



Bharat Heavy Electricals Limited

BHEL House, Siri Fort, New Delhi - 110 049, India

29th April 2020

Expression of Interest For Global OEMs for Manufacturing Partnerships under Make in India

BHEL is seeking manufacturing and technology partnerships with global OEMs looking to establish or expand their supply chains/manufacturing base in India for the manufacture of various goods and/or service business in India including for heavy electrical equipment, process plant equipment, other capital goods equipment, Solar value chain, LCDs, Li-Ion cells, transportation equipment, defence & aerospace, etc.

1.0 India Economic Opportunity

The Covid-19 pandemic is having a major impact on all economic activities, including manufacturing in most parts of the world. Supply chain disruptions in many sectors have been witnessed, the results of which shall become more pronounced in future. For a world that must quickly come to terms with the new normal, it is imperative that manufacturing activities are quickly resumed and ramped up, which would help restoration of normalcy and avoiding shortages that may adversely affect international economic recovery. A key lesson for businesses, emerging from the Covid-19 aftermath, is that the decentralizing of manufacturing will have to be adopted as a major strategy to mitigate disruption risks associated with concentrated and localized operations.

India being one of the fastest growing economies in the world, offers a wide range of opportunities. Government of India envisions India as a key engine of global growth, and is putting in place various supporting initiatives to make India a US\$ 5 trillion economy. BHEL, which is one of the largest engineering enterprises in the country would like to offer its state of the art manufacturing capacities and resources, for **forging long term partnerships in manufacturing of technology based critical equipment and systems with global OEMs.**

2.0 Overview of BHEL's Capabilities

BHEL has played a pivotal role in shaping the engineering and manufacturing capability in India across several sectors, including power, transmission, transportation, renewables, water, oil & gas, aerospace and defense, touching an annual revenue of ~4 billion USD. BHEL has established strong linkages with other Public Sector Undertakings as well as research institutes in the country and is also having technology tie-ups with leading OEM's in various sectors.

BHEL also has extensive experience in executing EPC projects in power plants and other industrial sectors. BHEL supplied equipment account for 60% of India's power generation, with an global installed capacity base of 185 GW (coal, lignite, nuclear, solar, hydro). BHEL has also served several overseas customers, with a global footprint in over 83 countries.

A brief overview of BHEL's core capabilities and strengths are detailed below.

- a. **Manufacturing facilities:** BHEL has 16 manufacturing facilities spread across the country that manufacture equipment compliant with latest national and international standards. BHEL's state-of-the-art facilities specialize in engineering, manufacturing, testing, aftermarket services for equipment such as steam turbines, generators, boilers, valves, piping, control systems, hydro turbines & generators and gas turbines in the power sector segment and other industrial sectors as detailed below. Some key manufacturing capabilities include expertise in Fabrication of steel, Aluminium Alloys, Special grade Alloy steel, Bronze, Copper and Dissimilar Materials, Precision Machining Facility for complex and intricate profile in components made of all categories of steel, titanium alloy, aluminium alloy, special grade alloy steel, bronze within close tolerances, Capability for Surface Protection Treatments such as alodyne, phosphatising, zinconickel plating, decorative chrome, passivation and special treatments, Manufacturing and Testing of Hydraulic Sub-systems etc.
The manufacturing units are supported by 4 overseas offices, 4 regional offices, 8 service centers and 15 regional marketing centers to deliver value to its customers.
- b. **Manpower:** BHEL is credited as one of India's largest employers, in the engineering sector with ~34,000 highly skilled employees which includes 9,000 engineers with qualifications, experience and skills spanning a wide range of technology areas. BHEL's employees have been one of the strongest pillars in building this successful business.
- c. **R&D facilities:** BHEL earmarks over 2.5% of the annual turnover for R&D spend, making it one of the highest in the capital goods manufacturing industry in India. BHEL's dedicated R&D center in Hyderabad has been instrumental in shaping technology and innovative manufacturing capabilities. This center has a number of advanced laboratories in the area of metallurgy, material science, vibration, tribology, aerodynamics, electrical machines, heat transfer, etc. Each manufacturing facility is also equipped with a research center. Additionally, the company has 14 Centres of excellence (Computational Fluid Dynamics, Simulators, Intelligent Machines & Robotics, Compressor & Pump Dynamics, Hydro Machines, Machine Dynamics, Nano Technology, Power Electronics, Ultra High Voltage, Advanced Transmission, Control & Instrumentation, Permanent Magnet Generators, Surface Engineering, Coal Research, Advance Fabrication Technology etc) and 5 specialised research institutes spread across the country (Welding Research Institute at Trichy, Ceramic Research Institute at Bangalore, Centre for Electric Traction at Bhopal, Pollution Control Institute at Hardwar etc.).
- d. **Technology partnerships:** BHEL has collaborated with several global players in establishing over 75 technology collaborations over the years. These partnerships have helped both parties, fruitfully benefit by sharing technology, know-how and resources. Currently, there are 14 active technology collaborations in place to support manufacturing. BHEL also has 3 active joint ventures in place today.

- e. Land: The company has a vast land bank of over 14,000 acres which is centrally located in major cities having good logistical support along with its existing manufacturing facilities
- f. All India Access: BHEL's unique ability to provide pan India access has been one of its core strengths. There are about 150 ongoing projects in different parts of India, served through the manufacturing and business units spread across the country.
- g. Respect & Goodwill: BHEL's dedicated role in supporting the country's development as one of the leading public sector enterprises in the country, has amassed credibility to advocate big shifts in the country in close association with the Government, Research and Educational institutions, other public and private companies and industry associations.
- h. Exports: With an installed base of 17GW outside India and ongoing projects of ~6GW, BHEL has experience in 83 countries and overseas offices in 4 countries. BHEL's expertise in exports can be utilized by global manufacturing firms to have a manufacturing hub in India. .

3.0 Areas of Partnership:

BHEL is actively seeking partnerships with global equipment manufacturing players looking to establish or expand their sourcing/manufacturing footprint in India. With extensive manufacturing facilities spread across India, highly skilled and experienced manpower, presence and reach through its wide network of offices and divisions in India, a successful model of collaborating with world OEMs and being a majority government owned company, BHEL is ideally placed to be the partner in India for cooperation in various areas of manufacturing, servicing , EPC etc.

Some possible areas of partnership could be

- a. Heavy electrical equipment: As a leading manufacturer of power generation and transmission equipment, BHEL has high synergy in manufacturing a wide range of equipment in this segment.
- b. Process plant equipment: As a leading manufacturer of equipment like compressors, turbines, motors, columns, vessels, for the process industries, BHEL has high synergy in manufacturing other equipment in this segment and also taking up EPC jobs for various packages with suitable tie-ups in association with engineering companies looking for a partner in these areas.
- c. Transportation equipment: BHEL has been serving the transportation sector in India for decades and now envisages to manufacture rolling stock and other allied equipment for the sector.
- d. Silicon to Module Solar Value Chain: BHEL has been manufacturing solar cell and modules and is looking to expand its operations in solar value chain by taking up polysilicon refining, wafer & ingot manufacturing etc.
- e. Setting up of upto 5GWhr capacity Li Ion cell manufacturing facility for all types of electric vehicles and energy storage.

- f. Manufacture of LCD panels in India for TV and mobile phones.
- g. BHEL has vast land bank available in its integrated facilities across India which are centrally located in major cities, industrial clusters and demand centres. BHEL would be open to proposals to utilize the available land for a range of purposes like putting up manufacturing facilities, setting up hospitals, smart cities etc.
- h. Any other area of manufacturing to leverage its existing assets and resources

4.0 Models of collaboration

BHEL is open to discussions for partnering with global OEMs, interested organizations through a range of cooperation modes including but not limited to the following:

- a. Joint Ventures
- b. Joint manufacturing
- c. Technology licensing
- d. Contract manufacturing
- e. Know-how transfer arrangement

Further details can be obtained at www.bhel.com

5.2 Contact Details:

Interested parties may contact the undersigned to initiate further discussions

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