Search for a Spanish Partner for a Bilateral R&D Project (this document will be shared with potential Spanish companies)

Organization	
Date of Request:	25/02/2018
Company/University name:	Central Metallurgical R&D Institute (CMRDI)
Contact person and title/ designation:	Prof. Taher A. El-Bitar, PI: specialist in the Field of Metal Forming and Heat Treatment
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SECTION 1: Your Company Profile *(Please give brief / to the point explanations. For more explanation on any point below, you may add a short paragraph as an annexure, with this document.)*	
Business Sector	CMRDI is dealing with the applied as well as fundamental research in the field of the metallic and material industries.
Company mission or core functions	CMRDI contains 4 main departments; • Ore beneficiation department • Metals Technology Department • Industrial Technology department • New Materials department
Date of establishment	1980
Ownership (if public and traded, add stock exchange and ticker symbol)	CMRDI is funded mainly by the government. The Institute receives financial subsidization through industrial projects or international projects.
Total number of employees	200
Number of employees in R&D	80 academic staff
Key products sold or services provided	CMRDI carry applied researches that solve problems and develop the industrial sector in the field of metals & Engineering industries
Company/University core technical competences	CMRDI owns many of the semi-industrial tools, as well as, numerous scientific facilities
Key R&D programs and activities	A national programme is going on to develop and enhance the SMEs companies.
Examples of accomplishments	Our group carried out successfully many of the

	industrial as well as fundamental projects, e.g. • "Hot Flat Rolling Thin strip spring steel (Grade60SiMn5)". • "Implementation of Nb micro-alloying in CSP plants", Project funded by Nb-Products Company- Dusseldorf – Germany. The project was implemented in both Alexandria National Iron and Steel Company and Ezz Flat Steel company. • "Controlled Rolling of Hot Strip Nb-Steel at Compact Slab Process (CSP) Machine", Project funded by Acadmy of scientific research and Technology – Egypt. The project was implemented in both Alexandria National Iron and Steel Company and Ezz Flat Steel company. • "Hot-Rolled Stainless Steel Wires Bearing Nb and Ti" Project funded by Acadmy of scientific research and Technology – Egypt. The project was implemented in Arabian Company for Special Steel (ARCOSTEEL). • A project funded by Science and Tchnology Development Fund (STDF) of Egypt, Project No. 7945, 2015-2017, the project entitled: "Development of Ferrite – Bainite (FB) dual phase high strength steel grade for Automotive industries" • A project funded by Science and Tchnology Development Fund (STDF) of Egypt, Project No. 7991, 2015-2017, the project entitled: "Development of Silicon Steels for Electric Power Transformation" • A project funded by National othurization of Military Industries of Egypt (Factory 100), 2015-2016, the project entitled: "High Strength Steel (HSS) for Armoring Troops Carriers"
Company strategic orientation	Develop and enhance the private and governmental industrial sector

SECTION 2: Partner of Interest *(Please provide a brief summary of the prospective partner company or organization. This summary may address some or all of the points below)*	
Profile of ideal technology partner	1- Hot rolled special steel producer 2- Academic institute in the field of industrial processing development
Core technological competencies and expertise	1- Provide us with the primary hot rolled bars steel coils containing 0.8% Carbon with 12 mm diameter 2- help us to implement knowhow for drawing

	the steel wire for the pre-stressed concrete pipes
Other essential qualifications (e.g.: ownership, track records etc.)	------
If you have a list of companies with whom you are in contact or interested in contacting, please provide contact details	
If you are interested in collaboration: please specify details and other important information you want to share with a potential company	One of the SMEs in Egypt is Called “Engineering Company for Wire Industries”. The owners of the company are ambitious to develop the company activities and grow. They contacted the PI and asked them for help. Both the industrial and academic parties decided to start with “Hard Drawn Steel Wire for Pre-stressing concrete pipes“. *Annexure 1
Interested areas of collaboration	Advanced construction technology and materials. *Annexure 2
Specific R&D contribution you are seeking/offering	We need to carry out deep investigation on the wire properties. A Transmission Electron Microscope (TEM) investigation may be needed to evaluate what was happened during cold drawing of wires, to expect the factors that control the strength of the wires. (Detailed needs can be discussed with the Spanish partner later). We need a sample of hot-rolled coiled bars with 12 mm diameter, to start our trials. And we will provide them with the final field and laboratory results. We may need for a technological help on the field during carrying out trials.

*Annexure 1_ ***If you are interested in collaboration:***

Egypt import considerable amount of the wires as we have long water piping projects for the growing of new communities and to fulfill the urban expansion and Infrastructure of the new industrial cities.

However, many problems are facing the proposed product.

- The steel alloy (0.8%C steel) is not produced in Egypt in the form of coiled hot rolled bars with 12 mm diameter. However, we are negotiating a steel producer in Egypt to carry out the job with a reasonable price.
- Cold drawn of such steel bars from 12 to 6.35 mm would need excessive drawing loads, which is not usual in conventional wire drawing. The Engineering Company has brought a high capacity drawing lines especially for that purpose.
- A new ribbing machine will be introduced for ribbing the wire after the last drawing pass.

*Annexure 2_***Interested areas of collaboration:***

Hard Drawn Steel Wire is used mainly for Pre-stressing concrete pipes. The wire can be also as straight lengths for green house agriculture and main frame of bed mattresses. It is a medium carbon steel containing between 0.70-0.85% carbon. The steel is usually processed by continuous casting rout as billets. The cast billets re usually subjected to hot rolling process for producing round 12 mm cross-sectional coils.

Hot rolled coils are not produced yet in Egypt; however, it is possible to start with imported steel coils. The coils are then subjected to hard – cold drawn by multi- consecutive passes to reach 0.25 inch (6.35 mm).

The scientific bases depend mainly on introducing internal stresses and creating high dislocation density areas, which are leading to creation of induced hard phases (Martensite and may be Bainite). The created induced phases are very sensitive to adiabatic heating, which should be taken into consideration during the whole investigation.

Hard drawn 0.25 inch wire should satisfy a min. tensile strength 1450 MPa for class II. On the other hand, the wire should satisfy 1650 MPa as tensile strength for class III.

Signature
Name: Prof. Taher A. El-Bitar
Date: 25/02/2018