



Request for Expression of Interest (EOI) seeking
Partnership for Technology Collaboration
Agreement (TCA) for **Wind Electric Generator's**

BHARAT HEAVY ELECTRICALS LIMITED

PLANNING & DEVELOPMENT DEPARTMENT

BOILER AUXILIARIES PLANT, RANIPET

TAMILNADU - 632 406

September 2011.

Sub: Seeking Expression of Interest (Eoi) for Transfer of Technology through Licensing, for Higher Rated (1 MW or higher) Wind Electric Generators (WEG)

About Bharat Heavy Electricals Limited ("BHEL")

BHEL is one of the leading Government of India owned Public Sector Undertaking. BHEL is a large engineering and manufacturing organization catering to the infrastructure sectors of Indian economy viz. energy, transportation, industry and non-conventional energy. The energy sector covers generation, transmission and distribution equipment for hydro, fossil, and gas fuels and BHEL has been in this business for over 40 years. Government of India presently holds 67.72% of the issued and paid up equity share capital of BHEL. The company has 15 manufacturing units, 4 power sector regions, 8 service centers and 15 regional offices, besides host of project sites spread all over India and abroad. The annual turnover of BHEL for the year 2010-11 is **US Dollar 9.6 Billion** with profit before tax of **US Dollar 2 Billion**. BHEL's highly skilled and committed manpower of around **48000** employees, the best of manufacturing facilities and practices together with the latest technologies, has helped BHEL to deliver a consistent track record of performance. At the end of year 2010-11, the total orders in hand for execution in 2011-12 and beyond, stand at about Rs 1,64,145 crores (**US Dollar 33.5 Billion**). Over the years, BHEL has entered into technology transfer agreements with leading original equipment manufacturers like GE, USA (for gas turbines,), Siemens, Germany (for steam turbines, generators), ABB, Sweden (for high voltage direct current transmission systems) and Alstom, France (for steam generators). More details about the entire range of BHEL's products and operations can be had by visiting the web site www.bhel.com.

About Boiler Auxiliaries Plant (BAP), Ranipet

One of the major plants of BHEL is located at Ranipet, manufacturing auxiliaries for Power Plants. This unit was started in 1981 for exclusive manufacture of boiler auxiliaries. Ranipet is located 120 kms west of Chennai on the Chennai-Bangalore trunk road and is known as the Boiler Auxiliaries Plant (BAP). BAP has also diversified into other fields like manufacture of fabric filters and RO based Desalination systems. BAP acquired the technology for Wind Electric Generators from M/S Nordex Germany and was one of the pioneers in introducing state-of-the-art technology based Wind Electric Generators in India in the early Nineties.

Market for WEG:

BHEL had earlier acquired the technology for smaller Wind Electric Generators from M/s Nordex, Germany. BHEL was one of the pioneers in introducing State-of-the-Art technology based Wind Turbines in India in the early Nineties. With the renewed interest in non-conventional energy route and growing market, BHEL is looking for re-entering into the WEG business with 1 MW and above rated machines.

Today India is the fifth largest country in terms of Wind Power installed Capacity (source: Indian Wind Energy Outlook 2011 by GWEC) and future looks promising for the country to maintain this dominant position. The Zero Carbon footprint and the employment opportunities arising out of this business are attractive. According to the data released by the Government of India as on 31st March, 2011 India's wind power capacity was 14158 MW (source: Ministry of New and Renewable Energy, Govt of India). A capacity addition of 46104MW of wind power in India is projected by 2020 (source: Indian Wind Energy Outlook 2011 by GWEC). Thus nearly 2800 MW to 3200 MW per annum would be required to be added in the next five years to meet our planned target.

Another alternate market that exists is the re-powering market, where potential exists for replacement of existing WEGs with those of higher rating. With the engineering strength that BHEL possesses and the earlier experience with a technology partner for WEG, BAP expects to capture a good share of the market.



Requirement of BHEL

For meeting the market requirements BHEL now seeks a partner for technology collaboration (TCA) through the licensing route.

We are now seeking an expression of your interest, to work with BHEL on licensing basis. We look forward to receive your response on or before **10th October 2011**. We would appreciate if your response is sent with complete details of your company - background, technical features, catalogues, reference lists (list of projects executed with rating of WEGs and numbers supplied for each project) and financial statements of last three years along with EOI Requirement Sheet (Annexure I) duly filled. While the EOI may be sent by e-mail, with requisite attachments, it is requested that the mails may please be followed up with signed hard-copies sent to the address below.

After the closure date, for such of those potential partners who have shown interest, a detailed requirement / scope document would be sent, for taking the process forward.

After evaluation and scrutiny of your document, we will schedule meetings at BAP, Ranipet / our corporate office at Delhi at mutually convenient date to work out the requirements / outline / modalities of the technology transfer arrangements.

Please do not hesitate to call us/contact us in case you need any further information.

We give below a broad contour of our expectations:-

BHEL is seeking technology for machines of capacities 1 MW and above output power in 50 Hertz to cater to the Indian market and other markets that can be agreed with the licensor.

The licensor shall have supplied the offered machines which are in continuous operation for atleast one year (within the past 3 years) and the machines have valid type test certification and certified power curve from any one of: C-WET (Center for Wind Energy Technology, India) or equivalent international certification that is acceptable to C-WET (and capable of operating in Indian climatic conditions (tropical climate & Class III of IEC 61400(2007) wind speed). One year continuous operation requirement, if not already available should be in place by 31st December 2011.

The offered Wind Electric Generators shall be with active yawing and pitch / stall power regulation, grid compatible - dual / variable speed. New technology developments like gearless drive and permanent magnet generator design can also be offered in the TCA.

The TCA shall enable BHEL to engineer, design, manufacture, assemble, test, install, commission, retrofit, & service the WEGs of different capacities under the agreement.

Contact / Reply to:

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Encl: Annexure I – EOI Requirements