



Expression Of Interest (EOI) Notice No: EOI/3phase/001

1.0 Title:

Expression of Interest (EOI) for "**Acquisition of technology for design and manufacture of 3-phase traction motors suitable for VVVF inverter fed supply**"

2.0 General:

M/s Bharat Heavy Electrical Limited (BHEL) is one of the leading Navratna Public Sector Undertaking of Government of India. The company has an annual turn over of US \$ 4.50 Billions and outstanding order of US \$20 billions. The company has presence and interest in Power, Transmission, Defence, Transportation & Industry etc.

BHEL has a very strong presence in the Indian rail network and more than 70% of the rolling stock operated by Indian railways are equipped with propulsion system manufactured & supplied by BHEL. BHEL is leader in drive systems with DC traction motor and also plans to establish itself in the field of 3 phase AC traction propulsion systems.

BHEL, Bhopal invites Expression of Interest (EOI) for acquisition of technology for design and manufacture of 3-phase traction motors suitable for VVVF inverter fed supply for various types of traction applications covering electric locomotives, diesel electric locomotives, metros and electrical multiple units.

The interested parties may submit their Expression of Interest along with the requisite details latest by 30/11/2008.

To,
Sr.DGM (TME)
Block-9, Annexe, 1st Floor,
Bharat Heavy Electrical Limited, Piplani
Bhopal- 462022, India
Phone No. 091 0755 2502346
Fax: 091 0755 4201524
E-mail: mbhakta@bhelbpl.co.in

All clarifications and correspondences regarding the EOI should be address to above person.

3.0 Scope of the EOI:

The EOI is for providing technology for design and manufacture of 3-phase asynchronous traction motor to be operated suitable VVVF inverter fed supply as applicable in most of the modern 3 phase drive traction propulsion systems.



The scope of EOI shall be :

- 3.1 Providing technology in the form of machine design and performance calculation methods to enable designing of the complete traction motor for various ratings from around 100 kW to 1500 kW.
- 3.2 Providing details of the manufacturing processes ,material specifications and vendor list for the said designs.
- 3.3 Carry out design of one or two applications currently under consideration, and provide all drawings and documents pertaining to this design for manufacture at BHEL.
- 3.4 Supply the initial lot of machines as designed under 3.3 as completely built unit or semi knocked condition for integration in the overall electrics against projects currently under consideration (optional).
- 3.5 Provide training to BHEL engineers at the bidder's works on design, manufacturing, testing, quality control and maintenance.
- 3.6 Visit BHEL works during manufacture of motors designed by bidder or designed by BHEL as per bidder methodology (optional).

4.0 Qualification criteria:

4.1 Technical capability

- The Bidder should have designed, manufactured and supplied 3-phase traction motors suitable for VVVF inverter fed supply for various type of applications covering electric locomotives, diesel electric locomotives metros and electrical multiple units to rail networks.
- The bidder should be capable of designing the motor based on the details of interfacing converter and the motor performance requirements as specified by vehicle system designer.
- The bidder should be able to prove the compatibility of motor with the proposed inverter and demonstrate performance under VVVF supply through calculations, modelling techniques etc.

4.2 Experience

The bidder should have at least 10 years experience in this field. The equipment supplied should be of proven design & working satisfactorily. A list of major customers with quantity supplied may be furnished in support of this.

4.3 Information transfer

Bidder should be willing to transfer the information on exclusive basis to BHEL for know how/know why for design, manufacture, inspection, testing, commissioning, trouble shooting, servicing/maintenance, quality assurance



etc., for 3-phase traction motor with VVVF inverter fed supply as per scope defined in Clause 3.0.

All information to be provided in English language only.

5.0 Composition of bid

5.1 Documents submission:

The following details may be submitted by the parties along with offer.

- a) Organization details covering product range, manpower strength in each function, number of production units
- b) Financial status of company like turnover, total assets.
- c) Profit and loss account and Balance sheet (or list of financial operations thereof) for last three years.
- d) Details of equipments & Facilities available at bidder works for the subject area.
- g) List of major customers for the subject area.
- h) Details of quality system followed in the company.

5.2 Acceptance document:

The bidder shall provide satisfactory evidence acceptable to the purchaser to show that -

- a) He is the supplier who has adequate technical knowledge and practical experience.
- b) He has adequate plant and manufacturing capacity to manufacture and supply for items offered within the delivery schedule offered by him.
- c) He has an established quality assurance system and organization to ensure that there is adequate control at all stages of manufacturing process.

6.0. Technology support arrangement:

After evaluation of the offers, a Technical support agreement shall be entered into with the party so selected and initial set of machines shall also be ordered on the party after signing the Technical support agreement. Out of these ordered quantity two motors shall be prototype tested at either bidder's works or BHEL.

Prototype machines shall be cleared subject to:

- a) Tests conducted in accordance with approved test schedule and calibrated test setup
- b) Tests results matching with the specification and/or referred standards.
- c) Over all dimensions of the machine matching with the accepted outline arrangement.



The tests may be witnessed by the purchaser or its authorized representatives at bidder's works.

7.0 General terms & conditions:

- a) The complete EOI including all documents submitted in response to this EOI shall be sent in a sealed cover envelope.
- b) The EOI shall be submitted on or before the time & date specified & shall be addressed to the official as mentioned in the EOI.
- c) The bidder shall closely study all the clauses, indicated in the EOI before quoting. Should the bidder require any clarification on the EOI specification, or is interested in offering any deviation from the EOI, he shall contact the authority inviting the EOI for clarification at least 8 days before the submission due date of the EOI.
- d) No price bids are to be submitted with this EOI.
- e) Based on the EOI submitted by parties , tender enquiry will be issued to successful bidders for submission of a techno-commercial offer.
- f) The BHEL's decision for shortlisting the bidders based on the overall suitability for issuing the enquiry shall be binding and final.
