



Ref No: HEP/TTG/FP/EOI/22/01

EXPRESSION OF INTEREST

FOR

**“DEVELOPMENT OF PORTABLE LOSS MEASUREMENT
SYSTEM”**

at

**ULTRA HIGH VOLTAGE LABORATORY
BHEL, Bhopal.**

Issued by:

Bharat Heavy Electricals Limited

Heavy Electrical Plant, Piplani,

Bhopal - 462022, India

(hereinafter referred to as ‘BHEL’)

Having registered office at

BHEL House, Siri Fort New Delhi-110049, India

DISCLAIMER

All information contained in this EOI provided / clarified are in good interest and faith. The information contained in this Expression of Interest document or subsequently provided to Applicant(s), whether verbally or in documentary or any other form, by or on behalf of BHEL, is provided on the terms and conditions set out in this EOI.

The purpose of this EOI is to provide interested parties with information that may be useful to them in the formulation of their application for qualification and subsequent selection pursuant to this EOI. This EOI is not an offer by BHEL to the prospective Applicant(s) or any other person.

Though adequate care has been taken in the preparation of this EOI document, the interested firms shall satisfy itself that the document is complete in all respects. The information is not intended to be exhaustive. Interested Agencies are required to make their own enquiries wherever required. Intimation of discrepancy, if any, should be given to the specified office immediately. If no intimation is received by this office by the date mentioned in the document, it shall be deemed that the EOI document is complete in all respects and firms submitting their interest are satisfied with the EOI Document in all respects.

The issue of this EOI does not imply that BHEL is bound to select and shortlist Applicant(s) for next stage or to enter into any agreement(s) with any Applicant(s). BHEL reserves all right to reject any applications submitted in response to this EOI document at any stage without assigning any reasons thereof. BHEL also reserves the right to withhold or withdraw the process at any stage.

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Application including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by BHEL or any other costs incurred in connection with or relating to its Application.

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1.0 INTRODUCTION

The Expression of Interest (EOI) will seek response from Original Equipment Manufacturer (OEMs), Authorized dealers of OEMs, Design Consultant/Agencies, Academic and R&D institutions, Industrial bodies and local suppliers who are involved in designing of High Voltage Equipment/Labs and have past experience in designing & manufacturing of Customized Transformer Testing Equipment and their Compatible Portable Solutions.

2.0 ABOUT BHEL

Bharat Heavy Electricals Limited (BHEL) is a Central Public Sector Enterprise. It is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing companies of its kind in India having a turnover of about USD ~3 billion. The company is engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable Energy, Oil & Gas and Defense with different product offerings to meet the needs of these sectors.

BHEL has a widespread network of 16 manufacturing units, 2 repair units, 4 regional offices, 8 service centres, 4 overseas offices and 15 regional marketing centres corroborates the humongous scale and size of its operations to deliver value to its customers.

With key focus on project execution, the worldwide installed base of power generating equipment supplied by BHEL has exceeded 185 GW. BHEL's equipment that account for about 60% of the country's total generation from thermal utility sets (coal based), stand a testimony to its valuable contribution towards nation building. BHEL's global competitiveness has established its footprint in all the inhabited continents with references in 83 countries.

The high level of quality & reliability of BHEL products is a testimony to its adherence to international standards by acquiring and adapting some of the best technologies from leading companies in the world including Siemens AG, ABB, Alstom, Mitsubishi Heavy Industries Ltd., General Electric, etc., together with technologies developed in its own R&D centres. BHEL invests more than 2.5% of turnover on R&D and innovation.

BHEL, Bhopal is one of the 1st manufacturers of power transformers in India catering to the need of domestic and overseas utilities since 1961. The Heavy Electrical Plant (HEP) Bhopal unit of BHEL is located in the capital city Bhopal of central state of Madhya Pradesh, India.

The unit manufactures a wide range of electrical products like hydro turbines & generators, traction machines, industrial machines, switchgears, traction & industrial controls, transformers, capacitors, bushings, heat exchangers, Thermal sets for power & industrial applications, DG sets, rectifiers & power electronics.

The facilities at Bhopal unit are today equipped with state-of-the-art design, manufacturing and testing facilities of transformers and reactors upto 1200kV class.

More details about the entire range of BHEL's products and operations can be obtained by visiting our web site www.bhel.com.

3.0 Scope of Cooperation

3.1 In order to meet upcoming market requirements and to enhance facility for the testing of transformers and reactors upto 800kV class. BHEL intends to Develop (Supply and/or consultancy) for: -

- Portable loss measuring system which will be required for measuring different parameters and loss measurement of power transformers and reactors.
- The system shall be of state-of-the art technology & compatible with the existing **M/s MI Canada make** loss measurement system available at 3 locations of the UHV lab of BHEL Bhopal.

3.2 The intent of this EOI is to invite applications from interested Organizations / Academic Institutes/R&D institutions/OEMs and consultants who are willing to work with BHEL for all /any of the above items mentioned in 3.1. Also, Industrial bodies & domestic manufactures are invited for consultations/deliberations.

3.3 Technical alternatives (if any) available can also be suggested.

3.4 Indicative Credentials of the participant to be submitted as per format in Annexure-1.

3.5 Brief Description of Highest rating of Transformers/Reactors tested at Bhopal

Product	Highest Rating
Generator Transformer	420kV, 3Ph,400 MVA & 420kV,1 Ph, 315 MVA (1000 MVA Bank) 765kV, 1Ph,330 MVA.
Auto Transformer	420kV, 3Ph, 520 MVA 765kV, 1Ph, 500MVA 1200kV, 1Ph, 333 MVA
Convertor Transformers/ Smoothering Reactors	500 MVA, \pm 500 kV HVDC/ \pm 800 kV HVDC. 254 MVA, 360 mH,1568 Amp, \pm 500 kV HVDC
Special Transformers/ Reactors	315 MVA, 420 Kv Phase Shifting Transformer. Upto 80 MVA,420 kV, 3 Ph, Controlled Shunt Reactors. 1200 kV,3Ph,600MVA Testing Transformer.

3.6 Brief Description of requirements against EOI:

- (i) The system should be compatible with the existing Current Transformer (300kV,4000Amps and 100kV,2500Amps) and Standard Capacitor (50pF,300kV and 100pF,100kV) of M/s MI Canada make installed at BHEL Bhopal.
- (ii) The set should comprise of 1 no. 500 kV, 50 pF Capacitor,1 no. 4000 A, 300 kV Current Transformer,3 nos. portable racks installed with loss measurement system for measurement V,I,P & PF along with system controller installed in portable rack with wheels. Set of interconnecting cables to connect the system with existing CTs and PTs and supplied CTs and PTs.
- (iii) Accuracy Requirements:-
Voltage accuracy: 0.1% or better
Current accuracy: 0.1% or better
Power accuracy: 50 ppm or better at full scale
- (iv) Portable Controller & LMS Rack in 4-inch wheel size:
For cooling purpose fans should be mounted inside all the cabinet with running & temp. indicators. All cabinet should have suitable handles and locking system.
- (v) System should have controller with rack mounted PC. Controller rack can be used with a single instrument rack or with all three racks simultaneously.
- (vi) Customized software/program required to meet our requirement. There should be a different window for Shunt Reactor loss measurement. RMS current, avg. current, measured power, corrected power, app. power, power factor (5 digit) and harmonics should be displayed on LMS screen. Provisions to be given to take snap shots of all displayed parameters.
- (vii) System should operate in single phase operation for measurement of loss on shunt reactor & transformer. Single phase reactor testing software to be provided for reactor loss measurement at all power factors.
- (viii) Suitable interconnecting cables to be provided for following
 - 1 Existing Standard Capacitor to control system of length 40m each- 3 nos.
 - 2 2500 A existing Current Transformer to control system of length 40m each- 3 nos.
 - 3 500 kV Standard Capacitor to control system of length 40m - 1 no.
 - 4 4000 A Current Transformer to control system length 40 m - 1 no.
- (ix) System should have adequate and reliable safety interlocks / devices to avoid damage to the system, work piece and the operator due to the malfunctioning or mistakes.

Note: All offered Equipment(s) / Technologies for 3.5 (i) to (ix) shall be such as to finally meet test requirement of IEC 60076, imbued with all the latest trends and well proven state of the art technologies. Any additional requirement other than the points mentioned will be suitably communicated.

4.0 INSTRUCTION TO APPLICANTS:

- 4.1** Reputed business entities may submit their application as per **Annexure -1 & Annexure – 2** (along with supporting documents for PQR) by Post / e-mail so as to reach us on or before **10th Sep 2022 (before 14:00 Hrs)** at the following address:

AGM (Testing),
Ultra High Voltage Laboratory,
TRANSFORMER BLOCK
Bharat Heavy Electricals Limited
Piplani, Bhopal -
462022, India.
Email: dajwani@bhel.in / pradeep_singh@bhel.in / pranay@bhel.in
Phone: +91 755 2505060 / +91 755 2505059 /+91 755 2505092

- 4.2** The details submitted by the Applicant(s) shall be complete in all respects and BHEL may seek clarifications/additional information as considered necessary. Such clarifications/additional information must be provided within one week of BHEL request.
- 4.3** The EOI process involves seeking willingness of interested parties and selecting one or more party(ies) amongst all who make an application in response to this EOI.
- 4.4** Any request for further information or clarification on the EOI document may be submitted to the above mentioned official within one week from the date of issue of EOI.
- 4.5** Responses to EOI are to be submitted in English only. Supporting documents, as required, must be in English language.
- 4.6** Duly authorized representative of the Applicant(s) shall sign on each page of the document. Response to EOI should be prepared in such a way so as to provide a straight forward, concise description of Applicant's capabilities.
- 4.7** Notwithstanding anything contained in this EOI, BHEL reserves the right to accept or reject any Application and to annul the EOI Process in whole or part, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.
- 4.8** BHEL reserves the right to verify all statements, information and documents submitted by the Applicant in response to the EOI. Any such verification or lack of such verification by BHEL shall not relieve the Applicant of his obligations or liabilities hereunder nor will it affect any rights of BHEL.

- 4.9** The EOI process shall be governed by, and construed in accordance with, the laws of India and the Courts at Bhopal/New Delhi shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the EOI process.
- 4.10** All costs incurred for participation in the EOI shall be borne by the Applicant(s).
- 4.11** BHEL at its discretion may extend the due date for submission of EOI and the decision of BHEL in this respect would be final & binding on the respondents.
- 4.12** In case any amendment/corrigendum issued to this EOI, it shall be notified only at www.bhel.com

5.0 Pre-Qualifying Requirements (PQR):

It is essential that the prospective partner/ respondent meet the pre-qualification requirement supported with relevant documents/ credentials/ certificates for further consideration as per the conditions stipulated in Annexure-2.

BHEL reserves the right to issue enquiry for procurement of system/ equipment planned through this EOI to only those participants who have submitted application in this EOI based on their proposal/EOI details and merit.

Expression of Interest (EOI) for Development of Portable Loss Measurement System
Ultra High Voltage Laboratory, BHEL-HEP, Bhopal

Annexure-1

Information to be submitted by Applicant

1. Name of the Company/Firm/Consultant:
2. Legal status of the Company/Firm/Consultant:
3. Brief description of the Company/Consultant including details of its business groups/subsidiaries/ affiliates:
4. Date of Incorporation:
5. Date of Commencement of Business:
6. Full address including Telephone nos. / Fax nos.:
 - Registered Office:
 - Head Office:
 - Address for communication:
 - Contact Details:
 - Office Address in India, if any:
7. Documents to be enclosed:
 - a) Technical Credentials – Relevant Product/System catalogues, Experience /Reference List, Copies of Customer Certificates, Engineering strengths, quality accreditations, etc.
 - b) Financial Credentials – Copies of Audited Financial statements (Annual Reports) for last 3 years. (Not required for individual consultancy)
 - c) Other documents considered relevant to meet PQR and support evaluation criteria.
8. All the submitted documents shall bear the seal and sign of authorized signatory.

Expression of Interest (EOI) for Development of Portable Loss Measurement System
Ultra High Voltage Laboratory, BHEL-HEP, Bhopal
Annexure-II

Pre-Qualification Requirements

Sl.no.	Requirement	Applicant's Response	Supporting document
1)	Equipment Supply:		
1.1	OEM / Industry/Local Supplier for system.		
1.2	Has sufficient experience in engineering /design/ manufacturing capabilities for design, development, manufacturing, testing and commissioning of proposed scope of work/cooperation.		
1.3	In case the bidder is authorized representative of OEM, the complete system should be sourced from OEM only. Accessories of different make from OEM, to be authorized by OEM.		
1.4	Has not been blacklisted / banned for business dealings by any Government Department of state/India.		
1.5	No previous contract has been terminated or part terminated due to bidder's failure.		
1.6	Has not suffered insolvency / bankruptcy.		
1.7	The bidder meeting the specification requirement may be called at BHEL works for equipment's operational/functional demonstration for the quoted model/system. Customized development is to be carried out at supplier's cost.		
1.8	All types of spares for equipment and accessories should be available for at least ten years after supply of the equipment.		
1.9	Bidder have to take full responsibility for carrying out entire installation and commissioning of the equipment. Complete commissioning; testing including all the tests will be in the scope of Bidder. Commissioning to be done in presence of technical expert.		
1.10	Bidder to submit, along with offer, the reference list of customers where similar systems have been supplied mentioning the customer, Machine Model, major specifications of the supplied system, Year of Supply etc.		
1.11	The total warranty will be 36 months from the date of commissioning of the system.		

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Ultra High Voltage Laboratory, BHEL-HEP, Bhopal
Annexure-II

Sl.no.	Requirement	Applicant's Response	Supporting document
2)	Consultancy:		
1.1	Designer / Design Consultant / Academic and R&D institutions.		
1.2	Has sufficient experience in engineering / consultancy for design, development, testing and commissioning of proposed scope of work/cooperation.		
1.3	Has not been blacklisted / banned for business dealings by any Government Department of India.		
1.4	No previous contract has been terminated or part terminated due to bidder's failure.		
1.5	The bidder meeting the specification requirement shall be called at BHEL works for technical discussion for the system.		
1.6	The Bidder shall provide a list of probable suppliers from which the system is to be procured. Bidder have to take full responsibility for carrying out consultancy during entire installation and commissioning of the system. Complete system commissioning; testing including all the tests will be in the scope of supplier from which system will be procured.		
1.7	Bidder to submit, along with offer, the reference list of customers where similar consultancy has been provided mentioning the customer, major consultancy specifications of the system, Year of order etc.		
1.8	The total warranty/service support will be 36 months from the date of consultancy completion of the system.		

(Sign & Company Seal)

Authorized signatory