



BHARAT HEAVY ELECTRICALS LIMITED
HEEP: HARDWAR-249 403 (UA)
Fax: 01334-226462, Phone: 284047
E-mail: skdeo@bhelhwr.co.in

Due Date: 26/06/2015

Ref: PPX/EM/EOI/15-16/Terminal Bushings

Notice Inviting Expression of Interest for empanelment of New Vendors

The Heavy Electrical Equipment Plant (HEEP) located in Haridwar, is one of the major manufacturing plants of BHEL. The core business of HEEP includes design and manufacture of large steam and gas turbines, turbo generators, hydro turbines and generators and so on. **We are looking for reputed Vendors having capability to supply "Terminal Bushings & HV Bushings" for Turbo Generators.**

The specification of these items may be obtained from BHEL after submission of Ink Signed Non-Disclosure Agreement (Annexure-2 for Indigenous vendors, Annexure-3 for Foreign vendors). The Non-Disclosure Agreement is to be submitted to the following person (s) for obtaining Specifications:

Contact Person 1:

Mr. Amit Tiwari
Designation: Sr. Manager (PPX/EM)
Email ID: @bhelhwr.co.
Tel: +91 1334 28 4047

Contact Person 2:

Mr. Sachin Kumar Deo
Designation: Sr. Engineer (PPX/EM)
Email ID: @bhelhwr.co.
Tel: +91 1334 28 4047

The offers received will be technically evaluated by BHEL & successful short listed parties will be asked to submit their detailed Techno-Commercial offers through formal NIT/Enquiry, for our future requirements. Vendors shall confirm that there is no deviation with respect to BHEL Specifications & drawings. However, deviations, if any, are to be listed as a separate attachment. The offers that do not meet the substantial requirements of our specifications are liable to be ignored. **Following documents are to be necessarily filled and submitted along with the technical offer:**

1. Details/ Documents in support of Pre-Qualification Requirement
2. Supplier/Vendor Registration Form. (Indigenous/Foreign as applicable)
3. Non-Disclosure Agreement
4. Quality control documents / procedure.
5. Details of Manufacturing Facility
6. Company Profile.
7. Financial report of the company.
8. Past experience along with documentary proof.

Only Technical BID along with the documents mentioned above should be sent & the envelope containing the offer shall be duly sealed and super scribed as "**Technical Offer for (ITEM NAME) AGAINST Reference No. PPX/EM/EOI/15-16/Terminal Bushings, SUBMITTED BY (Name of company)**"

The last date for submission of Technical offers is 31.08.2015.

- This notification shall be published in National Dailies (Name with date of publication will be mentioned on BHEL Haridwar portal). Last date for downloading tender documents shall be **30.08.2015** till 1700 Hrs (IST). The Technical Offers complete in all respect must be addressed to "Shri M K Sardana, AGM (PPX/EM)" **and should reach before 13:45 Hrs (IST) on 31.08.2015**. Tenders will be **opened on the same day at 1400Hrs (IST)** in the Tender Room BHEL HEEP Haridwar.
- Late offers will not be considered in any case. BHEL will not be responsible for any type of postal delay / incomplete information from vendor.



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- EMD & Tender fee are not applicable.
- The Quotation should be from the Principle / Original Manufacturer, falling which the Quotation is likely to be ignored. In case the quotation is submitted through agent, the quotation must accompany original authorization letter from Principle / Original Manufacturer.
- Amendments / Corrigendum, if any, will be hosted on our website only.
- For any further clarifications, feel free to contact the undersigned or log on to .bhel or .bhelhwr.co or .tenders.gov.

(Sachin Kumar Deo)
Sr. Engineer (PPX-EM)



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REF. NO. EME-B/PQR8

Sheet 1 of 2

**PRE-QUALIFICATION REQUIREMENTS (TECHNICAL) FOR
HYDROGEN /WATER COOLED TERMINAL BUSHINGS**

Introduction : Terminal Bushings of epoxy/ RIP type for large size turbogenerators (250-800 MW) are used for current transfer between the generator and the bus duct and as such are subjected to full current under abnormal and fault conditions. Robust bushings are of paramount importance in successful running of the generator and minimizing damage during fault conditions. Therefore the bushings are subjected to stringent tests relating to dielectric strength, leak-proofness, stress-grading etc. The bushings for 250/ 270/ 300/ 350 MW and 800 MW turbogenerators are hydrogen cooled whereas the bushings of 500/ 600/ 660 MW turbogenerators are water-cooled.

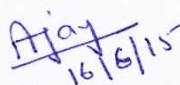
1. **EXPERIENCE:**


- 1.1. The vendor should have the experience of manufacturing and supplying hydrogen-cooled and water-cooled HIGH VOLTAGE TERMINAL BUSHINGS of epoxy/ Resin Impregnated Paper type of voltage rating ≥ 27.8 KV for large size Turbo-generators (rating >500 MW) suitable for continuous operating temperature 120 degrees C to reputed power equipment manufacturers world-wide for at least last 3 years. Vendor to furnish copies of Purchase Orders executed for above bushings. Also vendor to provide documentary evidence of the acceptance of material like Acceptance Certificate or letter from customer.
- 1.2. Vendor to give annual production capacity and output in numbers for the last 3 years along with customer-wise break-up for Terminal Bushings for Generators.


2. **DESIGN CAPABILITY:**

- 2.1. The vendor shall submit the drawings of their designed bushings for different ratings with critical dimensions conforming to respective BHEL drawings for BHEL approval.
- 2.2. The vendor shall submit details of epoxy resin system with filler and its properties including Electrical strength, Flexural Strength, Tensile strength, Marten's Heat Distortion temperature/ Glass Transition temperature.
- 2.3. The voltage withstand capability of the bushings shall be in line with that specified in VDE 0530 part 3 for the intended voltage rating of the bushing.

3. **MANUFACTURING FACILITIES:** The vendor should have facilities for manufacturing high voltage bushings like moulding (for epoxy cast bushings), manufacturing of copper terminal, precision machining, silver plating, stress-grading of insulation, sealing of air side and gas side etc. Vendor to furnish details (including make, model and year of manufacture) and technical specifications of the manufacturing facilities available at their works along with photographs.


(Ajay Kumar Gupta)
Dy. Mgr.(EME)


(NITI KOHLI)
SDGM (EME)


(A K Malhotra)
AGM (EME)




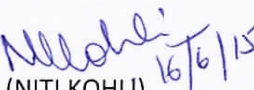
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ANNEXURE-1

Due Date: 26/06/2015

4. **MANUFACTURING PLAN:** Vendor to provide detailed Manufacturing Plan of bushings giving particulars of the manufacturing processes.
5. **TESTING FACILITIES:**
- 5.1 The vendor should have facilities for carrying out the following tests and provide details (including make and year of manufacture) of test equipment available at their works. Alternatively, he should indicate his tie-up with reputed accredited laboratory for performing these tests and give details of the same:
- Dielectric strength at a.c. test voltage specified in VDE 0530 part 3 in line with the rating of the bushing.
 - Leak testing using Helium at 10 bar test pressure.
 - Electrical Conductivity, chemical composition and mechanical properties testing for copper terminal.
 - Dimensional measurement.
 - Capacitance, partial discharge and tan delta.
 - Type testing including Bending and Mechanical Strength test as per VDE 0530 part 3, Sudden Short Circuit test with test surge of 10 KN, Impulse Voltage Withstand test.
- The testing facilities should be duly calibrated against measurement standards traceable to national or international measurement standards.
- 5.2 The vendor should have facilities and qualified personnel for carrying out Electrical and Type testing and should provide details of the same as well as furnish the laid down procedures for conduction of these tests.
6. The vendor should furnish copies of Test Certificates of previously supplied material.
7. The vendor shall source the raw material from reputed suppliers and shall furnish details of the same to BHEL along with Mill Test Certificates.
8. If the vendor plans to outsource any activity/ testing, particulars of the same along with details of the sub-vendor/ laboratory to be furnished to BHEL.
9. The vendor shall supply the components in suitably packing with machined and silver-plated surfaces adequately protected. Packing details and package drawing shall be furnished beforehand for BHEL approval.
10. BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect, the offer shall be rejected.
11. These pre-qualification requirements are not applicable for registered vendors of BHEL for this item.


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