

TRL Bridging Program KUEC & CDTI

Real challenges. Proven research. Wider impact.

Technology Readiness Level Bridging Program KUEC & CDTI

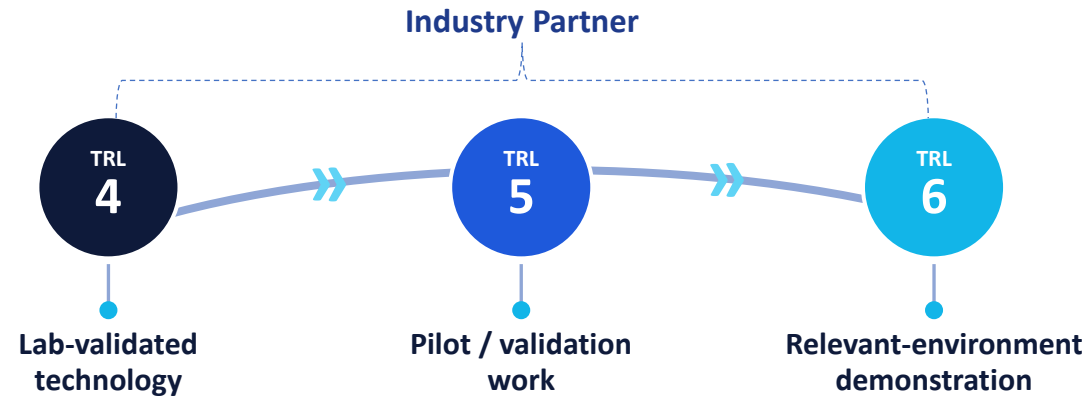
Sep 2026

TRL Bridging Program KUEC & CDTI

Advancing KU technologies from TRL 4 to TRL 6 through industry validation and pilot funding

WHY IT MATTERS

Many promising university technologies stall after lab validation. The TRL Bridging program helps de-risk these solutions, close the gap between research and market need, and move high-potential technologies from proof-of-concept into partner-validated pilots and commercialization readiness.



Goal



Faster validation, stronger industry evidence, and a clearer path to commercialization.

WHO IT IS FOR



Industry partners seeking pilot-ready technologies or support in defining and validating real operational challenges.

INDUSTRY COLLABORATION & COMMERCIALIZATION

Two ways to collaborate

Help KU technologies progress from TRL 4 to TRL 6.

01

Pilot a cohort technology

Select a project for piloting and validation.
Build industry evidence for demonstration
in a relevant environment.

02

Bring your industry challenge

If no cohort project fits, receive an assessment
of your operational needs and a match to a
relevant field-specific research team.

PROJECT CAPACITY

Up to 10

projects

CDTI SHARE

Up to 70%

of total funding

KUEC SHARE

30%

expected cash/in-kind contribution

How to Read a Technology Card

Use this guide to quickly understand each project card and identify the opportunity, maturity, funding need and partner ask.



Recommended reading order

1 Start with the title

2 Check the challenge and solution

3 Review readiness and value

4 Confirm the funding need and partner ask

PORTFOLIO OVERVIEW

Industry Portfolio by Theme

37 technology cards across 5 industry themes

INDUSTRY THEME	CARDS	SLIDES
Energy, Water & Sustainability	15	07–21
Healthcare & Life Sciences	6	23–28
Manufacturing & Advanced Materials	6	30–35
Agritech & Food Science	5	37–41
Aerospace, Defense & AI / Digital	5	43–47

INDUSTRY THEME

Energy, Water & Sustainability



SECTION OVERVIEW

15 projects

Slides 07–21

INCLUDES

SOLVENE Solar-Panel Recycling
Hybrid Atmospheric Water Generator
Multi-Timescale Grid Control System
Benign E-Waste Metal Recovery
Passive Solar Distillator
ScaleGuard-GO
MOFactory — MOFite Anodes
Next-Gen Power Converter
AqZen Aqueous Zn-Ion Batteries
C2VALUE — CO₂ Methanation Catalyst
Photomechanical Plastic Waste Upcycling
Ultra-Selective Lithium Recovery
ML-Assisted Capillary Pressure Prediction
NAWAH
DATEVIA



Energy, Water & Sustainability

SOLVENE Solar-Panel Recycling

Recovering glass, silicon and metals from solar panels.

THE CHALLENGE

Solar deployment across the GCC is creating a growing end-of-life panel challenge. Desert heat and UV accelerate degradation. Mechanical recycling captures only 29–56% of maximum recoverable value. Recovering high-purity silicon at scale remains difficult, limiting high-value reuse.

THE SOLUTION

Selective EVA dissolution releases glass, silicon and metals intact. SOLVENE uses xylene at 100–200°C and 2–15 bar, recovering 88–90% of solvent per cycle.

PROCESS ADVANTAGE

90%+

glass and silicon recovery at 200°C in KU laboratory trials. Wafers remain available for subsequent purification.

READINESS

Current TRL 4–5.

Operating KU reactor has processed a full panel with closed-loop solvent reuse. US provisional patent 63/870,716 filed in August 2025. KU-owned IP. Next milestone: TRL 5 to 6.



Photovoltaic panels

Funding Request

AED 1.8M | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Demonstrate repeatable bench-scale delamination on weathered GCC panels. Maintain ≥88% solvent recovery across batches and quantify silicon purity.

VALIDATION STATUS

KU lab trials completed.

INDUSTRY PARTNER ASK

Recyclers, EPCs and solar developers to provide end-of-life GCC panels and a host facility for process validation and co-development.

COMMERCIAL ROUTE

Process IP licensing plus reactor supply and royalties on recovered-material sales.
Target SOM: \$5M in years 1–3.

Energy, Water & Sustainability

Hybrid Atmospheric Water Generator

Reliable water for remote communities and agriculture

THE CHALLENGE

Remote communities, farms and off-grid facilities need water where supply is least reliable. Delivered water is costly, while conventional atmospheric water generators lose performance in hot, dry air.

THE SOLUTION

A hybrid AWG uses sorption to concentrate moisture before cooling. Recovered condenser heat regenerates the sorbent, and smart controls switch between VCR-only, sorption-assisted and blended modes as desert humidity changes.



Technology illustration

MODELED PERFORMANCE ADVANTAGE

UP TO 119x

higher water output at 40°C / 10% RH vs. VCR-only on the same 0.30 kg/s dry-air basis. Field validation pending.

READINESS

TRL 5: integrated prototype underway
TAQA-supported co-development
Patent filing underway
Field and water-quality validation next

Funding Request

AED 1M | TRL 5

Pilot Validation

NEXT DEVELOPMENT STEP

90-day desert pilot to validate output, energy use, uptime and water quality, followed by a paid 3–5 unit deployment decision. 12–18 month target: TRL 7 evidence.

VALIDATION STATUS

TRL 5: architecture, thermodynamic model and test protocol completed. Modeled results at 40°C / 10% RH show 25.08 L/h water output and 0.305 kWh/L versus a VCR-only baseline of 0.21 L/h and 18.25 kWh/L. Integrated prototype co-development with an Abu Dhabi based industry partner.

INDUSTRY PARTNER ASK

Remote-community and agricultural pilot sites, independent testing support, and an equipment or service partner for manufacturing, integration and deployment. Commercial path after validation: paid pilots leading to sale or lease, O&M, and a licensing, JV or spin-out decision.

Energy, Water & Sustainability

Multi-Timescale Grid Control System

Fast power support for renewable grids and high-impact industrial loads.

THE CHALLENGE

Grids with high renewable penetration and high-impact loads face power fluctuations, frequency deviations, voltage disturbances, and low-inertia risks. Conventional generators are inefficient for rapid repetitive fluctuations, lithium batteries degrade under sustained high-rate cycling, and conventional EDLCs are too short in duration. UAE heat, dust, and solar exposure further raise thermal and safety requirements.

THE SOLUTION

A second-generation modular LiC supercapacitor grid-support system comprising LiC storage units, second-generation CMS, bidirectional PCS, EMS/coordinated control, high-voltage protection, fire protection, and liquid-cooling thermal management. It is designed for millisecond-to-minute applications including renewable smoothing, fast frequency response, voltage support, broadband oscillation damping, and industrial impact-load compensation.

DEVELOPMENT TARGET

24 MONTHS

to complete a Gen-2 engineering prototype and UAE field validation, advancing the integrated system from **TRL 5** to **TRL 7**.

READINESS

Current **TRL 5**. First-generation products are already mature and mass-produced at TRL 8–9, with deployments in China and selected international markets for more than 5 years. Mature cells, modules, storage containers, manufacturing quality systems, and supply chains provide the industrial foundation. Joint R&D has already produced results in Gen-2 CMS, high-temperature thermal management and safety, and EMS-based multi-timescale grid control.



Technology illustration

Funding Request

AED 1M | TRL 5

Joint Development

NEXT DEVELOPMENT STEP

Validate the Gen-2 system using real grid data, including fast frequency response, renewable-power smoothing, voltage support, high-temperature operation, and high-frequency cycling.

VALIDATION STATUS

A mature product base reduces commercialization risk; the next step is system-level validation in relevant UAE environments and finalization of the Gen-2 integrated system toward TRL 6–7.

INDUSTRY PARTNER ASK

UAE grid operators, utilities, renewable developers, pilot hosts, local EPC/system integrators, and certification bodies to support pilot validation, field data capture, and commercial deployment planning.

Energy, Water & Sustainability

Benign E-Waste Metal Recovery

Sustainable recovery of high-value metals from e-waste.

THE CHALLENGE

The UAE generates a large amount of e-waste, estimated conservatively at 39k tons per year. Recoverable value in gold, palladium, silver, nickel, and copper is about USD 30M. Conventional metal recovery has environmental risk, uses cyanide or strong acids, is energy intensive, and there is currently no such recovery process in the UAE.

THE SOLUTION

A benign recovery process using leaching, photochemistry, and acid/base equilibria to recover gold, palladium, silver, nickel, and copper from e-waste streams.

PROCESS ADVANTAGE

200 kWh/ton

feedstock energy requirement, versus more than 2,000 kWh/ton for conventional recovery, with no harsh chemicals used.

READINESS

Current TRL 4–5.

Validated laboratory-scale demonstrations on real e-waste streams.

Patent filed: United States Patent Application Publication, selective metal recovery. Potential partnership/customer: EnviroServe, willing to offer space for a pilot.



Metal illustration

Funding Request

AED 1.4M | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Run a 50–100 kg/batch pilot to demonstrate more than 90% recovery, complete full technoeconomic analysis, identify bottlenecks, and optimize the process.

VALIDATION STATUS

Lab validation completed on real e-waste streams; patent filed; pilot host interest identified.

INDUSTRY PARTNER ASK

Electronics recycling companies and pilot hosts to validate the process in the UAE and support an IP licensing pathway.

COMMERCIAL ROUTE

IP license agreement.

Serviceable obtainable market: \$5M.

Energy, Water & Sustainability

Passive Solar Distillator

Off-grid freshwater and salt production with zero liquid discharge.

THE CHALLENGE

Current desalination technologies produce freshwater at the expense of concentrated brine waste. In the UAE, 42% of freshwater comes from desalination and about 40% from groundwater used for agriculture. Desalination rejects about 2.85 billion m³/year of brine to the sea, contributing to a 1.52% increase in coastal salinity and a 4.32°C temperature rise, while RO plants in agriculture also increase groundwater salinity.

THE SOLUTION

A portable, nature-inspired passive solar desalinator that turns salty water into clean drinking water anywhere, with no electricity and zero liquid discharge. It is designed for remote communities, desert military stations, and off-grid environments.

UNIQUE VALUE

100% SOLAR

No grid required, with freshwater production and zero liquid discharge.

READINESS

TRL 4–5, CRL-2

Lab-verified prototype and outdoor testing at the KU rooftop. Three patents and 10+ journal articles. U.S. Patent 12,612,522 B2 granted on Apr. 28, 2026; US20260048342A1 assigned to KU and pending; PCT Application No. 19/719,426. Winner of the 2025 Mohammed Bin Rashid Al Maktoum Global Water Award, 1st Place in Innovative R&D, USD 100,000. EOIs from Al Nakhli and Hameem Technology.



Technology illustration

Funding Request

AED 1M | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Manufacture five prototypes and test them near coastal, desert, and agricultural sites across five UAE locations with strategic partners.

VALIDATION STATUS

Freshwater module, brine module, and integrated prototype completed; field testing and strategic partnerships are ongoing for 2026–2027.

INDUSTRY PARTNER ASK

Support pilot-scale deployment at five remote UAE locations to validate sustainable freshwater access in stressed environments.

COMMERCIAL PATH

Device sales to defense and government agencies, OEM integration into portable field systems, and service contracts for humanitarian and industrial deployments.

Energy, Water & Sustainability

ScaleGuard-GO

A regenerable graphene-based pretreatment technology for Gulf desalination and industrial brine streams.

THE CHALLENGE

The UAE depends heavily on desalination: 42% of drinking water comes from desalination across around 70 major plants, and the UAE produces 14% of the world's desalinated water. Scaling and fouling create major recurring cost and downtime. UAE desalination plants spend about AED 60–80M per year on antifouling chemicals and early membrane replacement caused by scaling, especially under hypersaline conditions.

THE SOLUTION

A regenerable adsorbent that strips hardness before it reaches the membrane. It offers drop-in compatibility, is built to regenerate, and performs where others fail, above 200k mg/L salinity.

VALIDATED PERFORMANCE

4.6x

higher adsorption capacity than the leading prior-art adsorbent, with 82% Ca^{2+} and 95% Mg^{2+} removal demonstrated on real SWRO brine.

READINESS

TRL 5 advancing toward **TRL 6**. **CRL 5** with commercial partner engagement including Gradiant and MediSun.

Filed US Patent 4015.146US1.

Additional validated results:

- +39% flux increase on real seawater and SWRO brine.
- Stability above the hypersaline limit.
- Regeneration validated for 5 cycles with >85% capacity retained.



Technology illustration

Funding Request

AED 5M | TRL 5

Pilot Validation

NEXT DEVELOPMENT STEP

Real seawater or SWRO brine access for a continuous packed-bed validation run, followed by pilot setup, optimization, regeneration testing, long-run validation, process integration, technoeconomic assessment, and pilot launch over 24 months.

VALIDATION STATUS

Lab validated and clearly positioned for pilot testing.

INDUSTRY PARTNER ASK

Pilot host with real seawater or SWRO brine, strategic/licensing partners among desalination utilities and water-tech integrators, and industrial partners in oil & gas, mining, or petrochemicals with hypersaline streams.

Energy, Water & Sustainability

MOFactory — MOFite Anodes

Cost-effective MOF-enhanced graphite anodes for next-generation lithium-ion batteries.

THE CHALLENGE

Battery manufacturers need higher-capacity graphite anodes, but they prefer solutions that fit existing lithium-ion battery manufacturing without major process change.

THE SOLUTION

MOFite combines a low-loading Fe–Tp MOF dopant with commercial graphite through simple physical mixing. The resulting MOF-enhanced graphite is designed for lithium-ion battery anodes and aims to deliver higher anode capacity and strong rate performance without changing the familiar manufacturing ecosystem.



MOF-enhanced graphite anode material

VALIDATED PERFORMANCE

1,447 mAh g⁻¹

demonstrated at 0.1 A g⁻¹, with 847 mAh g⁻¹ at 1.0 A g⁻¹.

READINESS

TRL 4 / CRL 2

validated in a lab environment.
US patent by Khalifa University:
US Patent Application
18/243,310.

Additional validation:

- Li–Fe–Tp anode validated against an LFP cathode
- 151 mAh g⁻¹ initial at 1 C
- ~99.8% coulombic efficiency
- 85% retention after 1,000 cycles at 10 C

Second-phase objective: advance to a repeatable pilot-scale process (target TRL 6).

Funding Request

AED 1M | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Validate graphite mixing compatibility, slurry stability, electrode coating quality, and performance against graphite-only controls, then produce repeatable pilot batches with an industry partner and confirm manufacturability, consistency, and adoption economics.

VALIDATION STATUS

Completed laboratory demonstration; scale-up and pilot manufacturing readiness are next.

INDUSTRY PARTNER ASK

Co-development partner with pilot-facility access, 100 kg production equipment, pouch-cell testing partner, and battery supply-chain introductions. Commercialization pathway includes MOFactory LLC spin-out, KU IP licensing, and partnership with a lithium-ion battery production factory.

MARKET OPPORTUNITY

Global market about USD 5B in 2025, 20% CAGR, and USD 50M+ addressable by 2030.

Energy, Water & Sustainability

Next-Gen Power Converter

High-efficiency DC-DC conversion for hydrogen storage and EV charging.

THE CHALLENGE

Existing EV charging sites are usually supplied from one main source, typically the grid. They still need converters, but they are not full PV + hydrogen + EV charging platforms. PV, hydrogen, and EV charging equipment operate at different DC levels, so the missing link is combined PV + hydrogen + EV charging on one DC platform.

THE SOLUTION

A high-efficiency DC-DC converter that is the critical link between PV solar, hydrogen, and EV charging. It controls power flow, reduces heat, enables voltage matching, and supports cleaner, easier integration with fewer conversion stages.

TARGET EFFICIENCY

>98.5%

multi-source PV + hydrogen + EV charging efficiency target.

READINESS

Current **TRL 3**. Analytical proof-of-concept and converter architecture are defined, but the hardware prototype is not yet built. The 12-month roadmap moves from **TRL 3** to **TRL 4** after lab prototype validation and prepares the evidence package for a future TRL 5 partner test.



Technology illustration

Funding Request

AED 700K | TRL 3

Pilot Validation

NEXT DEVELOPMENT STEP

Finalize topology, simulation model, and component ratings; build a low-power converter, control board, and bench-test setup; measure efficiency, thermal behavior, and power-flow stability; then prepare partner test plans, integration requirements, and field-test readiness.

VALIDATION STATUS

Pre-prototype stage with clear lab-validation roadmap.

INDUSTRY PARTNER ASK

Charger manufacturers, system integrators, hydrogen developers, and fleet-charging depots to define or host real-world validation tests.

COMMERCIAL PATH

startup route from lab prototype to partner test, then licensing or converter-module supply.

First market entry: UAE clean-energy fast charging and hydrogen infrastructure.

Energy, Water & Sustainability

AqZen Aqueous Zn-Ion Batteries

Safe and sustainable zinc-ion batteries for stationary and low-power applications.

THE CHALLENGE

Existing lithium-based storage faces supply, safety, and cost pressures, creating demand for safer, more scalable, and more sustainable alternatives for stationary energy storage and low-power applications.

THE SOLUTION

Aqueous zinc-ion battery technology using a Zn/PCNT anode and an MnO_2 cathode to deliver a non-flammable, chemically stable, eco-friendly, and scalable storage solution.

KEY APPLICATIONS



Grid-scale

- Renewables integration
- Energy shifting
- Upgrade deferrals



Commercial & Industrial

- Energy arbitrage
- Microgrids
- Diesel replacement



Residential

- Solar self-consumption
- Power backup
- Bill management

Global stationary and IoT energy storage markets are expected to exceed **USD 100B by 2030**.



Zinc-ion cell and battery system prototype

Funding Request

AED 1.2M | TRL 4

Pilot Validation

PILOT TARGET

100 kWh

battery system target for phase 2 pilot-scale testing and customer demonstration.

NEXT DEVELOPMENT STEP

Move from test cells to prototype to pilot scale, followed by certification, scale-up manufacturing, and commercialization.

VALIDATION STATUS

Lab-scale testing completed; the programme is positioned at TRL 4 and aims to reach TRL 7.

INDUSTRY PARTNER ASK

Co-investment, prototype development support, pilot-scale manufacturing support, BMS integration, and customer demonstration support for stationary, commercial/industrial, and residential use cases.

READINESS

TRL 4: lab-validated technology. Phase 1 requires AED 600,000 for months 1–9 to move to TRL 5 through prototype development and system-level modelling. Phase 2 requires AED 600,000 for months 10–18 to move to TRL 7 through pilot-scale manufacturing, a 100 kWh battery system, real-world testing, and customer demonstration. Functional prototype validation is the first milestone, followed by a commercial pilot that is demonstrated and industry-ready.

Energy, Water & Sustainability

C2VALUE

CO₂ Methanation Catalyst

Turning CO₂ and H₂ into synthetic methane with a high-performance catalyst.

THE CHALLENGE

Globally, billions of tonnes of CO₂ are released into the atmosphere every year, accelerating global warming while valuable carbon resources are wasted.

THE SOLUTION

A patented high-performance catalyst that converts CO₂ and H₂ into synthetic methane via the Sabatier process. The technology focuses on tailoring catalysts to improve industrial reactions, not inventing a new reaction.

LAB PERFORMANCE

>99% CH₄

methane selectivity, alongside more than 90% CO₂ conversion under lab conditions.

READINESS

Current progress includes more than 90% CO₂ conversion in lab conditions, more than 99% CH₄ selectivity, successful scale-up to 1 kg catalyst production, and strong economic potential.



Technology illustration

Funding Request

AED 1M | TRL 4

PARTNERSHIP SOUGHT

PRE-INDUSTRIAL TESTING

NEXT DEVELOPMENT STEP

Conduct pre-industrial reactor testing in Jupiter 1000 and advance catalyst scale-up toward commercial readiness.

VALIDATION STATUS

Lab performance proven; scale-up demonstrated at 1 kg; pre-industrial validation is next.

INDUSTRY PARTNER ASK

A pre-industrial reactor test partner and commercialization partner to validate the catalyst in relevant operating conditions and prepare the scale-up pathway.

Energy, Water & Sustainability

Photomechanical Plastic Waste Upcycling to Valuable Chemicals

A modular photomechanical platform to upcycle post-consumer polystyrene into value-added chemicals

THE CHALLENGE

Plastic waste needs higher-value circular routes. Polystyrene is rarely recycled, and current routes are energy-intensive or low-value.

THE SOLUTION

A modular photomechanical platform that enables ambient, light-driven and mechanochemical conversion of post-consumer polystyrene. It delivers clean, selective outputs, uses a modular continuous-flow cartridge reactor, and is circular by design.

ESTIMATED IMPACT

100%

upcycling of post-consumer PS

70%

conversion to value-added chemicals.

READINESS

Current **TRL 4** lab validation.
Invention disclosure filed (KUEC, 2026).
Peer-reviewed publication in Chemical Engineering Journal (2026, top 3%).
Custom flow reactor built.
CTF cartridge films in fabrication.
1M AED ASPIRE grant secured.
IP pending.



Post-consumer polystyrene waste (PS)

Funding Request

AED 1M | TRL 4

Pilot Validation

PLANNED MILESTONE

Build and operate the continuous-flow pilot and validate the platform at TRL 6.

INDUSTRY PARTNER ASK

A strategic partner to validate the platform using real post-consumer polystyrene waste streams and support scale-up toward commercial off-take.

Energy, Water & Sustainability

Ultra-Selective Lithium Recovery from Desalination Brine

Bioengineered sponge adsorbents to recover battery-grade lithium from UAE RO reject brine

THE CHALLENGE

Lithium demand is rising sharply, while UAE desalination plants discharge lithium-rich RO brine, around 6.5 ppm, as waste. Existing ion-sieve adsorbents require aggressive acid activation, can leach metals, degrade on cycling, and underperform in dilute high-salinity real brine.

THE SOLUTION

Two bioengineered composite sponge adsorbents made from waste chicken feather keratin selectively recover lithium from desalination reject brine in a packed-bed column. The process is selective, acid-free, regenerable, and validated directly on real Al Taweelah RO brine.

KEY PERFORMANCE

209.7–213 mg/g
adsorption capacity

80–90%
regeneration over 4+ cycles.

READINESS

TRL 4–5.

Bench isotherm, kinetics, and regeneration studies completed.
Real-brine validation retained 77–78% of nominal capacity.
Selectivity above unity over major competing ions.
MVP packed-bed column module in progress.
Hosted continuous-flow pilot targeted within 18 months.



Technology illustration

Funding Request

AED 1.65M | TRL 4

Joint Development

PLANNED MILESTONE

Hosted continuous-flow pilot, TRL 6–7, plus signed LOIs or MOUs with a feedstock supplier, host operator, and off-taker within 18 months.

INDUSTRY PARTNER ASK

Hosted pilot site with a UAE RO desalination operator and a co-development partnership for a continuous-flow demonstration on real brine.

Energy, Water & Sustainability

ML-Assisted Capillary Pressure Prediction from NMR T2 Relaxation

A non-destructive AI workflow that predicts capillary pressure curves from fast NMR scans

THE CHALLENGE

Conventional mercury-intrusion capillary-pressure testing is destructive, uses small non-representative samples, and involves toxic, tightly regulated mercury handling.

THE SOLUTION

A machine-learning model converts a fast, non-destructive NMR T2 relaxation scan into a full primary-drainage capillary-pressure curve. It enables analysis of loose rocks, fragile rocks, and limited samples.

KEY PERFORMANCE

$$R^2 = 0.94$$

4% mean error versus the MICP benchmark.

READINESS

Current TRL 4.

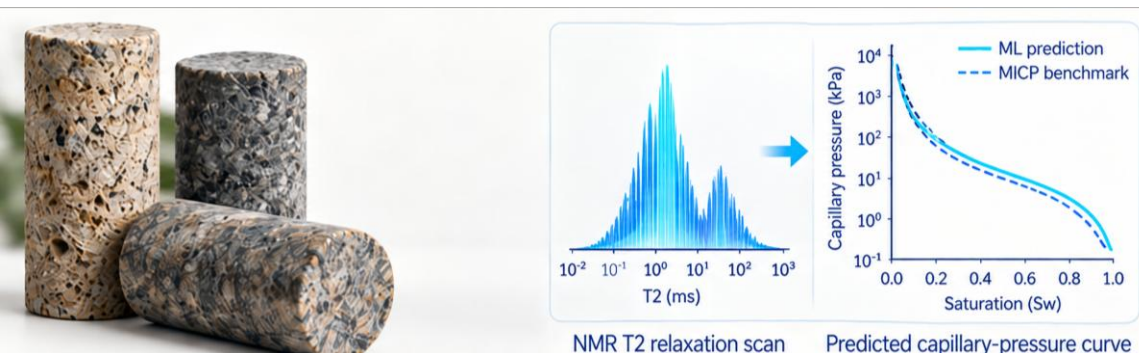
KU RI-IAG funding of 1M AED over 1.5 years.

USPTO provisional patent filed.

ADNOC is piloting the model and has signed a Letter of Support.

Validated across 4 rock types from 4 continents.

GUI software prototype targeted by Dec 2027 at TRL 6.



Rock core samples

Funding Request

AED 1M | TRL 4

Pilot Validation

PLANNED MILESTONE

Validate on partner NMR and MICP data and deploy a GUI software prototype in a relevant environment.

INDUSTRY PARTNER ASK

Energy operators, service companies, and NMR software vendors to pilot the technology on their own rocks or deploy it inside NMR workflows.

Energy, Water & Sustainability

NAWAH

Activated carbon from UAE date seeds

THE CHALLENGE

Every kilogram of activated carbon used in the UAE is imported. There are zero local activated-carbon manufacturers, while the UAE produces over 1.2 million tonnes of date seeds annually that are underutilized.

THE SOLUTION

NAWAH converts discarded UAE date seeds into high-purity activated carbon through a proprietary activation process, creating a local premium-carbon supply from biowaste.

IODINE NUMBER

1,111 mg/g

exceeding the 750 mg/g benchmark.

READINESS

TRL 5–7.

More than 99% dye removal efficiency at 300 ppm.

Dubai Central Laboratory approved for cosmetics.

NPK delivery showed tomato-growth improvement.

Proof of concept and prototype completed, pilot ongoing, scale planning underway.



UAE date seeds
(biowaste)

High-purity activated
carbon

Funding Request

AED 1M | TRL 5

Joint Development

PLANNED MILESTONE

Produce activated carbon at pilot scale, more than 25 tonnes per year, and complete industrial-scale design and purchase readiness.

INDUSTRY PARTNER ASK

Off-takers and industrial partners for the current pilot-scale phase and later industrial-scale launch.

Commercialization pathway: licensing and partnership.

Energy, Water & Sustainability

DATEVIA

FO hydration bag technology for safe portable hydration

THE CHALLENGE

In remote and disaster-affected environments, access to safe drinking water is unreliable.

THE SOLUTION

A forward-osmosis hydration bag technology using next-generation membranes. The concept is proven using real seawater and brine and is being developed as a deployable UAE/GCC hydration solution.

VALIDATION HIGHLIGHT

15+ BAGS

More than 15 full-scale bags fabricated consistently, with cyclic stability validated for 4–5 cycles.

READINESS

TRL 4–5

Proof of concept completed
 Prototype completed
 QCC analysis passed
 Dubai Central Lab migration tests passed
 Invention disclosure submitting.



Funding Request

AED 1M | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Shelf-life and sensory testing, cost reduction, ADAFSA certification, field trials, production scale-up, manufacturing partner, roll-to-roll pathway, and cost/spec lock.

VALIDATION STATUS

Concept proven using real seawater and brine; lab validation complete; target TRL 5 to 6 pilot is planned.

INDUSTRY PARTNER ASK

Pilot partners for field validation, a manufacturing and scale-up partner, and strategic investment support.

Resources needed: pilot-scale manufacturing, regulatory and certification support, and funding for scale-up to 50 bags.

INDUSTRY THEME

Healthcare & Life Sciences



SECTION OVERVIEW

6 projects

Slides 23–28

INCLUDES

Adaptive Knee Exoskeleton System

Golde

OvaXome

NanoMap

RegenGun

RegenRNA svRNAx



Healthcare & Life Sciences

Adaptive Knee Exoskeleton System

Personalized rehabilitation and assistance for lower-limb recovery

THE CHALLENGE

Millions of people with lower-limb impairments and mobility limitations cannot access effective, consistent, and scalable rehabilitation needed to regain function and independence.



Technology illustration

THE SOLUTION

An adaptive knee exoskeleton that provides personalized assistance, real-time motion and performance feedback, and a portable clinic-to-home rehabilitation experience.

KEY PROGRESS

Functional prototype validated and structured usability feedback collected from 15 physiotherapy professionals.

READINESS

Current TRL 4–5. High tracking accuracy, robustness, and assist-as-needed behavior demonstrated in laboratory and human-in-the-loop testing. Clinical interest established with Amana Healthcare. US Patent No. 63/557,819 filed.

Funding Request

AED 1M | TRL 4

Pilot Validation

PLANNED MILESTONE

Advance from TRL 4–5 to TRL 6–7 through product refinement, pilot clinical studies, and regulatory preparation.

INDUSTRY PARTNER ASK

Strategic support in medical-device regulatory qualification and market access, plus rehabilitation partners for pilot clinical validation.

Healthcare & Life Sciences

Golde

Hydrogel electrodes for better biosignal quality, better AI, and better healthcare

THE CHALLENGE

Around **AED 7.5B** is spent annually on cardiovascular-disease healthcare in the UAE, while current imported synthetic electrode technology limits user experience and the reliability of AI, wearables, and BCI systems.

THE SOLUTION

A low-cost hydrogel electrode technology designed for scalable production and stronger skin-electrode interface performance, improving signal quality and enabling better AI-ready biosignal capture.

KEY PERFORMANCE ADVANTAGE

More than 2x

AI ECG signal-classification accuracy; signal quality 44 dB versus 20 dB.

READINESS

Current TRL 6 and validated on humans. ECG systematic benchmarking proof of concept completed. OEM prototype integration with ECG.ON under agreement and LOI. Engaged CCAD clinical team with study plan, LOI in progress. Roadmap targets at least 2 pilots including at least 1 paid CCAD 200-participant study, then regulatory package and repeatable UAE production.



Technology illustration

Funding Request

AED 1M | TRL 6

Pilot Validation

PLANNED MILESTONE

Become clinically validated, manufacturing-ready, and CE-submission-ready, advancing from TRL 6 to TRL 7–8.

INDUSTRY PARTNER ASK

Product and manufacturing engineering support, pilot production-line equipment, accredited testing, and clinical/device-integration partners.

Healthcare & Life Sciences

OvaXome™

Clinical-grade Emirati extracellular vesicles to restore ovarian health

THE CHALLENGE

Women with POI and PCOS face infertility, hormonal imbalance, poor egg quality, irregular cycles, and reduced quality of life. Current therapies mainly manage symptoms rather than restore ovarian function.

THE SOLUTION

OvaXome is a clinical-grade, exosome-based therapy platform using Emirati umbilical-cord mesenchymal stem-cell EVs to regenerate and restore ovarian function.



Technology illustration

ESTIMATED COST & QUALITY ADVANTAGE

1×10^{12} EVs/mL

with more than 90% purity

Imported EV cost

AED 35,000 – 60,000+

per course



Target (Made in UAE)

AED 12,000 – 20,000

per course

READINESS

Current TRL 5/6.

Proof of concept completed and prototype completed. Mouse models of POI and PCOS validated and published. Potency validated via key protein biomarkers. Safety profile acceptable. Prototype achieved more than 80% recovery and at least 95% batch consistency. Pilot is in progress with LOIs from UAE hospitals and fertility clinics and a secured LOS from Abu Dhabi Biobank.

Funding Request

AED 2.99M | TRL 5

Pilot Validation

PLANNED MILESTONE

cGMP process qualification and scale-up at the health partner facility, IND submission to DoH, Phase I/IIa trial initiation, and advancement toward TRL 7/8.

INDUSTRY PARTNER ASK

Pilot sites and clinical collaborators, co-development partners for CMC and regulatory pathways, licensing and IP partners, and investment partners to scale manufacturing.

Healthcare & Life Sciences

NanoMap

A smart insole platform for real-time gait and pressure analysis

THE CHALLENGE

Gait analysis and foot-pressure mapping are valuable, but current systems can be expensive, clinic-bound, and impractical for continuous monitoring.

THE SOLUTION

NanoMap is a smart-insole pressure-mapping platform built around a porous graphene/PDMS nanocomposite sensing layer for gait analysis, rehabilitation, sports performance, orthotics, and fall-prevention use cases.

ESTIMATED ADVANTAGE

2.5 MPa

Wide linear pressure range up to 2.5 MPa and about 7× higher sensitivity than the non-porous version.

READINESS

Current TRL 4.

Working prototype with integrated electronics and a web app. Lab testing on users completed. Beachhead market is UAE rehabilitation and sports medicine clinics. Plan includes pilots with 2–3 clinics and validation of gait and pressure reports with clinicians.



Technology illustration

Funding Request

AED 2M | TRL 4

Pilot Validation

PLANNED MILESTONE

Turn a validated TRL 4 prototype into a commercially validated smart-insole product through 3 pilots, 100+ users, software refinement, IP and regulatory work, and first commercial sales.

INDUSTRY PARTNER ASK

Physiotherapy clinics, sports-medicine centers, podiatry and orthotics partners for pilots, plus OEM and licensing partners for later scale-up.

Healthcare & Life Sciences

RegenGun

Tissue adhesive and smart delivery device for rapid bleeding control

THE CHALLENGE

Responders have only minutes before bleeding becomes severe and life-threatening, yet emergency bleeding care remains largely manual and lacks speed and precision.

THE SOLUTION

RegenGun combines a tissue adhesive with a smart delivery device to improve speed and precision in emergency wound closure and bleeding management.



Technology illustration

GLOBAL IMPACT

4.4M

injury deaths globally each year.

1.19M

annual road-traffic deaths globally.

384

UAE road fatalities reported in 2024.

READINESS

Current TRL 3.

Strong in-vivo data suggests better healing than the current benchmark in wound closure and healing platforms.

Expression of interest from Medcare Hospital Dubai for clinical tests.

Roadmap progresses from animal and bench testing to first-in-human, pivotal trial, FDA 510(k), and launch scale.

Funding Request

AED 1M | TRL 3

Joint Development

PLANNED MILESTONE

Advance from animal and bench validation to design freeze, ISO 13485 quality setup, and first-in-human readiness.

INDUSTRY PARTNER ASK

Clinical-testing and development partners to accelerate validation and commercialization; startup registered at Masdar.

Healthcare & Life Sciences

RegenRNA svRNAx

A synthetic small-RNA supplement to expand usable skin-forming cells

THE CHALLENGE

Skin-forming cell expansion is the bottleneck limiting scalable skin grafts, engineered skin models, cell banks, and exosome production. Current practices are expensive and inefficient.

THE SOLUTION

svRNAx is a synthetic svRNA supplement for keratinocyte culture expansion. It supports stronger stem-marker expression, cell viability, migration, preserved differentiation, and multiple delivery formats for cell-culture integration.

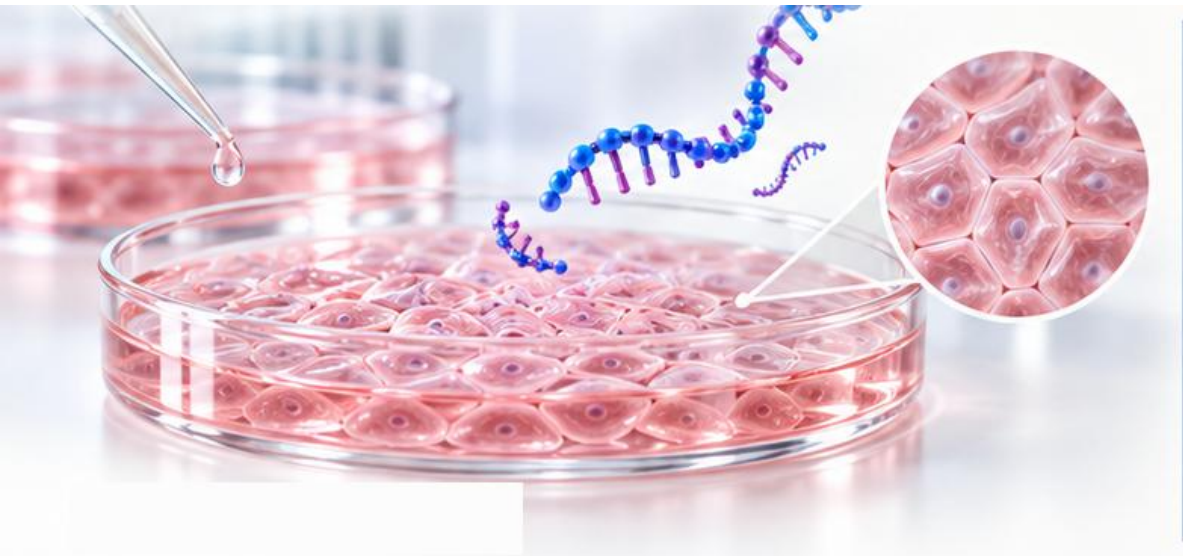
ESTIMATED IMPACT

More than 50%

increase in doubling and more than 200% more cell yield.

READINESS

Current **TRL 4–5** and validated in relevant culture models.
 Proof of concept completed.
 Prototype supplement completed.
 Relevant-environment testing completed or in progress.
 Pilot path secured.
 NDA signed with 2 companies and MOU signed with 2 companies.
 Next milestone is partner pilot studies and delivery-format optimization.



Expanding keratinocyte cultures with synthetic small-RNA

Funding Request

AED 1M | TRL 4

Pilot Validation

PLANNED MILESTONE

Move from validated laboratory technology to a UAE-based commercial platform through company setup, pilot studies, product validation, a GMP-ready manufacturing plan, and early direct-supplement launch and licensing discussions within 18 months.

INDUSTRY PARTNER ASK

Supplier and manufacturing relationships, pilot-study partners in skin grafts, skin models, pharmaceutical testing, and regenerative medicine, plus support for GMP-compatible manufacturing and IP commercialization.

INDUSTRY THEME

Manufacturing & Advanced Materials



SECTION OVERVIEW

6 projects

Slides 30–35

INCLUDES

Cling Robot

HyphaTex

Graphene Hydrogen Liner

Hybrid Additive Repair

High-Temperature IDEX 3D Printer

CelluDate



Manufacturing & Advanced Materials

Cling Robot

Offshore inspection and maintenance robot

THE CHALLENGE

Deployment of human divers for offshore inspection and maintenance raises safety issues. Underwater operations cost about USD 100K per day for a 2- to 4-week campaign, while operational efficiency is compromised and the working window is limited.

THE SOLUTION

A modular cling robot for underwater inspection and cleaning of offshore assets. It can operate 24/7 non-stop, improving safety and operational efficiency.

MARKET SIZE

~USD 4B

Worldwide TAM, with ~USD 400M in the GCC and ~USD 40M ARR in the UAE.

READINESS

TRL 4 now: prototype fully functional in lab

US Patent US12,240,544 granted

UAE Patent 6875 granted

KU spin-off

Signed licensing agreement with KU

Problem validated with offshore operator and contractor.



Technology illustration

Funding Request

AED 800K | TRL 4

Joint Development

FUNDING USE

50%

Development & testing (TRL 4 to 6)

50%

Ruggedized prototype + pilot (TRL 7)

PLANNED MILESTONE

TRL 5 by month 8 in an emulating pool;

TRL 6 by month 12;

TRL 7 by month 18.

INDUSTRY PARTNER ASK

Offshore asset owners, contractors and service providers for co-funding, early adoption and pilot validation.

Manufacturing & Advanced Materials

HyphaTex

Interior panels from textile waste

THE CHALLENGE

Textile waste needs higher-value uses. Fit-out projects need affordable alternatives to conventional interior boards.

THE SOLUTION

Mycelium binds recovered textile fibres into panels designed for acoustic absorption and thermal insulation.

ESTIMATED COST ADVANTAGE

20-50%

Lower cost versus alternatives, subject to validation.

READINESS

TRL 4: lab validated
US patent filed
Industry LOI reported
Fire certification pending



Material prototypes

Funding Request

AED 1M | TRL 4

Joint Development

FUNDING USE

AED 350k	Materials & process
AED 250k	Prototype fabrication
AED 200k	Testing & certification
AED 200k	IP, regulatory & training

PLANNED MILESTONE

Prototype demonstration in months 7-8.
Target: TRL 7 by month 12.

INDUSTRY PARTNER ASK

Manufacturers and fit-out partners to support production trials and a live pilot installation.
Commercial route: licensing or joint venture.

Manufacturing & Advanced Materials

Graphene Hydrogen Liner

A material barrier to reduce hydrogen loss from storage tanks

THE CHALLENGE

Hydrogen can permeate through polymer tank liners, creating leakage, efficiency and qualification concerns for tank makers and storage operators.

THE SOLUTION

Graphene added to a PA11 polymer liner creates a longer path for escaping gas while retaining a lightweight, manufacturable design.

ESTIMATED PERFORMANCE ADVANTAGE

UP TO 60%

Lower permeability in laboratory samples at 3 bar.

READINESS

TRL 3: samples tested
Liner prototype exists
Operating-pressure validation next



Technology illustration

Funding Request

AED 2M | TRL 3

Joint Development

NEXT DEVELOPMENT STEP

12–16 weeks of hydrogen and pressure-cycle testing, followed by partner-witnessed validation and a tank-level pilot.

VALIDATION STATUS

TRL 3: material samples tested at 3 bar showed up to 60% lower permeability. A liner prototype exists. Operating-pressure validation is next.

INDUSTRY PARTNER ASK

Tank manufacturers, liner producers or storage-system integrators with hydrogen test facilities. Joint development first, with formulation or liner licensing after validation.

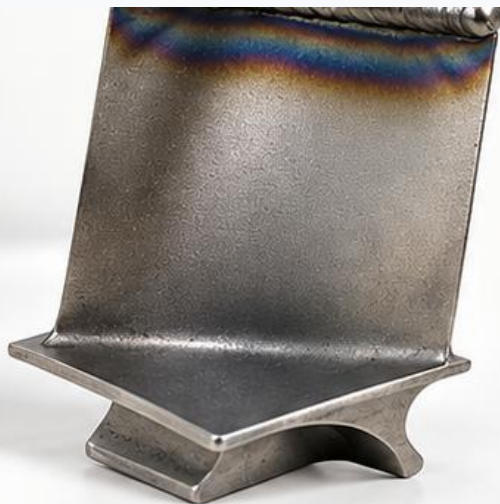
Manufacturing & Advanced Materials

Hybrid Additive Repair

Repair platform for high-value metallic components using laser powder bed fusion

THE CHALLENGE

Local damage can force MROs to scrap and replace an entire high-value part. This is expensive and OEM-dependent.



Damaged blade illustration

THE SOLUTION

Repair only what is damaged using an additive repair platform. The process aims to deliver stronger, more consistent repair with lower distortion and longer component life.

OPERATIONAL ADVANTAGE

DAYS, NOT WEEKS

Faster turnaround with lower cost, enabling in-house repair capability instead of replacement or conventional welding.

READINESS

TRL 5

Primary use case is blade repair
Engine MRO is the relevant segment
UAE/GCC blade repair is the beachhead for controlled MRO validation.

Funding Request

AED 1M | TRL 5

Pilot Validation

FUNDING USE

Resources needed include test blades, accredited lab access, and MRO/OEM validation input.

PLANNED MILESTONE

Repeatability testing and repair validation with MRO partners, leading toward controlled repair-service deployment.

INDUSTRY PARTNER ASK

Funding and MRO partners for repeatability testing and repair validation.
Commercialization pathway: controlled repair-service model first, then licensing or JV expansion after qualification is locked.

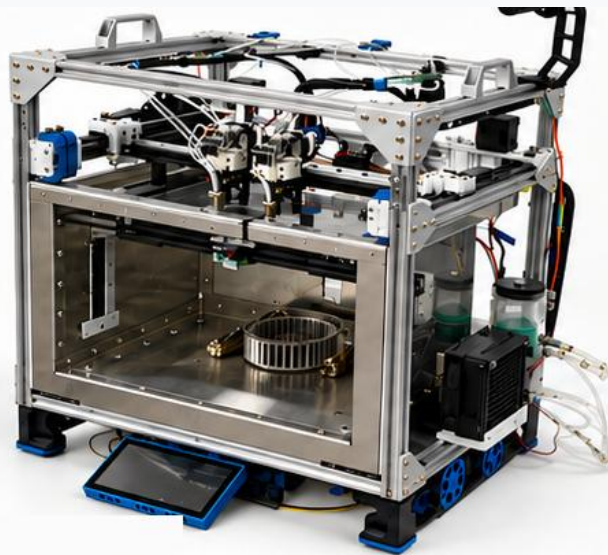
Manufacturing & Advanced Materials

High-Temperature IDEX 3D Printer

Open high-temperature dual-extrusion platform for advanced polymer parts

THE CHALLENGE

Advanced polymer printing remains out of reach for many teams that need it most. High-temperature printers are costly, closed and difficult to adapt, while outsourcing creates long lead times, higher costs and supply-chain dependence.



High-temperature IDEX prototype

THE SOLUTION

A configurable high-temperature IDEX platform that brings advanced-polymer part production closer to research and industry. It enables local production, open materials use, and modular configuration for evolving applications.

MARKET OPPORTUNITY

AED 12.5M

Estimated UAE TAM across about 250 sites, with about AED 5M SAM across 100 priority sites.

READINESS

TRL 4;

- functional prototype validated in laboratory conditions
- integrated high-temperature IDEX prototype developed
- heated chamber, dual extrusion and calibration demonstrated
- study specimens fabricated
- manuscript under review
- signed non-binding LOI

Funding Request

AED 900K | TRL 4

Pilot Validation

FUNDING USE

Pilot systems and materials

thermal, safety and control upgrades

external testing and validation

BOM, manufacturing and spinout preparation

PLANNED MILESTONE

Build and harden the design, complete 2–3 partner-site pilots, then freeze the BOM, establish the company and prepare market entry.

INDUSTRY PARTNER ASK

2–3 UAE pilot partners, especially R&D labs and additive-manufacturing service bureaus, plus operating space for engineering and pilot preparation.

Manufacturing & Advanced Materials

CelluDate

Cellulose nanofibers from date pomace

THE CHALLENGE

Nanocellulose today is made from imported wood pulp using harsh chemicals and high energy. The region has no local food-safe CNF supply, while the UAE generates about 850,000 tonnes per year of date pomace biowaste.

THE SOLUTION

CelluDate converts UAE date pomace into high-aspect-ratio cellulose nanofibers through a patented process, using up to 60% less energy and allowing simple redispersion at 6,000 RPM.

ENERGY USE

-60%

Lower energy versus TEMPO or acid-hydrolysis routes.

READINESS

TRL 5–7

Food Chemicals Codex FCC 11 passed all 8 food-safety parameters

Patented process

Roadmap positioned for investor-grade scale-up.



From date pomace to high-value nanocellulose (illustrative concept)

Funding Request

AED 2.93M | TRL 5

Pilot Validation

FUNDING USE

AED 2.08M Core team & operations

AED 646k Technical milestones & pilots

AED 206k Regulatory, IP & contingency

PLANNED MILESTONE

Seed / TRL-bridging capital to advance scale-up through pilots and commercialization as a Khalifa University spin-out backed by KUEC.

INDUSTRY PARTNER ASK

Food and beverage manufacturers, pharmaceutical formulators and personal-care partners for validation and commercial scale-up.

INDUSTRY THEME

Agritech & Food Science



SECTION OVERVIEW

5 projects

Slides 37–41



INCLUDES

Aloe-Neem Date Seed Oleogel

SehaVita

UV-C Camel Milk Pasteurization

Camel Cheese & Whey

Date Seed Tea

AgriTech & Food Science

Aloe–Neem Date Seed Oleogel

Evidence-backed natural first aid for minor wounds

THE CHALLENGE

Minor wound care has a trust gap: consumers want natural products, while pharmacists and parents still need proof. Synthetic ointments remain the default for cuts, mild burns, scrapes and irritation.

THE SOLUTION

A structured topical oleogel combining date seed oil, aloe vera and neem extract. The platform supports retention and local delivery, hydration and regeneration, plus antimicrobial and anti-inflammatory action.

KEY PRECLINICAL RESULT

96.94%

wound contraction by Day 13
vs 82.19% comparator

READINESS

TRL 4

Prototype formulation developed
Preclinical validation complete
IP filed: 19/790,752
Next: safety, stability & claims



Technology illustration

Funding Request

AED 1.50M | TRL 4

Pilot Validation

FUNDING USE

AED 800K	Clinical trials and GMP
AED 500K	Team & program management
AED 50K	Legal, admin & travel
AED 100K	Contingency
AED 50K	Other cost

PLANNED MILESTONE

Complete safety, stability and claims de-risking, then run a 3–6 month UAE urban-pharmacy pilot.

INDUSTRY PARTNER ASK

OTC / consumer-health licensing partner plus UAE pharmacy access to support pilot scaling, clinical validation and market entry.

Agritech & Food Science

SehaVita

AI platform for livestock health and feed-quality intelligence

THE CHALLENGE

Farmers often find out too late. Livestock health issues are detected late, feed quality remains invisible, and productivity and profits drop.

THE SOLUTION

SehaVita analyzes images captured by drones and fixed cameras to detect problems before they become losses. It provides one integrated platform linking livestock monitoring and feed-quality monitoring.

MARKET OPPORTUNITY

USD 54B

Smart agriculture market expected to exceed USD 54B by 2030.

READINESS

Technology ready; proven AI models validated in controlled environments.

Next step is real-world deployment with strategic pilot farms in the UAE.



Technology concept illustration

Funding Request

AED 1M | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Pilot deployments with leading dairy farms; SaaS platform development and scaling; GCC expansion and market penetration.

DIFFERENTIATION

The only integrated platform in the pitch that connects feed quality with animal health, enabling earlier intervention, lower costs and stronger food security.

INDUSTRY PARTNER ASK

Strategic pilot farms and commercialization support to accelerate deployment and scale the platform across the GCC.

Agritech & Food Science

UV-C Camel Milk Pasteurization

Non-thermal pasteurization for industrial throughput and bioactive preservation

THE CHALLENGE

Thermal pasteurization protects safety, but heat can reduce camel milk's most valuable attributes, including heat-sensitive bioactive proteins and premium-quality positioning.

THE SOLUTION

A non-thermal UV-C platform for camel-milk processing that pasteurizes milk without damaging bioactive proteins. Present capacity is 12 W at about 10 L/h.

LAB EVIDENCE

80–90%

Retention of lactoferrin, lysozyme, IgG and insulin, alongside approximately 4-log microbial reduction.

READINESS

TRL 4

12 W prototype demonstrated at about 10 L/h

Approximately 4-log microbial reduction achieved

Published patent US 2026/0150853 A1



Technology illustration

Funding Request

AED 883K | TRL 4

Pilot Validation

NEXT DEVELOPMENT STEP

Advance from TRL 4 lab proof to pilot-scale validation with industrial throughput optimization.

VALIDATION STATUS

UV-C preserved bioactive proteins while delivering microbial reduction in lab testing.

INDUSTRY PARTNER ASK

A UAE camel-milk processor and an equipment integrator to co-develop the pilot system.

Commercialization pathway: strategic processor pilot and joint development.

Agritech & Food Science

Camel Cheese and Whey

Transforming camel milk into premium cheese and functional ingredients

THE CHALLENGE

The UAE is a leading producer of camel milk, but cheese yield is low and whey is often discarded. The opportunity is to unlock more value from every litre through a zero-waste philosophy.

THE SOLUTION

A zero-waste platform that increases cheese yield and transforms whey into functional products using non-thermal processes that reduce microbes, preserve nutrients and improve energy efficiency.

VALUE ADVANTAGE

+57%

Higher cheese yield, with whey transformed into products for near-zero waste and higher revenue per litre.

READINESS

TRL 4–5

Patent applications

57% higher yield

Next step TRL 6–7 pilot with Al Ain Dairy Farms.



Premium camel cheese and whey ingredients

Funding Request

AED 1M | TRL 4

Pilot Validation

COMMERCIAL PATH

Customers include UAE-based dairy companies.

Commercial expansion path: UAE to GCC to Africa to Central Asia.

REVENUE STREAMS

Premium camel cheese; whey functional products; technology licensing.

INDUSTRY PARTNER ASK

Pilot validation under real industrial conditions, manufacturing partnership to scale production, and licensing partners.

AgriTech & Food Science

Date Seed Tea

Caffeine-free fermented tea from upcycled date seeds

THE CHALLENGE

UAE date seeds represent 10–15% of fruit weight and are often sent to landfill. Around 100,000 tonnes are wasted every year, while no locally rooted caffeine-free functional beverage fills this market gap.

THE SOLUTION

A caffeine-free fermented beverage made from upcycled date seeds, designed for wellness and circular-economy impact. The tea has zero caffeine, prebiotic gut-health support, antioxidant-rich properties, and metabolic support.

MARKET OPPORTUNITY

USD 250M

In play, with zero local caffeine-free competitors.

READINESS

Validation complete
Pilot product validated
Lab-scale product ready
Target commercial gross margin: 80%.



Illustrative product concept

Funding Request

AED 850K | TRL 4

Joint Development

PLANNED MILESTONE

Months 1–3: pre-clinical and validation.

Months 3–6: lab-scale development.

Months 6–12: pilot scale and optimization.

Months 12–18: licensing and commercialization.

SCALABLE PRODUCTION

Stage 1: 1 kg per batch at Khalifa University.

Stage 2: 5 kg batch to 4,000 tea bags.

Stage 3: certified UAE co-packer, 50 kg MOQ to 40,000 tea bags.

INDUSTRY PARTNER ASK

Pilot partners in the UAE functional-beverage and hospitality sectors, plus commercialization, distribution and regulatory support.

INDUSTRY THEME

Aerospace, Defense & AI / Digital



SECTION OVERVIEW

5 projects

Slides 43–47

INCLUDES

Hi-Bird iPPMS

MP Photonics

FutureVolt

ScanSight

SYNCRotime



Aerospace, Defense & AI/Digital

Hi-Bird iPPMS

Intelligent power and propulsion management for hybrid-electric aerial platforms

THE CHALLENGE

Pure-electric aircraft are limited in range and infrastructure. ICE platforms fly farther but are noisier, less sustainable and harder to deploy in sensitive missions. Advanced air mobility needs an intelligent hybrid layer between energy and flight.



Prototype platform

THE SOLUTION

The iPPMS is a software intelligence layer for hybrid-electric aerial platforms. It manages battery, fuel, hydrogen fuel cell and solar power in real time, replacing static control logic with adaptive decision-making.

PERFORMANCE HIGHLIGHT

3x

Overall improvement in range, endurance and emissions, according to the pitch. The pitch also cites 45% reduction in emissions over baseline.

READINESS

TRL 4

Validated in simulation

US patent filed July 2025

Moving toward HIL testing and flight demonstration

Signed agreements and active OEM pipeline

Funding Request

AED 1.5M | TRL 4

Joint Development

GO-TO-MARKET

Targeting 8–12 OEM design-ins within 3–5 years, with AED 10.4M Year-4 revenue, 25% recurring revenue and 74% gross margin on the summary market slide.

TRACTION & CREDIBILITY

Signed agreements, active OEM pipeline, published science and protected IP, built on Khalifa University's FALCON Center research foundation.

INDUSTRY PARTNER ASK

OEMs, UAV developers and AAM partners for HIL testing, flight demonstration, validation and design-in opportunities.

Aerospace, Defense & AI/Digital

MP Photonics

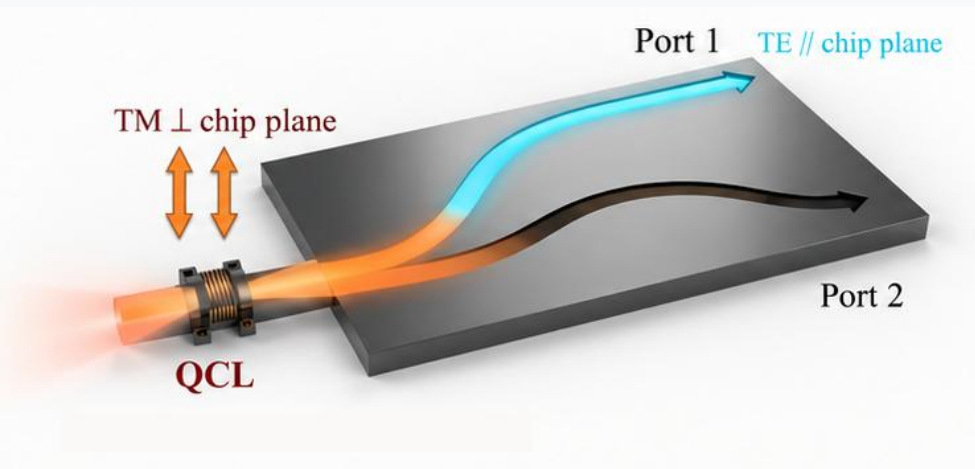
Chip-scale mid-infrared photonics for QCL integration

THE CHALLENGE

Mid-infrared systems and future infrared-countermeasure architectures still rely on bulky external optics. Disconnected QCL sources, polarization control and PIC routing increase footprint, insertion loss, alignment burden and packaging risk.

THE SOLUTION

A KU-originated MIR photonics platform that combines a compact polarization splitter-rotator with dense low-crosstalk MIR waveguide arrays. The first proof of concept validates a QCL-to-PIC input interface, then expands toward MIR routing and EO/IR applications.



Technology illustration

PSR METRICS

50 μm

Design footprint. The pitch also reports <0.5 dB simulated conversion loss and <-30 dB dense-array crosstalk.

READINESS

TRL 4 today

Initial polarization measurements

External testing underway

Target: TRL 5 partner-reviewed validation

Funding Request

AED 800K | TRL 4

Pilot Validation

STRATEGIC PACKAGE

AED 800K over 18 months for full platform validation plus HALCON / EDGE EO-IR discovery and strategic pilot scoping.

VALIDATION STATUS

Lab work is underway. Written support is cited from nanoplus and Łukasiewicz-IMIF, with external testing support and partner-reviewed metrics needed for the next gate.

INDUSTRY PARTNER ASK

IP-safe option or license route, QCL / MIR partners for thresholds and review, and Abu Dhabi based partner participation in a non-sensitive EO/IR discovery brief.

Aerospace, Defense & AI/Digital

FutureVolt

Next-generation powertrains for advanced air mobility

THE CHALLENGE

AAM, eVTOL and EV integrators need propulsion systems with high power density, efficiency and low mass. Catalogue motors lack mission-fit customization, harsh environments demand more reliability, and rare-earth dependence creates a supply-chain bottleneck.

THE SOLUTION

A UAE-first propulsion platform built around rare-earth-magnet-free EV traction motors and heavy-rare-earth-free UAV / eVTOL motors. The concept highlights SynRM and EESM development plus high-performance aerospace motors for drone and AAM applications.

MARKET OPPORTUNITY

>\$150B

Global electric motor market. The pitch also cites a USD 37B electric aircraft market by 2030 and AED 90–120B projected UAE SAVI contribution.

READINESS

TRL 5 for UAV / eVTOL motors
 Prototype developed and tested
 10-unit pilot batch in production
 SynRM prototype developed
 Planned drone flying tests to move toward TRL 7



Illustrative product concept

Funding Request

AED 8.4M | TRL 5

Joint Development

USE OF FUNDS

Phase 1 CAPEX: AED 2.2M.

Phase 2 CAPEX: AED 3.3M.

Annual OPEX: AED 2.9.

GO-TO-MARKET

Non-certified revenue first through large drones and land EV applications, followed by hybrid-electric VTOL and certifiable aviation products through direct OEM sales, co-development and industrial partnerships.

INDUSTRY PARTNER ASK

A joint venture with an institutional partner to build the UAE's first sovereign high-performance electric motor platform, scaling from partner-facility production to full in-house UAE manufacturing.

Aerospace, Defense & AI/Digital

ScanSight

Roller-based tactile surface inspection with traceable 3D records

THE CHALLENGE

Airframe inspection spans multiple materials and usually depends on multiple inspection technologies. Existing surface inspection is slow, manual and material-dependent, especially across diverse aerospace structures.

THE SOLUTION

ScanSight uses roller-based tactile sensing and 3D reconstruction to measure by touch, so reflectivity and curvature stop mattering. It supports handheld scanning and robot integration while turning defects into measurable, traceable 3D records.



Product render

METROLOGY HIGHLIGHT

100 μm

Precision, with single-pass reconstruction and an integrated UR10 chain on the roadmap.

READINESS

TRL 4 complete
M4 metrology
M8 target: TRL 5
M12 target: TRL 6
0.3 mm PoD detection target

Funding Request

AED 750K | TRL 4

Joint Development

MILESTONE GATES

Funds released against three milestones: **AED 350k**, **AED 250k** and **AED 150k**.

PILOT PARTNER

A UAE MRO or aerospace manufacturer pilot site with aircraft parts, access to inspectors and current inspection data.

COMMERCIAL PATH

By month 12: independent TRL 6 demonstration. Months 13–24: launch the spinout and target first UAE MRO customers.

Aerospace, Defense & AI/Digital

SYNCRotime

Network-edge timing for distributed systems

THE CHALLENGE

Distributed applications need highly accurate time synchronization to avoid dropped calls, meet regulations and capture network events. The pitch highlights use cases across telecom 5G, financial services, smart grids and datacenters.

THE SOLUTION

SYNCRotime combines hardware, unique algorithms and Precision Time Protocol to distribute time from a main source and reduce network- and device-induced errors. The technology emphasizes high synchronization accuracy, robustness to traffic variations and reduced dependency on satellite systems.



Prototype hardware

VALIDATION HIGHLIGHT

120 ns

Accuracy achieved in ITU-T testcases, according to the pitch.

READINESS

TRL 6

Developed prototype

35+ filed patents, most granted

Industrial partner contact underway

Next step: first PoC implementation

Funding Request

AED 1M | TRL 6

Joint Development

FIRST MARKET

Smart grids, based on available insights from experts and industry. Business model: off-the-shelf hardware plus embedded software, sold directly.

MARKET CONTEXT

The pitch cites major opportunity across data centers, timing devices and smart grids, including data centers from USD 269.79B in 2025 to USD 699.13B in 2034.

INDUSTRY PARTNER ASK

Industrial partner support for assembly, implementation, trials and first PoC contract as part of the market-validation plan.

Thank you



START YOUR CONVERSATION