

# **EXPRESSION OF INTEREST FOR DESIGN VETTING OF A VARIABLE SPEED TRACTION MOTOR FOR EMU APPLICATION**

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## **1. Introduction**

M/s Bharat Heavy Electricals Limited (BHEL) is one of the leading Navratna Public Sector Undertakings of Government of India. The company has an annual turnover of US\$ 7.8 billion having outstanding order book of US\$ 33 billion. One of the major business segments of the company is transportation equipments which mainly comprises of propulsion system electrics. Most of the systems supplied by BHEL in earlier times were with DC drive systems and for the last few years, AC drive systems are also forming a good share of business. In addition, BHEL is the only manufacturer of electric locomotives other than Indian Railways in the country. For more information on BHEL, you can visit our website [www.bhel.com](http://www.bhel.com).

## **2. Purpose**

The purpose of this Expression of Interest is to seek engineering services for vetting of electrical and mechanical design of a new type of three-phase traction motor being envisaged for IGBT based AC Electrical Mobile Unit (EMU) operating on 25 kV AC line. The suitability of the motor is also to be checked for similar applications as detailed below. The motor has been designed with in-house efforts and generic software design tools available. However, its suitability for traction application and its compatibility with supply inverter to be used in the system is to be checked. Temperature rise of the traction motor with track profile given is also to be checked. Hence, it is desired that the design may be vetted by an agency with expertise in this area.

## **3. Scope of work**

The scope of work for the vetting agency shall be as follows:

- a. Study of the specification for the following vehicle systems:  
These specifications shall be provided during execution of the contract.
- b. Checking the suitability of electrical design of the 3 phase traction motor for meeting the performance of the above systems.
- c. Checking the suitability of mechanical design with respect to the specified service conditions.

- d. Checking the suitability of thermal design with respect to the specified service conditions.
- e. Checking the compatibility of motor with respect to the supply inverter to be used.
- f. Suggest modifications in motor design with respect to all the above factors so that the final motor becomes electrically and mechanically suitable for the above applications.
- g. Preparing a detailed report covering the above details.

#### **4. Association of BHEL engineers**

The agency for design vetting should associate BHEL engineers during the vetting process and explain the reasons for suitability/unsuitability of the design under vetting as the case may be and then jointly work out the final design meeting the specification requirements. BHEL engineers may provide the support for explaining the in-house design details.

#### **5. Composition of budgetary offer**

The agency for design vetting should submit a proposal for above in two parts:

- 1) Technical proposal and
- 2) Commercial proposal separately indicating the overall price (including the breakup with respect to the scope of work) and time period required for each of the activities.

The total composition of offer shall include:

- a) Price for the service including a breakup with respect to activities defined in Scope of Work (SOW).
- b) Time schedule including breakup with respect to activities defined in SOW.
- c) Date of start after receipt of order.
- d) Terms and conditions of offer.
- e) Credentials and/or previous experience of similar kind of motor design/vetting activities.

In case you require any further clarifications, please do contact us.

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