

**Bharat Heavy Electricals Limited
(A Government of India Undertaking)**

**INVITATION FOR EXPRESSION OF INTEREST
FOR APPOINTMENT AS REVIEW CONSULTANT**



Issued by:

**Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Power Sector- Project Engineering Management
PPEI Building, Plot no. 25, Sector-16A, Noida
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DISCLAIMER

This Invitation for Expression of Interest (hereinafter called document) is issued by Bharat Heavy Electricals Limited (hereinafter called BHEL) for appointment of consultant for review of system design of their coal based thermal power plants with supercritical steam parameters.

This document is meant for only those applicants, who intend to submit their Expression of Interest in line with qualification requirements and other terms and conditions set forth in it. Whilst the information in this document has been prepared in good faith, it is not and does not purport to be comprehensive. Neither BHEL, nor any of its officers or employees accepts any liability or responsibility for accuracy, reasonableness or completeness of, or any errors, omissions or mis-statement, negligent or otherwise, relating to the proposed consultancy services or makes any representation or warranty, expressed or implied, with respect to information contained in this document or on which this document is based or with respect to any written or oral information made or to be made available to any of the applicant or their representative, so far as permitted by law and except in case of a fraudulent misrepresentation by the concerned, and liability therefore is hereby disclaimed.

The information contained in this document is not exhaustive. It does not, and does not purport to, contain all the information that a proposed applicant may require. Neither BHEL nor any of its officers or employees undertakes to provide any applicant with access to any additional information or to update the information in this document or to correct any inaccuracies therein which may become apparent. Each applicant must conduct its own analysis of information contained in this document or to correct any inaccuracies therein that this document and is advised to carry out its own investigation into the proposed consultancy services.

DEFINITIONS

Following capitalized terms used in this DOCUMENT shall have the meaning given hereunder:

- i. "APPLICATION" shall mean the response submitted in writing by the applicants in accordance with the terms and conditions of this "DOCUMENT".
- ii. "DOCUMENT" shall mean this Invitation for Expression of Interest.
- iii. "EOI" shall mean Expression of Interest.
- iv. "BHEL" shall mean Bharat Heavy Electricals Limited, a company registered under the Indian Companies Act, 1956 with its registered office at BHEL HOUSE, SIRI FORT, NEW DELHI -110049, INDIA or its authorized officers or employees authorized to deal with any matters related to this document on its behalf.
- v. "APPLICANT" shall mean single entity or consortium of applicants/ companies, who is submitting EOI in response to this document.
- vi. "BIDDING COMPANY" shall mean the reference to the single company, if the application for EOI is made by a single company.
- vii. "BIDDING CONSORTIUM" or "CONSORTIUM" shall mean reference to the group of companies, each being a member in a bidding Consortium, if the bid for EOI is made jointly by more than one company.
- viii. "MEMBER IN A BIDDING CONSORTIUM" or "MEMBER" shall mean each company in the Bidding consortium.
- ix. "REVIEW CONSULTANT" shall mean Consultancy Firm or EPC contractor who is submitting EOI to carry out the work as spelt out in para 3.0
- x. "PEM" shall mean Project Engineering Management division of BHEL, located at PPEI building, HRDI & ESI complex, Plot No. 25, Sector-16A, NOIDA-201301, Uttar Pradesh, India
- xi. "RfQ" shall mean Request for Quotation, which shall be issued to short listed applicants, in accordance with clause no. 6.1

1.0 BHARAT HEAVY ELECTRICALS LIMITED: AN INTRODUCTION

Bharat Heavy Electricals Limited (BHEL), A government of India undertaking, is the largest engineering and manufacturing enterprise in India in the energy related/ infrastructure sector, and caters to Power Generation and Transmission, Industry, Transportation, renewable energy etc. BHEL has turnkey capabilities for executing power projects from concept to commissioning. BHEL has installed Coal & Gas based Thermal and Hydro Power Projects with cumulative capacity exceeding 125000 MW in India and abroad. For year 2010-2011, BHEL turnover was INR. 43,451 crore (INR. 434,510 Million), registering a growth of 27% over previous year and profit before tax was INR. 9,016 crore (INR. 90,160 Million), an increase of 37% over previous year. For further details please visit our website www.bhel.com.

Project Engineering Management (PEM) Division of BHEL is the power plant system integrator providing total engineering solutions for coal and gas based Thermal Power Projects, enabling BHEL to offer complete Engineering, Procurement and Construction services. For further details please visit our website www.bhelpem.com.

PEM has the experience of design & engineering of coal based power plants with unit capacities up to 600 MW with sub critical steam parameters and 660MW & above with supercritical steam parameters.

The engineering activities carried out by PEM division are briefly described below.

- a) Mechanical systems: Heat and mass balance diagrams, optimization of Power cycle parameters, Process and Instrumentation Diagrams for Power Cycle(Main Steam, cold Reheat and Hot Reheat Systems; HP/LP Bypass steam system; Condensate & DM Make up system; Heater drains and Vents system; Air evacuation System; Feed Water system; Extraction steam system; Auxiliary Steam System) and Plant Water Systems (Raw Water, circulating water, DM Water, Aux. Cooling water) including engineering & procurement of cooling towers and other packages, preparation of valve schedules and pipe schedules.
- b) Piping and Layout: Development of plot plan, Power Plant Building Layouts, Equipment layout, composite Piping Layout, Piping Isometrics, Stress Analysis, dynamic analysis, engineering of hangers and supports.

- c) Balance of Plant: Sizing, Engineering and Procurement of Balance of Plant Packages like Ash Handling system, Chemical Dosing System, Chlorination Plant, Condensate Polishing Unit, Cranes, Hoists, Air conditioning system, Ventilation System, DM Plant, Effluent Treatment Plant, Fire Protection system, Fuel Oil Handling system, Mill Reject system, Lime stone Handling system etc.
- d) Electrical systems: System design of AC Auxiliary System, DC system, Emergency Diesel Generator, Black Start Supply system; Control & Protection of Electrical Systems; Electrical Equipment & Cabling Layout; Sizing of Power & Auxiliary Transformers, Generator Bus ducts, Cables & MV Switchgear. Sizing & Procurement of Electrical BOP packages such as LT Switchgear, LT service Transformers, Cables & Cabling materials, Generator Circuit Breaker, Station Lighting System, Battery & Battery Chargers etc.
- e) Station Control & Instrumentation: Control Philosophy & System Architecture for Distributed Control System; Open & Closed Loop Controls; Control Room Layouts; Instrumentation & Control schemes.
- f) Civil & Structurals: Complete Civil Engineering and Design for Power Plant covering Earth works Design (including Grading & Levelling), Foundation of Equipment including TG & Boiler foundation; Power House and Technological buildings; non plant buildings; roads, drains and paving; Raw water reservoir, Chimneys, Ash Ponds; Structural & Architectural works etc.

2.0 INVITATION FOR EXPRESSION OF INTEREST

BHEL PEM desires to develop optimized designs for coal based thermal power plants with supercritical Units in line with proven international practices and norms, so as to minimize the project cost & execution time, to enable BHEL to offer complete engineering procurement and construction services on a very competitive basis. This would call for optimization of equipment sizing, Schematics, Layouts, Control Logics, Electrical systems etc. In view of above, it is proposed to appoint a review consultant for engineering services, who will review design documents prepared by PEM for optimization and aligning with international practices etc.

PEM now invites Expression of Interest from interested applicants who desire to get short listed for appointment as Review Consultant (RC) for their supercritical power projects with unit rating of 660MW and above. Applicant shall meet Qualification Requirements as given in clause 4.0 of this document. Request for Quotation (RfQ), containing detailed specification, shall be sent to the short listed applicants as per methodology given in clause no. 6.1 below. Scope of work shall be as given in clause no. 3.0 below.

3.0 SCOPE OF WORK

- 3.1 The appointed Review Consultant (RC) shall review drawings and documents prepared by BHEL and suggest design improvements based on their proven practices to align the same with international practices and norms with due consideration to domestic conditions. RC shall also provide expert opinion and assistance on critical technical issues to enable BHEL to improve the process (Mechanical / Electrical / Instrumentation) as well as layout design.
- 3.2 Modalities of Review shall be as follows:
- a) Through electronic exchange of documents.
 - b) Video Conferencing
 - c) Across the table discussion at BHEL premises or Applicant's premises

4.0 QUALIFYING REQUIREMENTS FOR APPOINTMENT AS REVIEW CONSULTANTS

The Expression of Interest (EOI) is invited from applicants meeting the minimum TECHNICAL and FINANCIAL capabilities as mentioned below:

4.1 TECHNICAL

The applicant should be an established EPC Contractor or Engineering Consultant.

4.1.1 Past Experience

- A) As an established EPC Contractor, the applicant should have carried out design and engineering of following projects as EPC Contractor:
 - i) Minimum 10Nos. Coal & Gas based Thermal Power Projects during last 10 years.

- ii) Out of 10 power projects, min. two (02) nos. Coal based Thermal Power Projects should be with unit rating of 200-500 MW.
- iii) Out of 10 power projects, min. three (03) nos Coal based Thermal Power Projects should be with unit rating greater than 500 MW.
- iv) All the 10 nos. Coal & gas based Thermal Power Projects (referred at S.No. 4.1.1.A) i) above) should be in commercial operation for a minimum period of two years, as on date of application.

OR

B) As an established Engineering Consultant, the applicant should have provided DETAILED ENGINEERING CONSULTANCY SERVICES at contract stage for substantial portion of the Power Plant including Boiler, Turbine & Generator as a minimum for following projects, as Project Consultant:

- i) Minimum 10Nos. Coal & Gas based Thermal Power Projects during last 10 years.
- ii) Out of 10 power projects, min. two (02) nos. Coal based Thermal Power Projects should be with unit rating of 200-500 MW.
- iii) Out of 10 power projects, min. three (03) nos Coal based Thermal Power Projects should be with unit rating greater than 500 MW.
- iv) All the 10 nos. Coal & gas based Thermal Power Projects (referred at S.No. 4.1.1.B) i) above) should be in commercial operation for a minimum period of two years, as on date of application.

AND

4.1.2 Experience of projects with supercritical units

A) In case of Applicants who are EPC Companies(Contractor), the applicant should have carried out or currently carrying out design and engineering of following projects as EPC Contractor:

- i) Minimum three (03) nos. coal based Thermal Power Plants, with supercritical steam parameters, of Unit rating 500 MW or above.

- ii) Out of 3 power projects mentioned at S.No 4.1.2.A.i), min. two power projects should be in commercial operation for minimum two years as on date of application.
- iii) Projects under execution shall be in advanced stage of engineering completion as on date of application.

OR

- B) In case of Applicants who are Engineering Consultants, the applicant should have provided or is currently providing DETAILED ENGINEERING CONSULTANCY SERVICES at contract stage for substantial portion of the Power Plant including Boiler, Turbine & Generator as a minimum, as Project Consultant;
 - i) Minimum three (03) nos. coal based Thermal Power Plants, with supercritical steam parameters, of Unit rating 500 MW or above.
 - ii) Out of 3 power projects mentioned at S.No 4.1.2.B.i), min. two power projects should be in commercial operation for minimum two years as on date of application.
 - iii) Projects under execution shall be in advanced stage of engineering completion as on date of application.

4.1.3 Necessary documentary evidence shall be furnished in the prescribed formats to substantiate the qualification requirements mentioned at 4.1.1 & 4.1.2 above and shall be enclosed along with EOI to prove the credentials of the applicant for meeting the above requirements.

4.2 FINANCIAL

The applicant should meet following financial criteria:

- a) The net worth of the applicant as per the latest audited financial results shall be positive.
- b) Annual turnover of the applicant shall not be less than US \$ 1,500,000 (one million five hundred thousand dollars) as per audited financial results in any one of the three preceding financial years upto the due date of submission of the EOI.
- c) The applicant should have experience in executing similar consultancy work during the last three years with a minimum order value as given below:

- i) Three completed consultancy job of value of work done not less than US \$ 500,000 (five hundred thousand dollars)

OR

- ii) Two completed consultancy job of value of work done not less than US \$ 800,000 (eight hundred thousand dollars),

OR

- iii) One completed consultancy job of value of work done not less than US \$ 1,000,000 (one million dollars)

- d) The applicant shall submit the audited financial results for the three preceding financial years and the proof of executing the consultancy job as c) above.
- e) The currency conversion rate at the closing date of bid will be taken for the applicants having the above information in values other than US dollars

4.3 APPLICATION BY CONSORTIUM

Individual companies may associate with each other to form a consortium to complement their expertise in respective areas to fulfil the criteria mentioned at clause no. 4.1 above. However, one of the companies must become the lead member of the consortium and shall be authorized by all other members to take decision related to this EOI. Additionally, the lead member company shall alone fulfil the criteria mentioned at 4.2 above, and shall shoulder responsibility on behalf of all the members.

In case of participation in the EOI by a consortium, application shall comply with the following requirements:

- a The application shall include all the information required for the applicants as described in this document for each consortium members.
- b Leader of the consortium shall alone fulfil the financial criteria as specified in clause no. 4.2 above.

- c Authorisation by all the consortium members in favour of leader of the consortium shall be submitted along with the proposal.
- d Separate application by a consortium member shall not be accepted. A company can be a member in only one consortium.
- e Consortium agreement shall be furnished along with application.

4.4 MANPOWER

The Applicant shall have adequate and experienced engineering manpower for rendering all the specified services as mentioned in clause no. 3.0 above. The Applicant shall indicate the manpower & resources available with the Applicant in Form 6.

4.5 FACILITIES

The Applicant shall have all necessary facilities and resources for performing all design and drawing work in an automated computerized environment. All design software shall be original with requisite number of licenses.

5.0 METHODOLOGY FOR APPOINTMENT OF APPLICANTS AS REVIEW CONSULTANT

Following methodology and sequence is intended to be followed for appointment of applicants as Review Consultant:

- a. Invite Expression of Interest from applicants
- b. Evaluation of EOIs and Short listing of the applicants based on specified Qualification Requirements. Decision of BHEL shall be final in short listing of the applicants
- c. Floating Request for Quotation (RfQ) with detailed specification to shortlisted applicants.
- d. Evaluation of Responses to RfQ.
- e. Placement of purchase order based on technical and commercial evaluation of Responses to RfQ. Decision of BHEL shall be final in appointment of the applicant as Review Consultant.

6.0 INSTRUCTION/ INFORMATION TO THE APPLICANTS

- 6.1 The application and all correspondence incidental to the application shall be written in ENGLISH language only. Any printed literature and document submitted in any other language shall be accompanied by authenticated English translation, in which case, for the purpose of interpretation of the application, English translation shall govern. Responsibility for correctness in translation shall lie with the applicant.
- 6.2 The applicant shall not disclose any information to any third party without prior written consent of BHEL.
- 6.3 BHEL reserves its right to call for original of the supporting documents for verification, if so deemed fit and also cross check any details as furnished by the applicant from their previous clients.
- 6.4 It will be certified by the applicant that there is no pending court cases or otherwise on them by Government or any statutory authorities which might infringe upon their rights to participate in such EOI with BHEL
- 6.5 BHEL reserves the rights to make use of available independent data for evaluation of the application that have been submitted against this document
- 6.6 Canvassing in any form by the applicant or by any agency on their behalf may lead to disqualification of their EOI.
- 6.7 BHEL reserves the right to invite fresh EOI with or without amendment at any stage without any liability or obligation for such invitation and without assigning any reason thereof.
- 6.8 In case of consortium, after applicant has been qualified and short listed, the structure of the consortium formed for the purpose of qualification, shall not be changed till the validity of contract with BHEL.
- 6.9 BHEL reserves the right to reject any application if:
- i. At any point of time, it is found that applicant has misrepresented the facts or figures
 - ii. The applicant does not respond promptly and thoroughly to the request for supplementary information required for evaluation of application.
- 6.10 All correspondence relating to this Expression of Interest shall carry the following title:

**“EXPRESSION OF INTEREST FOR APPOINTMENT AS REVIEW
CONSULTANT FOR ENGINEERING OF COAL BASED SUPERCRITICAL
POWER PLANTS”**

- 6.11 The Expression of Interest must be submitted within ONE MONTH of publication of invitation for EOI by e-mail to the following address
Email: arungupta@bhelpem.co.in
Tel: +91 120 4329065
Fax: +91 120 4329046
- 6.12 A hard copy of the Expression of Interest shall be delivered to the following address as confirmation of the email submission:
Mr ARUN GUPTA,
Addl General Manager, (MATERIAL MANAGEMENT),
BHARAT HEAVY ELECTRICALS LTD,
PROJECT ENGINEERING MANAGEMENT
PPEI Building, Plot No. 25, Sector 16A,
NOIDA 201301, U.P. INDIA.
The outside of the sealed envelope shall be marked with the heading referred to at S No. 6.10 above. Duly signed hard copy should be delivered within one week of the last date of submission mentioned above.
- 6.13 Clarifications can be directed to the contact person, at the address or by e-mail, contact details as indicated at S No. 6.10 above within two weeks of publication of THIS INVITATION FOR EXPRESSION OF INTEREST.
- 6.14 BHEL reserves right to consider or reject the applications received after due date of submission.
- 6.15 BHEL reserves the right to accept or reject any or all of the EOIs without assigning any reason thereof.
- 6.16 BHEL shall not be responsible for expenses incurred towards preparation and submission of applications as well as other expenses incurred towards it.
- 6.17 An applicant may be considered to be in conflict of interest with one or more applicants in the same bidding process if they have a relationship with each other, directly or through a common entity, that puts them in a position to have access to information or influence the bid of another applicant.

7.0 SUBMISSION OF EXPRESSION OF INTEREST

Interested applicants are requested to submit their application in a format as outlined below in order to achieve the objective of maintaining uniform application structure for all the applicants:

Form-1	:	Proforma of EOI Letter
Form-2	:	General Information about applicant
Form-3	:	Experience List of projects with subcritical units
Form-4	:	Experience List of projects with supercritical units
Form-5	:	Financial Capability of the applicant
Form-6	:	Organisation structure, Manpower & Facilities available with applicant
Form-7	:	Comments and suggestions from applicant

All the forms mentioned above are given in separate MS-Word file. All documents as required in various forms shall be furnished by the applicant. Forms enclosed without documentary proof shall not be considered for evaluation.