics; 2) Project management; 3) Assembly, integration and verification of ground-based instrumentation; 4) Software development, astronomical data processing and archiving, VO standards and services, user-friendly tools.

SUMMARY OF RESEARCH SERVICES

Access to OAJ telescopes and instrumentation. Access to raw, reduced and calibrated sky images and scientific databases to the astronomical community and general public. CEFCA has signed several collaboration agreements with national and international research institutions and consortia. External data storage service is under development.

PROCUREMENT PROCESS

https://www.cefca.es/cefca_es/contrato

BIG SCIENCE AREAS

ASTRONOMY

Night-time view of the dome network of Galáctica, a centre for Astronomy Education and Outreach
© Galáctica

Hosting Organisation: **INSTITUTO DE ASTROFÍSICA DE ANDALUCÍA**

Address: Glorieta de la Astronomía, s/n. 18008, Granada

Web: http://www.iaa.es

Phone: [+34] 958 230 535

Email: direccion.iaa@csic.es

DESCRIPTION

The IAA is a research institute that belongs to the Consejo Superior de Investigaciones Científicas (CSIC), located in Granada (Andalucía, Spain). The main activities of IAA (CSIC) are devoted to:

- Front-line research in the field of Astronomy and Astrophysics
- Development of space-borne and ground-based instrumentation

PROJECTS UNDER DEVELOPMENT

Currently the IAA is involved in the development of the instruments: GALA/JANUS (JUICE; ESA), PLATO 2.0 (ESA) , IMaX + and SCIP (Sunrise III; NASA USA, Germany & Spain), COCA/MANIAC/Enviss/OPIC (Comet Interceptor; ESA), VenSpec/VEM (EnVision; ESA), PMI (VIGIL, ESA), SKA (SDP, SRC, PAF), TARSIS/CARMENES-PLUS (CAHA), MOSAIC/ANDES (ELT), Tunable Imaging Spectropolarimeters (EST), MIMA (OSN), DUSTER, MARCOT (CAHA), PANIC (CAHA).

MAIN EQUIPMENT OR FACILITIES

- Mechanical electronic workshops
- Clean room for instrumentation AIV (ISO8)
- Clean room for electronics AIV (ISO8)
- Optics laboratory (ISO 8)
- Solar Physics Laboratory
- Cosmic Dust laboratory
- Spanish SKA Regional Center (espSRC)

Operation of astronomical observatories:

- Calar Alto Observatory (CAHA) is a joint infrastructure from CSIC and Junta de Andalucía, and the IAA (CSIC) is the reference institute. Telescopes: 3.5m, 2.2m and 1.23m.
- Sierra Nevada Observatory (OSN) is operated by the IAA (CSIC). Telescopes: 1.5m and 0.9m.

CARMENES instrument end-to-end cryogenic development

TECHNOLOGY CAPABILITIES

The technological capabilities of the IAA-CSIC focus on the development of instrumentation for ground-based telescopes and astronomical payload instrumentation for science and exploration space missions, covering various fields such as:

- Electronics engineering: development of power distribution units (PDU), data processing units (DPU), mechanism controller units (MCU), electrical ground support equipment (EGSE) and on board software for instrument control using FPGAs.
- Mechanical engineering: cryo-vacuum technology, high accuracy mechanics and FEA structural analysis. This know-how has been successfully applied in projects such as CARMENES (CAHA Observatory), ALMA (Band 1) and ANDES (ESO).
- Optical design of astronomical instrumentation in visible and infrared ranges: telescopes, spectroscopy, imaging, photometry and polarimetry.
- Analysis, design, integration and verification (AIV) of astronomical instruments for interplanetary scientific space missions and stratospheric balloon observatories.
- Software development: control software development for telescopes and astronomical instrumentation; development of pipelines for processing astronomical data and data archives; Expertise in VO (Virtual Observatory) standards and services; Big Data solutions for data processing; User-friendly tools for analysis and reproducibility.
- Project management.

More information: ***http://udit.iaa.csic.es/***

IM Janus Filter Wheel for JUICE ESA

SUMMARY OF RESEARCH SERVICES

- The IAA forms part of numerous consortia for the development of airborne and ground-based and instruments.
- The IAA provides access to multiple and advanced observing capabilities to the astronomical community, through the CAHA and OSN observatories.
- The IAA is coordinating the Spanish participation in the Square Kilometre Array (SKA, ***http://www.ska-spain.es***), with funds granted by a budgetary line from the Spanish Ministry of Science (2021). IAA is supporting the interaction with international consortia/groups for strategic alliances, positioning of Spanish industry, representation of Spanish groups in SKA meetings and consortia. IAA is prototyping the Spanish node of the international SKA Regional Center (SRC) network, advocating for the principles of Open Science and reproducibility.
- The IAA participates in all scientific, technological, management and communication aspects of the European Solar Telecope (EST) project. In particular, the IAA is leading the development of the Tunable Imaging Spectropolarimeters/Fixed-Band Imagers (TIS/FBI).
- The IAA participates in the development of the second generation instruments ANDES and MOSAIC of the Extremely Large Telescope (ELT/ESO).
- The IAA is involved in the development of Gammapy, a Python-based package for high-level data calibration and analysis for CTA (Cherenkov Telescope Array) data processing.

BIG SCIENCE AREAS

ASTRONOMY

Hosting Organisation: **INSTITUTO DE ASTROFISICA DE CANARIAS**

Address: C/ Vía Láctea, s/n. 38205, San Cristóbal de La Laguna (Tenerife)

Web: http://www.iac.es/

Phone: [+34] 922 605 200

Email: contacto@iac.es

DESCRIPTION

The IAC, a worldwide reference research centre in astrophysics, is a public research Consortium comprised by the Observatorios de Canarias (OCAN) and two headquarters, in La Laguna (Tenerife) and Breña Baja (La Palma). It has a state-of-the-art Technology Division with facilities and technical staff involved in the development of the most advanced instrumentation projects for the near future. In addition, the IAC has set up IACTEC in La Laguna, a technological and business collaboration space whose mission is to develop in the Canary Islands an innovative ecosystem for the transfer of high technology between the public sector and companies, taking advantage of the scientific and technological capital of the IAC.

MAIN EQUIPMENT OR FACILITIES

- Optical Laboratory: area of 160 m2, divided into three clean ISO class 8 rooms and an ISO class 6 room. Equipment includes optical instruments and a wide variety of other elements.
- Optical fibre Laboratory: preparation, characterization and integration of optical fibres and bundles; the lab is equiped with STRASBAUGH and ENGIS polishing machines.
- Electronics and Electromagnetic compatibility Laboratories: shielded isolated room of 35 m, and electronic equipment (oscilloscopes, signal analyzers, EMI receptors, etc.).
- Laboratory of Imaging and Sensors for Astronomy: calibration and characterization of visible wavelength detectors (quantum efficiency, noise, spectral response, etc).
- Climatic chamber of 8000 liters of usable capacity, capable of simulating environments from -200C to 750C and 40% to 98% relative humidity, with 20C/minute gradient.
- Mechanical Integration Laboratory: equipped with appropriated tools, precision measuring devices, and general purpose test cryostats and vacuum and cryogenic hardware.
- Computer Aided Design & Engineering Laboratory: powerful hardware platforms and software to support mechanical design and analyze optical and mechanical systems.
- Metrology Laboratory: 3D measuring machine with precision of a few microns, two portable coordinate measuring machines, an arm for small distances and a laser tracker.
- Electronics Workshop: multilayer printed circuit boards, SMDs, microcontrollers, special power supplies, racks and cables are routinely manufactured.
- Mechanical Workshop: lathes and mills with five numerically controlled high precision machines, painting enclosure, anodizing plant, shotblasting machine, furnace, and welding and cutting machines. Works on steel, stainless steel, aluminium alloys, bronce, teflon, etc.
- Large instrument assembly, integration and verification room: with a floor area of 540 m^2 and 10 m high, the lab is a 100000 class cleanroom. It is divided in several areas, including an anti-vibration plate for optics, as well as a GTC Nasmyth rotator simulator.
- Advanced Optics Systems Centre: three laboratories for optical manufacture from 10 cm to 1.5 m of diameter, including grinding, polishing, ultrapolishing and coating. Three interferometers, profilometer and a 3D scanner will be available for metrology.

IACTEC comprises a purpose-built headquarters that offers businesses a space of more than 4000 m^2, equipped with infrastructure, including offices, meeting rooms, clean rooms, multipurpose laboratory, storage areas, computer rooms, common areas, and underground parking.

PROJECTS UNDER DEVELOPMENT

In addition to its research projects, the IAC conducts, among others, instrumental projects for space facilities (PLATO, LITEBIRD,...), operation and viability of telescopes (CTA, EST, TMT, OPTICON, SOLARNET), infrared instruments (HARMONI, HIRES, EMIR, MIRADAS, FRIDA, NIRPS), visible instruments (HORS, ESPRESSO, WEAVE, HARPS3), high-spatial resolution systems (GTCAO-LGS, EDiFiSE, EST) or microwave instruments (TGI-QUIJOTE, FGI-QUIJOTE, SANCHO).

Through IACTEC IAC collaborates with industry in: (1) MicroSatellites: development of a sub-meter resolution camera (including optics and detector); (2) Medical Technology: among others, design and assembly of a device for detection of diabetes ulcers by using thermal and microwave imaging; (3) Large Telescopes: EST, CTAO, and NRT; (4) Optical and Quantum communications focused in R&D of quantum optical communications equipments and implementations, between buildings, islands or with LEO/GEO satellite. In addition, the use of Adaptive Optics in quantum optical communications.

Integration in the AIV room of the TGI (Thirty Gigahertz Instrument), the second instrument for the QUIJOTE Experiment, at theTeide. © Pablo López /IAC

TECHNOLOGY CAPABILITIES

Optical system design and testing, Mechanical and opto-mechanical system design and development, Cryogenic and vacuum system design and development, Precision mechanics, Adaptive optics, Fibre optics, Control systems, Sensor characterisation, Project management, Systems, Electronic system, Software design and Laser communications.

SUMMARY OF RESEARCH SERVICES

The IAC's Technology Division, in close coordination with IACTEC, provides technology, development and production support for research and technology projects.

PROCUREMENT PROCESS

Law 9/2017, of 8 November 2017, on Public Procurement, which transposes Directives 2014/23/EU and 2014/24/EU of the European Parliament and of the Council, of 26 February 2014, into Spanish law.

BIG SCIENCE AREAS

ASTRONOMY

Hosting Organisation: **ESS BILBAO**

Address: Parque Tecnológico de Bizkaia, C/ Laida Bidea, 207 - B semisótano 2. 48160, Derio (Bizkaia)

Web: http://www.essbilbao.org/

Phone: [+34] 946 076 620

Email: essbilbao@essbilbao.org

DESCRIPTION

ESS Bilbao is a public consortium of the Spanish and Basque governments, bringing knowledge and added value in particle accelerator and neutron scattering science and technologies; by leveraging its In-Kind Contributions to the European Spallation Source ERIC, in Lund (Sweden).

MEBT Assembly at ESS Bilbao premises

MAIN EQUIPMENT OR FACILITIES

ESS Bilbao has an R&D Centre at the Bizkaia Technology Park and an Advanced Welding Facility (AWF) at Jundiz (Vitoria) hosting the support laboratories and the infrastructures developed within its in-house projects:

- Injector: composed by an Ion Source Hydrogen Positive (ISHP) – ECR type; and a LEBT (Low Energy Beam Transport) producing a pulsed proton beam at 45 KeV, 40 mA, up to 2.84 msec, 50 Hz. Other light ions production include He+, N+, O+, Ar+, Kr+, Xe+, Ne+.
- RFQ (Radio Frequecy Quadrupole): able to accereate, bunch and focuss the protons from 45KeV to 3MeV. RFQ manufactured and assembled. Commissioning ongoing.
- RF Test Stand: a fully equipped high power RF test stand, providing up to 3MW peak at 352 MHz, for testing and conditioning of RF components such as power couplers, cavities, etc.
- Integration laboratory: Covering interceptive and non-interceptive beam instrumentation, a broad range of magnets design and RF technologies for particle accelerators. Electromagnetic design and simulations, RF measurements, cavity characterization, electronics, and controls. Local protection system, machine protection system and high level integration are also included.
- Vacuum laboratory and NDTs; having all the capabilities to ensure the compatibility and correct operation of components working under Ultra High Vacuum environment (<10- 7 mbar), including vacuum gauge calibration, leak detection and outgassing testing. Also, capabilities of NDT on visual inspection, pressure testing and ongoing penetrant liquids.
- Advanced welding Facility (AWF): Electron-beam welding, vacuum brazing furnace, clean room, metrology, for specialized welding processes of different metals and ceramics and a broad range of dimensions.

PROJECTS UNDER DEVELOPMENT

ESS Bilbao is the organization in charge of channeling all in-kind Spanish contributions to the European Spallation Source ERIC. The scientific and technological advances that are being generated as part of the design, production and testing that are currently being carried out at the ESS Bilbao facilities (ion injector, RF, electronics and vacuum laboratories...) will play a key role in the ESS project. ESS Bilbao contributes in all ESS technical areas, making its contribution to the European source project with the design, manufacturing, testing and delivery of all work packages committed to accelerator (MEBT and RF systems), target (wheel, monolith, windows) and instruments (MIRACLES).

Likewise, ESS Bilbao, as a reference center in neutron techniques and particle accelerators, participates in other large European projects such as ITER, IFMIF-DONES, ISOLDE (CERN) or MHYRRA (SCK/CEN).

Furthermore, in recent years, ESS Bilbao has been actively collaborating with several European centers in the development of HiCANs (Hich Current Compact Accelerator-Based Neutron Sources) within the framework of the ELENA association (European Low Energy Accelerator-Based Neutron Facilities Association). . ELENA promotes cooperation within Europe in the field of neutron sources based on an accelerator and a low-energy reaction to produce neutrons. Thus ESS Bilbao has proposed, together with BCMaterials, CFM and INEUSTAR, the ARGITU project to build a neutron source in the Basque country. The initial phase of this "Argitu-Zero" project (Ion Source – LEBT – RFQ – MEBT, together with a small target and a station for neutron detection) is already underway.

TECHNOLOGY CAPABILITIES

- Design, prototyping, manufacturing, testing of components, subsystems and systems for particle accelerator, target and neutron instruments, as well as for Fusion Projects.
- AWF Advanced Welding Facility: Electron Beam Welding (EBW) and brazing.
- Vacuum laboratory and NDTs

SUMMARY OF RESEARCH SERVICES

Design, prototyping, manufacturing, testing of components, subsystems and systems for particle accelerator, target and neutron instruments.

PROCUREMENT PROCESS

Public procurement procedures are conducted by ESS Bilbao according to the Spanish Law (Law 9/2017 of 8 November on public sector contracts). This policy applies to all contracts signed with regional, national and international companies. ESS Bilbao has also joined the Spanish Public Procurement Platform.

BIG SCIENCE AREAS

PARTICLE PHYSICS AND ACCELERATORS

Target Wheel installation at ESS. Image courtesy of ESS

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