

BHARAT HEAVY ELECTRICALS LTD., BHOPAL
HYDRO MACHINERY DEVELOPMENT STATION
NOTICE INVITING TENDER (NIT)

Sealed tenders are invited from the bidders, for the following work as per details given below:

1. Name & details of the work:

Name of Work	Completion Period Month(s)	NIT No. & Date
<i>Development of methodology for CFD analysis of Pelton Turbine (refer detailed description and scope of work along with the deliverables in Annexure 1)</i>	Around 04 Months from the date of Order	HLE/11-12/WP/01 26.09.2011

- i) Last Date & Time of Submission of Tender – 22-10-2011 3.30 pm IST
ii) Date & Time of Opening of Tender – 24-10-2011 2.30 pm, IST

2. The fully signed & sealed Tender is to be sent to

Tender Room,
Ground Floor,
Administrative Building,
BHEL, Piplani, Bhopal
Madhya Pradesh
India - 462022
Contact Phone No – 91-755-2502433

3. Details of Tender Documents:

1.	Technical Specification and scope of Work	Annexure -1	1 pages
2.	Instructions to Bidders	Annexure -2	4 pages
3.	Techno-Commercial bid Part-1	Annexure -3	2 pages
4.	Price bid Part-2	Annexure -4	1 page

Ajay kumar Arya
Manager (HLE)
BHEL, Piplani
Bhopal, India-462022
Email:
ajayarya@bhelbpl.co.in
Phone: +91-755-2503709

Dynampally Pavitrn
Engineer (HLE)
BHEL, Piplani
Bhopal, India-462022
Email:
dpavitrn@bhelbpl.co.in
Phone: +91-755-2502006

Annexure -1

Technical Specification and Scope of Work:

The scope of present work is to calculate the torque of a Pelton turbine by carrying out CFD analysis for a pre-supplied Pelton turbine hydraulic profile. The above analysis should be carried out using ANSYS CFX-13.0 CFD software for a single case (Single case corresponds to a single operating point i.e. at a particular needle stroke & RPM) and validate the results with model test results. The pre-supplied hydraulic profile will contain the geometry of all components (Distributor, Nozzle and Pelton Bucket) in a PARASOLID file format. Additionally for estimation of boundary conditions, experimental values of relevant parameters from model test results will be provided on request. The task of Consultant/ Consulting firm would involve Domain Creation of the given components, Quality Grid generation (structured / unstructured) using ANSYS ICEM-CFD, Pre-processing using ANSYS CFX-PRE 13.0, Transient solver runs and post-processing using ANSYS CFX 13.0 for a single case, capturing of results in a structured format, systematic analysis and comparison of obtained results with model test results. The obtained results by CFD analysis with respect to Torque should be within 5% of model test experimental results. BHEL Bhopal will jointly participate and monitor in all the phases of the project execution.

Deliverables:

The Consultant/ Consulting firm is expected to submit a consolidated technical report which specifically mentions about the procedures followed in arriving at optimum domain creation, Grid (Quality & near-wall spacing) and solver settings (about chosen Advection & Transient scheme, Turbulence model, Multiphase option, Interphase transfer option and time step) with “**proper justifications**”. The report should also contain the detailed analysis of obtained results with explanation about the variations between the numerical & experimental results. All grids, pre-processing files and results should be supplied on DVD.

General Instructions for the bidders

1. Tender documents can be downloaded from Web site- www.bhel.com or www.bhelbhopal.com.

3.0 INSTRUCTIONS AND GUIDELINES TO BIDDERS

3.1 INTRODUCTION:

Bharat Heavy Electricals Limited (BHEL) is an ISO-9001:2000 certified premier Engineering and Manufacturing organization with majority share-holding by Government of India. BHEL is catering to the core infrastructure sectors of Indian economy viz. Power Generation and Transmission, Industry, Transportation and Renewable energy. BHEL has been in this business for almost five decades now. In India BHEL has 14 manufacturing units, 4 Power Sector Regions, 8 Service centres and 15 Regional offices besides host of Project sites spread all over India and abroad. BHEL supplied equipment account for more than 65% of the total installed Generating capacity in India and contribute approx. 73% of the total power generation in the country. More details about the entire range of BHEL's products and operations can be had by visiting our web site www.bhel.com or www.bhelbhopal.com.

Hydro Turbines are a major product of manufacturing unit located in Bhopal, Madhya Pradesh in Central India. BHEL, Bhopal has a wide and rich experience of supplying various types of hydro turbines and hydro generators for more than 150 projects. In around 50 years of operation BHEL has supplied & commissioned Hydro Turbine sets of around 18000 MW. BHEL also has an in-house NABL-certified Hydro turbines and Pumps Model Testing Laboratory conforming to the relevant International standards.

3.2 TENDERER TO INFORM HIMSELF FULLY:

3.2.1 The bidder shall closely peruse all the clauses, specifications and requirements etc., indicated in the tender documents, before quoting. Should the bidder have any doubt about the meaning of any portion of the tender specifications or find discrepancies or omissions in the specifications or if the tender documents are found to be incomplete or require clarifications on any of the technical aspects, scope of work etc., he shall at once contact the official inviting the tender, before submission of the tender.

3.2.2 Bidders are advised to study all the tender documents carefully. Any submission of tender by the Bidder shall be deemed to have been done after careful study and examination of the tender documents and with the full understanding of the implications thereof. The specifications and terms and conditions shall be deemed to have been accepted unless otherwise specifically commented upon by the bidder in his offer.

3.3 PROCEDURE FOR SUBMISSION & OPENING OF BIDS

3.3.1 Bids are invited **in TWO parts**, as described below, on or before the due date & time indicated in the Tender Notice.

PART-I: TECHNO-COMMERCIAL BID

This part shall consist of the following:

Technical Specifications including all items of Table-1 & Table -2, Annexure-3 duly filled.
The bidder should offer only as per the Complete Scope of Technical Specification.
[Supporting documents of qualifying criteria of (a) and (b) of Annexure-3 to be submitted with Techno-Commercial Bid, i.e Part-I bid for tender evaluation, otherwise bid may not be considered.]
BHEL reserves the right to accept or reject the technical offer.
Price bids of only techno-commercially successful bidders will be opened.

PART-II : PRICE BID

Price bid of only techno-commercially qualified bidders shall be opened.

Price bid containing PRICES only in English Language in both Words and Figures.

Price-Bid should be submitted in Table-3 , Annexure -4 duly filled.

Price Bid should not contain any technical details and/or Commercial Terms & Conditions as the same are supposed to be contained in PART-I only so that the same can be evaluated before opening of Price Bid(s). In case of disparity between prices in words & figures, the price in words will be considered.

3.4 MARKING ON ENVELOPE

Part-I & Part-II offers shall be submitted in TWO sealed envelopes super-scribed as follows:

PART-I: 1. TENDER ENQUIRY NO. AND DESCRIPTION
2. DUE DATE OF OPENING
3. "TECHNO-COMMERCIAL BID".

PART II: 1. TENDER ENQUIRY NO AND DESCRIPTION
2. "PRICE BID".

Un-sealed envelopes or envelopes not super-scribed as above may not be accepted/considered. Sealed Part-II envelope can be kept inside Part-I envelope also.

3.5 BID SUBMISSION

3.5.1 Bids shall be addressed to the official inviting Bids by name and designation and sent at the following address:

**Tender Room,
Ground Floor,
Administrative Building,
BHEL, Piplani, Bhopal- 462022.
Contact Phone No – 91-755-2502433**

3.5.2 Bids submitted by post shall be sent by "REGISTERED POST" / International Courier only and shall be posted with due allowance for any postal delay. Bids received after the Due Date and Time of opening are liable to be rejected.

3.6 BID OPENING

- 3.6.1 PART-I (Techno-Commercial Bid) is to be opened on the due date and time as specified in the Tender Notice, in the presence of bidders who may like to attend. Part-II (Price Bid) shall be opened subsequently.
- 3.6.2 Date and time of Price Bid (Part-II) opening shall be intimated to the technically and commercially acceptable bidders only.
- 3.6.3 Unsolicited bids shall not be entertained. Unsolicited revised Price Bids also, shall not be entertained at any stage of the tendering process.

3.7 VALIDITY OF OFFER

Offer shall be kept valid for at least two months from the due date of Tender, for BHEL's acceptance.

3.8 DEVIATIONS

Bids shall be submitted strictly in accordance with the Technical specification (annexure- 1) of the Tender Enquiry. However, deviations if any should be clearly brought-out separately.

3.9 LANGUAGE & CORRECTIONS

- 3.9.1 The bidder shall quote the rates in English language and international numerals only. The metric system of units shall be used, for the purpose of tender.
- 3.9.2 Bidder shall fill the tender documents issued by BHEL in ink or in typed formats. Each page of the bid shall be signed by the bidder.
- 3.9.3 All entries shall be filled in neat and legible handwriting. No over-writings erasures and corrections are permitted and may render such bids liable for rejection.
- 3.9.4 However, if any cancellations, corrections and insertions are in the bid, the bidder shall duly attest the same.
- 3.9.5 Normal language of communication (written as well as verbal) including Final report would be in English.

3.10 REJECTION OF BID AND OTHER CONDITIONS

BHEL reserves to itself, full rights for the following without assigning any reasons, whatsoever:

- a) To reject any or all the bids.

3.11 TENDER EVALUATION

3.11.1 Value should be indicated both in words as well as in figures. If there is a difference between price quoted in words and figures the price in words will be considered or if there is any other price discrepancy, lower value(s) will be considered for evaluation & ordering.

4.0 COMMERCIAL TERMS AND CONDITIONS FOR BIDDERS

4.1 DELIVERY

Delivery period shall be around 4 months or duration proposed / agreed at the time of Order placement. The details of deliverable are explained in Annexure 1.

4.2 RATES

4.2.1 Lump-sum value of the entire scope (annexure -I) is to be quoted in both Figures and Words in Part-II (price-Bid- Annexure 4, table 3). All applicable taxes as per Indian Government laws shall be payable extra as per actuals. ***{Incase of International bidders the tax liabilities as per the native Country's law shall be paid by the Bidder himself. The Price quoted shall be inclusive of all tax liabilities of the native country of the Bidder}.***

4.2.2 Rates shall remain FIRM without any variation till completion of the Contract.

4.2.3 In case of International Bidders the Exchange rate on the date of opening of Price bid (Part-II) shall be taken for evaluation.

4.3 PAYMENT TERMS

The complete payment would be made after successful completion of work and receipt of Final completion report. The payment will be made within a maximum of 30 days. There would be no intermediate stage payments.

4.4 PENALTY FOR DELAY

If the completion of project is delayed from the agreed/ proposed schedule, a penalty of 0.5% (of total value) per week would be imposed subjected to a maximum of 10% , if the delay is not on account of BHEL or Force-Majeure conditions.

4.5 CONFIDENTIALITY

Bidder shall, at all times, undertake to maintain complete confidentiality of all data, information, drawings & documents, etc. belonging to BHEL and also of the procedures, reports, input documents, manuals, results and any other company documents discussed and/or finalized during the course of execution of the order/contract.

4.6 ACCEPTANCE OF ORDER

Letter of acceptance of the Purchase order is to be submitted within two weeks of receipt of Purchase Order.

TECHNO-COMMERCIAL BID - Part -1**Qualifying Criteria :**

- a. The Consultant / Consulting firm should have expertise and experience in using ICEM-CFD and ANSYS CFX CFD software for Hydro turbine simulation.
- b. The Consultant should have also performed at least one Consultancy project concerning Multi phase CFD simulation of Pelton Turbine using ANSYS CFX.
- c. The bidder should not be a business partner/ business associate to any of the major Hydro Turbine Manufacturers having any business interest in India and should be ready to accept of a Secrecy clause of maintaining strict Confidentiality of the data / information related to this project.

TABLE – 1

S.No	Criteria	Description
1	Details of Experience in carrying out CFD simulations of Hydro turbine using ANSYS CFX and the names of the projects for which it has been carried out.	
2	Details of at least one Consultancy project concerning CFD simulation of Pelton Turbine.	
2.a.	Name & Description of project (1)	
	Date of Completion	
	Value of the project	
2.b.	Name & Description of project (2)-Optional	
	Date of Completion	
	Value of the project	
3	Statement detailing the status of bidder (Consultant/Consulting firm) with respect to any association with major hydro turbine manufactures.	
4	Acceptance of Secrecy/Confidentiality clause (Clause No. 4.5. of Annexure -2)	Yes / No Comments if any
5	Bidder should have and submit PF no. and ESI No./ Medical policy, Service Tax registration No. for executing the contract. International Bidders are exempted from this clause.	

TABLE -2

S.No.	Description	Remarks / Comments	Deviations (if any)
1.	Acceptance of complete Technical scope of work as per Annexure -1	Yes / No	
2.	Acceptance of deliverables as per Annexure -1	Yes / No	
3.	Acceptance of Payment terms and conditions (clause 4.3 of Annexure -2)	Yes / No Comments if any	
4.	Acceptance of commercial terms & conditions (clause 4.2 of Annexure -2)	Yes / No Comments if any	
5.	Validity of quoted price -(acceptance of clause 3.7 of Annexure -2)	Yes /No Comments if any	
6.	Proposed Delivery schedule (Also refer clause No. 4.1 of Annexure -2)		
7.	The consultant would visit BHEL, Bhopal for presentation and discussion of final report after completion of work for duration of 3 working days. The cost of above visit should be included in price bid. BHEL Bhopal Engineers can be deputed to consultant's works for discussion. The cost (TA, DA, Lodging) of BHEL Engineers will be taken care by BHEL.	Yes/No	

Deviation in any of the seven items in Table -2 above must be clearly brought out as Deviations and should be a part of Techno-Commercial bid Part-I .

BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/incorrect at any point of time, the offer shall be rejected.

Price Bid - Part -2**TABLE -3**

S.No.	Description	Value (Both in Figure and Words)
1 2.	Lump Sum value of Entire Technical Specifications, Scope and Deliverables as per Annexure -1 to be quoted in both Figures and Words. All applicable taxes as per Indian Government laws shall be payable EXTRA as per actual. <i>{Incase of International bidders the tax liabilities as per the native Country's law shall be paid by the Bidder himself, i.e., The Price quoted shall be inclusive of all tax liabilities of the native country of the Bidder}.</i> Rates shall remain FIRM without any variation till completion of the contract. In case of International Bidders the Exchange rate on the date of openings of price-bid shall be treated as FIRM.	-----