

**BHARAT HEAVY ELECTRICALS LIMITED**

CORPORATE RESEARCH &amp; DEVELOPMENT DIVISION

VIKASNAGAR, HYDERABAD - 500 093, INDIA

**ENQUIRY**

PHONES: 23774494 (EXCHANGE)

DIRECT: 23882104/23882204/

23778474/23776772

FAX : 91 40 23770698

To

-

Enquiry No: Enq Date: Due Date: Delivery By:

840601671 18-JUL-06 19-AUG-06 31-OCT-06

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PLEASE-----SUBMIT-----YOUR-----QUOTATION-----IN  
SEALED COVER SUPERSCRIBED WITH  
ENQUIRY NO, ENQUIRY DATE AND DUE DATE  
SUBJECT TO OUR TERMS AND CONDITIONS  
ENCLOSED, FOR THE FOLLOWING MATERIALS  
SO AS TO REACH US ON OR BEFORE THE DUE  
DATE BY 12 NOON. THE TENDERS WILL BE  
OPENED AT 2 PM ON THE SAME DAY

Pin

Email :

Attn. .

PLEASE GIVE REFERENCE OF ENQ NUMBER , ENQ .DATE AND DUE DATE IN ALL YOUR  
CORRESPONDENCE FOR PROMPT ACTION. IN CASE IF YOU ARE NOT MAKING THE OFFER  
PLEASE POST A REGRET LETTER AND RETURN THE DOCUMENTS.

SL NO	DESCRIPTION / SPECIFICATION	UNIT	QTY
1	HIGH PRESSURE TERMO GRAVIMETRIC ANALYZER	NO.	1
	* LIST OF BASIC AND OPTIONAL ITEMS AS PER ANNEXURE - I		
	* DETAILED TECHNICAL SPECIFICATIONS AS PER ANNEXURE - II		

NOTE: PLEASE SUBMIT YOUR OFFER IN TWO PARTS AS PER THE ENCLOSED ANNEXURE  
"AA" IN SEPERATE SEALED COVERS AS DETAILED BELOW :

1) FIRST COVER CONTAINING TECHNICAL COMMERCIAL AND UNPRICED PRICE BID ALONG  
WITH COMPLIANCE STATEMENT, MENTIONING APPLICABLE DUTIES, TAXES ETC., AND  
DELIVERY TIME CLEARLY.( TERMS,CONDITIONS AND COMPLIANCE FORM ENCLOSED)

2) SECOND COVER CONTAINING PRICE BID

3) COMBINED BID OFFERS WILL BE REJECTED SUMMARILY.

AS WE ARE ENGAGED IN R&D ACTIVITY "C" FORM  
WILL NOT BE ISSUED

Yours faithfully  
for

PLEASE FILL UP THE ENCLOSED VENDOR  
REGISTRATION FORM AND SEND IT ALONG WITH  
YOUR QUOTATION. OTHERWISE YOUR QUOTATION  
WILL NOT BE CONSIDERED. (IGNORE THIS IF YOU  
HAVE ALREADY SUBMITTED THIS FORM)

BHARAT HEAVY ELECTRICALS LTD

BA Udai Shanker  
Manager

Email: [udai@bhelrnd.co.in](mailto:udai@bhelrnd.co.in)

**Annexure-I**

**List of basic and optional items for HP TGA**

Serial No.	ITEM DESCRIPTION
1	<p>Basic thermo gravimetric system consisting of</p> <ol style="list-style-type: none"><li>1. Thermo balance</li><li>2. Furnace and reaction chamber</li><li>3. Gas dosing system</li><li>4. Data Acquisition System/Software module</li><li>5. Sample holders</li></ol>
Optional	<ul style="list-style-type: none"><li>• Special configuration of reaction chamber for H<sub>2</sub>S gas</li><li>• Computer and Printer</li><li>• Transformer ( I/P V:415 to O/P V:110)</li><li>• Uninterrupted Power Supply system</li><li>• Spares and consumable kit for one year operation</li><li>• Spares and consumable kit for five years operation</li><li>• AMC for HP TGA O&amp;M</li><li>• Interface for Evolved Gas Analyzer</li><li>• Additional mass flow controllers</li></ul>

**TECHNICAL SPECIFICATION FOR HIGH PRESSURE THERMO GRAVIMETRIC  
ANALYZER (HP TGA)**

A High Pressure, high temperature Thermo Gravimetric Analyzer (HP TGA) system is proposed to be installed for carrying out reactivity studies. The essential applications envisaged for the HP TGA system are furnished below.

**I Essential applications**

1. Proximate analysis of carbonaceous fuels such as coal, lignite, petro-coke, other carbonaceous fuel blends, bio-mass etc.
2. Reactivity for gasification of char prepared from carbonaceous fuels in the presence of gasifying reactants like steam, carbon-dioxide and hydrogen either in pure form or in varying proportions of these reactant gases in admixture with nitrogen. The reactor pressure range for the experiment will be in the range of 1 to 30 bar. The reactor temperature for each experiment will be from 800 deg.C to 1050 deg.C for each of the pressure range of 1 bar to 30 bar. Sample weight changes with respect to real time are to be recorded for deriving reaction kinetic parameters.
3. For gas solid reaction of hydrogen sulfide, sulfur dioxide and ammonia with solid materials like limestone, dolomite, zinc ferrite, zinc titanate and oxides of iron and calcium.
4. Reactivity for gasification of char prepared from carbonaceous fuels in the presence of synthesis gas mixtures containing steam, carbon-dioxide, hydrogen, methane, carbon monoxide, hydrogen sulfide and nitrogen in varying ratios and proportions. The reactor pressure for the experiments ranges from 1 bar to 30 bar. The reactor temperature for each experiment will be in the range of 800 deg.C to 1050 deg.C for a pressure range of 1 bar to 30 bars. Sample weight changes with respect to real time are to be recorded for deriving reaction kinetic parameters.
5. Reactivity for gasification of liquid and semi-liquid fuels in the presence of gasifying reactants like steam, carbon-dioxide and hydrogen either in pure form or in varying proportions of these reactant gases in admixture with nitrogen. The reactor pressure for the experiments ranges from 1 bar to 30 bars. The reactor temperature for each experiment

will be in the range of 800 deg.C to 1050 deg.C for a pressure range of 1 bar to 30 bars. Sample weight changes with respect to real time are to be recorded for deriving reaction kinetic parameters.

6. Thermal pyrolysis of solid /liquid /semi-solid /polymeric materials at any preset constant pressures (upto 30 bar) with temperature ranging from ambient to 1050 deg.C. The gas environment will be non-oxidative inert or synthesis gas mixtures. Weight changes with respect to real time data will be taken for deriving pyrolysis kinetics of the fuel.

**Note:** Additional weightage will be given if the offered HP TGA can be used for operating conditions of temperature in the range of 1050 and above upto 1100 deg C and at pressures in the range upto 50 bar taken together.

## **II HP TGA system components and their description**

The High Pressure TGA system should consist of the following:-

1. Thermo balance
2. Furnace and reaction chamber
3. Gas dosing system
4. Data acquisition system/Software module

### **1. Thermo balance:**

Thermo balance must be vertical type and should be able to operate in a temperature and pressure controlled environment. The balance must be housed in a thermo-statically controlled chamber that isolates the balance from thermal effects. The balance should have suitable automatic switching mechanism for weighing samples in milligram ranges and in gram ranges as well. The balance should have a dynamic weighing range of upto 5 gram sample excluding the sample container weight. The balance should have low base line drift and smooth operation in the entire weighing range. It must operate under pressures ranging from 1 bar to 30 bar. The sample pan and the hanging wire from the balance should be made of suitable material to withstand the high temperature, high pressure and corrosive gas environment. The balance should operate with the sample pan and the sample exposed to temperatures ranging from ambient to a maximum of 1050 deg.C and also under pressure. The sample pan's position in the reaction chamber should be reproducible.

## **2. Furnace and Reaction Chamber :-**

The furnace and reaction chamber should operate at a wide choice of pressures and temperatures. The pressure and temperature ranges are prescribed in the technical specification (Table 1). The heater, pressure vessel and temperature elements should be designed to withstand the operating conditions specified in terms of pressure ranges, temperature ranges and reactant gas environment listed in the specification table. The pressure vessel should be constructed and inspected as per ASME Boiler and Pressure Vessel Codes or its equivalent international standards. Furnace temperature controller should have capability to follow a precise temperature profile of ramp and /or isotherm segments. Temperature calibration method adopted for furnace temperature, sample temperature and other temperature measurements should be specified. Temperature calibrator or metal standards shall be provided. There should be heating rate control. Safety interlocks should be built in and should be fully automatic to protect the instrument in case there is a failure either in pressure control system or in temperature control system. There should be a proper supporting platform for housing the thermo balance and furnace. The reaction chamber should have sufficient volume and should be able to handle sample holder of reasonable capacity to accommodate even the large size sample upto 5 grams. The reaction chamber should be able to handle corrosive, reducing and oxidizing gases.

## **3. The Gas Dosing System:-**

There should be provision for admission of two reactant gases and steam in the reactant gas inlet line. The reactant gas inlet line should split into three lines for admission of two reactant gases and steam. If the offered system requires inert gas admission to the balance and to the furnace sections, provision for these lines should be provided in addition to the reactant gas lines. Provision should also be available for admission of cooling air/ inert gas for faster cooling of furnace. One pre-heater shall be provided in the reactant gas line at the inlet of TGA. There should be mass flow controller with a flow control valve in each of the gas lines i.e. in three reactant gas lines and if required, in inert gas lines for balance and furnace. There should be provision for pressure indication in all the gas lines. Gas pressure in the reaction chamber should be controlled at pressures ranging from 1 bar to 30 bar by providing pressure control valves with a pressure controller at the reactant gas outlet line of high pressure TGA and the pressure should be displayed in the instrument panel and also in the data acquisition system. All pressure and flow controllers in the gas stream should be controlled through

software. If any special procedures are required for admitting condensable gases like steam into the high pressure TGA, detailed information about the procedure and additional requirements, if any, should be mentioned.

#### **4. Data acquisition system/Software module:-**

The software for HP TGA should have provision to record the sample weight changes with real time continuously and display the same in the computer and preferably on the instrument panel also. Similarly, other parameters like temperature, pressure and flow rates of all gas streams should preferably be displayed on the instrument panel in addition to their logging and display in the DAS. The software should facilitate automated operation of HP TGA. Once programmed, the entire operation from cold startup to completion of experiment should be software controlled. The operating system of the software should be latest windows based version. All necessary accessories like computer, printer, compatible UPS, transformer etc. should be offered and complete technical specifications should be furnished.

The software for the HP-TGA should have the following features:

1. Temperature programming:
2. Storage and display of real time weight, temperature, pressure, and flow measurements.
3. User friendly operating program for instruments and data analysis.
4. All data should be exportable to spread sheet
5. User choice of experimental parameters.
6. Flexibility to program customized operation methods as per user requirements.
7. Customized report generation
8. Quick retrieval of all data files.
9. Storage of as many methods as needed.
10. Programming many ramps and isothermal segments in one experimental campaign.
11. Modifying a method during an experiment.
12. Facility for data transmission to many storage devices.

### **III Technical specification of HP TGA**

The specification details of HP TGA are given in Table 1.

**Table 1 - Specification of HP –TGA**

<b>Sl No</b>	<b>Description of specification</b>	<b>Essential</b>	<b>Preferable</b>
<b>1.0</b>	<b>Thermo Balance</b>		
1.1	Measurement Range	upto 5 g	1 µg to 10 g
1.2	Resolution	1 µg	0.1 µg
1.3	Accuracy	Min 0.02% of actual reading.	0.002% of actual reading
1.4	Precision	<=0.001%	<=0.001%
<b>2.0</b>	<b>Furnace and Reaction Chamber</b>		
	<b>Pressure</b>		
2.1	Pressure Range	Ambient to 30 Bar	Upto 50 bar.
2.2	Pressure controller and pressure control valve for control of reaction chamber pressure	To be provided.	
	<b>Temperature</b>		
2.3	At ambient pressure	Upto 1050 °C	Upto 1100 °C
2.4	At 30 Bar Pressure	Upto 1050 °C	Upto 1100 °C
2.5	At 50 Bar pressure (preferable)	-	Upto 1100 °C
2.6	Heating Rate	25 °C per minute	25 °C /min or more
2.7	Cooling Rate	Min of 10 °C/min	20 °C/min
2.8	Temperature resolution	± 3 °C	± 3 °C or less
2.9	Thermocouple	Standard thermocouple suitable for the temperature and pressure range specified under serial no.2.3 to 2.4	
2.10	Temperature Calibration	Curie Point/ Melting Point (ASTM E-1582 calibration preferable) or equivalent.	
2.11	Heater Element	Vendor to specify the details	
2.12	Controllers for heating rate and furnace temperature	Vendor to specify the details	
2.13	Forced air cooling for furnace cooling	Vendor to specify the details, if required	
	<b>Sample and Sample Pan</b>		
2.14	Sample	Upto 5 grams	Upto 10 grams
2.15	Sample volume	Upto 10 ml	Upto 20 ml

SI No	Description of specification	Essential	Preferable
2.16	Sample pan weight	Vendor to specify	
2.17	Sample Pan Capacity	Sufficient to hold samples of volume upto 10 ml	Sufficient to hold samples of volume upto 20 ml
2.18	Sample Pan position and operation	Reproducible position	
2.19	Sample pan material and hang Down wire	Suitable material for high temperature and corrosive gas environment ( Refer serial no. 4.2 for gas components. Traces of Na/K/Hg vapors, HCL, HF, HCN, COS and NH <sub>3</sub> may also be present in the gas environment.	
2.20	Sample pan liners	---	Additional disposable sample pan liners preferred.
2.21	Sample pans	Suitable for holding solid and liquid samples	
<b>3.0</b>	<b>Gas Dosing System</b>		
3.1	Furnace Gases (if required)	Nitrogen (vendor to specify).	Nitrogen/ Argon
3.2	Reactant gases	Carbon dioxide, steam, oxygen, hydrogen, carbon monoxide, methane, nitrogen, hydrogen sulphide, sulfur dioxide, either in pure form or as a gas mixture of two or more of the above gases.	Synthetic gas mixture consisting of CO, H <sub>2</sub> O, H <sub>2</sub> , CH <sub>4</sub> , CO <sub>2</sub> , H <sub>2</sub> S and N <sub>2</sub> in different volumetric proportions.
3.3	Number of reactant gas connections at the gas inlet	Three including one for steam	
3.4	Purge gas for balance and furnace chambers	Vendor to specify the details if required	
3.5	Gas Flow rates	Normal and maximum flow rates to be specified by the vendor	
3.6	Mass flow controllers	1) Three numbers.(2 for normal reactant gases and 1 for steam)	
3.7	Pre-heater for reactant gas lines at the TGA inlet.	To be provided.	



SI No	Description of specification	Essential	Preferable
<b>4.0</b>	<b>Data Acquisition system/Software Module</b>		
4.1	Type of data from HP TGA	Data from all measurement points and control points should be monitored and stored.	
4.2	Hardware interface for data collection from HP TGA	USB/GPIB/RS232/RS485/Ethernet	Ethernet
4.3	Data logger	Vendor to provide suitable hardware and software for collecting the data online through the interface listed under Sr No. 7.2	
4.4	Data scanning rate for TGA	Vendor to specify	
4.5	Software module for analyzer operation and data analysis	<ul style="list-style-type: none"> <li>* Windows based</li> <li>* Operate HP TGA system</li> <li>* Monitor and logging of real time weight, temperature and pressure</li> <li>* Able to perform data analysis</li> <li>* Should have special software library for HP TGA</li> <li>* Control for gas switching</li> <li>* Enable constant temperature and programmed temperature operations</li> </ul>	
<b>5.0</b>	<b>Interface details for EGA (Optional item)</b>		
5.1	Heater in the interface line	Vendor to specify	
5.2	Gas filter	Vendor to specify	Gas filtration for fine dust may be required
5.3	Pipe line dimensions	Vendor to specify	
<b>6.0</b>	<b>Dimensions</b>	Vendor to specify	
<b>7.0</b>	<b>Weight</b>	Vendor to specify	
<b>8.0</b>	<b>Power supply to instrument</b>	Suitable arrangements to connect to 3-phase, 4 wire 415 V, 50 Hz AC must be provided.	

#### **IV Details of performance demonstration experiments to be conducted during commissioning**

The service engineer from the Vendor or the technical personnel from their authorised representative /agent shall demonstrate the following experiment at the time of commissioning. The service engineer shall also inform in writing/email to BHEL in advance, the details of the prerequisites and infrastructure to be provided for conducting this experiment so as to enable us to meet the requirements at the time of experimentation during the commissioning period. Details of experiment and the expected end results are given below:

Pyrolysis and Reactivity study of coal sample at 30 bar pressure and at 1050 deg.C in the presence of a gas mixture containing either carbon dioxide or steam and nitrogen. The sample size of coal shall be around 5 grams. Then reactor pressure may be raised to 30 bar using nitrogen gas under ambient temperature. The reactor temperature may be raised to 1050 deg.C at 30 bar pressure in inert medium of nitrogen and weight changes are to be recorded with real time during the course of temperature rise upto 1050 deg.C. The reactant gas is to be introduced at these conditions and its mole fraction in nitrogen medium may be quickly brought to 15%. Weight changes with respect to real time may be recorded in the data acquisition system until all the carbon in the coal char gets consumed. The experimental data may be analysed by the vendor's software. The analysis results shall be in the form of weight changes and temperature in real time measurements.

#### **V Optional Items :**

1. Special provisions in the TGA reaction chamber for handling corrosive gases like Hydrogen Sulfide, Sulfur Dioxide etc. at high temperature.
2. Interface for Evolved Gas Analyser

(The interface should enable to admit a portion of evolved gas from HP TGA into EGA. The interface should have necessary facilities to bring down the exit gases to the conditions required for EGA)

3. Accessories like computer, printer, uninterrupted power supply system, transformers etc.
4. Spares for HP TGA and interface for one year operation.
5. Spares for HP TGA and Interface for 5 years operation.
6. AMC for HP-TGA operation and maintenance.
7. Additional mass flow controllers for inert gas purging if required
8. Any other item required for smooth and trouble-free operation of the system, which is not specifically mentioned in the indent.

## **VI General Notes :**

1. The instrument should be capable to operate on 3-Phase, 4 wire, 415 Volts AC / 50 Hz power supply and tropicalized for ambient temperature varying from 10 deg.C to 45 deg.C.
2. The instrument and its accessories should be installed by the vendor/ their representative at Corporate R&D Division, BHEL, Hyderabad and it's operation should be demonstrated.
3. BHEL's technical personnel should be trained in operation and normal maintenance of the system supplied during the commissioning and demonstration by the vendor or their authorized representative.
4. All optional items listed under section-V should be quoted separately along with full technical specifications.
5. Detailed technical catalogues of all the major components of HP TGA system and their associated accessories should be furnished along with the quotation. Only such quotes which include complete technical details and catalogues will be considered .Vendor shall include all such technical details which will address the specification requirements listed in Table-1 and the listed applications under section-I.
6. Vendor should confirm in the offer if the HP TGA offered can meet the essential applications listed under section-I of the technical specification.
7. The vendor shall give all calibration standards and calibration certificates for the components and accessories (List of such items shall be furnished by the vendor) of the HP TGA which require calibration.
8. The vendor should furnish guarantee certificate, warranty certificates and test certificates for the TGA system, their accessories and components/sub-systems. Any part/component not covered under the guarantee and/or warranty shall be mentioned exclusively.
9. The vendor should supply manuals (one set of hard copy and one set of soft copy) for operation of the TGA and connected instruments and for such of the maintenance to be carried out by the user periodically. The frequency of each such maintenance may be mentioned.
10. Vendor to indicate controlled environment, if any, as may be required at the location of the TGA facility.

11. Customer reference list and their contact addresses for the offered model of HP TGA system should be furnished along with the quotation.
12. The HP TGA system offered by the vendor should meet the technical specification requirements listed under the column titled '**essential**' of Table-1. It should also be suitable for the applications listed under '**essential applications**' of section -I. Additional weightage will be given if the offered system can meet the requirements listed under the column titled '**preferable**' of Table-I.
13. The commercial bid should contain the cost breakups for each item of HP TGA system. The commercial bid should contain separate quotation for basic and optional items.
14. The vendor should specify the period of free maintenance and technical support as may be required for the operation of the HP TGA system and accessories from the date of commissioning.
15. Vendor should mention in the quote their appointed agency who shall provide maintenance and operational technical services (normal and emergency services) for the period of five years from the date of commissioning.
16. Any deviation from the specification may be brought-out clearly by the vendor in the technical bid.
17. **The essentiality of additional mass flow controllers required for the operation of HP TGA should be mentioned clearly in the technical bid by the vendor.**
18. **BHEL (Buyer) reserves the right to order any or all or none of the optional items.**



# BHARAT HEAVY ELECTRICALS LIMITED

CORPORATE R&D DIVISION, VIKAS NAGAR, HYDERABAD – 500 093, AP, India

Ph: 0091-40 – 23778474, FAX: 0091-40 – 23770698

## General Terms and Conditions of Enquiry & Contract for the Purchase of Goods/ Services

1. The quotation and any order resulting from this enquiry shall be governed by these General Terms and Conditions of enquiry and contract for the supply of goods and the supplier quoting against this enquiry shall, unless specifically stipulates any different terms or conditions, be deemed to have read and agreed to the same.
2. Sealed quotations in double cover with tenderer's distinctive seal, superscribing enquiry number, date and due date are to be submitted so as to reach on or before due date & time, addressed to **Additional General Manager(MM), Bharat Heavy Electricals Limited, Corporate Research & Development Division, Vikasnagar, Hyderabad, Andhra Pradesh, India – PIN-500 093, India.**

In the case of **Two-part bid**, each inner cover shall clearly be labeled as a) **Technical & Commercial Bid** containing technical data/ drawings/ catalogues/ quality plans along with commercial terms and conditions & copy of the price bid with the price columns left blank (unpriced price bid), b) **Price bid** containing prices quotes. Installation and/or Commissioning charges shall be spelt out in absolutely lucid terms, taking into account total charges, rather than quoting vaguely, such as charges per man-day or charges per engineer per day etc. **If the price bid was found later to be different from the unpriced price bid in any way, the offer will be rejected summarily.**

3. **Tender/ Technical bid Opening:** Unless specified otherwise, tenders/ technical bids will be opened on appointed date and time as mentioned in the enquiry or as communicated changed date/time, if any, in the presence of such of those tenderers who may be present.
4. **Delayed/ Late Tender:** Tenders, which have been posted by registered post through the postal department in time before opening date but received after tender opening, shall be treated as regular tenders. Other tenders received after tender opening time shall be treated as late tenders and normally they may be rejected.
5. The Quotation should be free from overwriting and erasures. Corrections and additions, if any, must be attested. Supplier should indicate in the quotation dimensions (Size), weight, rate etc., in the metric system unless the enquiry calls for different unit.
6. **Validity of Quotation:** All quotations shall be kept open for acceptance for a period of ninety days from the date of opening of Tenders/ Technical bid and this shall be deemed to be an express condition of all quotations. The rate shall be quoted in both figures and in words.
7. In the case of Two-part bid, the vendor should furnish technical clarifications, if any, within stipulated time mentioned, failing which, it will be construed that the vendor is not interested in the tender and BHEL shall not consider the offer for further evaluation.
8. **Revision of Pricebid:** In the event of any bidder, after finalizing the technical specifications and scope of supply, opting to revise and submit their latest price bid, then BHEL reserves the right to open their original / previous price bid also while evaluating revised bid.
9. **Pricebid Opening:** Unless specified otherwise in the enquiry, the Price bids of technically qualified vendors shall be opened with prior intimation in the presence of such of those tenderers who may be present.
10. **Conformity to Specifications:** The material should be of the best quality and shall be conforming to our specification given in our enquiry. Unless otherwise agreed upon by BHEL, no payment shall be due by BHEL in respect of any sample. Offers without details of specifications/ applicable catalogues will not be considered and are liable to be rejected.
11. **Terms of Delivery:** All suppliers shall quote the lowest prices on ex-works and FOB/FCA basis. Foreign suppliers will also indicate their Indian agent's name and address with percentage of agency commission out of the quoted price, if any. Name and Address of the supplier's Bankers address should also be given. Indian suppliers for the indigenously manufactured/ imported stock shall quote on Ex-works /Free-on-Rail/Road /FOR-destination basis, indicating packing & forwarding charges, if any, separately.
12. **Taxes and Duties:** Unless specified otherwise in the enquiry, BHEL do not provide "C" or "D" Form as it is engaged in R&D. All Indian suppliers shall clearly mention Sales Tax/ VAT, Excise Duty, and Service Tax etc, if any, payable in addition to the quoted price and indicate applicable rates/ percentage, item-wise. It will be paid

only if Registration Number under State(TIN)/ Central Sales Tax or Service Tax is specifically mentioned in the Bill/Invoice. Vendors without a Sales Tax/VAT registration and applicable Service Tax registration will not be considered.

13. **Insurance:** Insurance will be arranged by BHEL in case of Ex-Works as well as FOB basis supplies.
14. **Terms of Payment:** Full payment will be made within 30 days after receipt, inspection and acceptance of the material (and where involved, Erection and commissioning of the material/ equipment at BHEL/Destination) by Crossed cheque and no Bank commission charges are admissible. The Cheque will be sent by registered post and BHEL is in no way responsible if loss occurs due to delay by postal authorities and cheques falling into improper hands or through forgery or fraud. Suppliers having RBI-SEFT-enabled accounts can seek payment through Electronic Fund transfer. For foreign suppliers, the preferred payment term will be on Sight Draft basis and bank charges inside India will be to BHEL account and outside India will be to supplier's account.
15. Suppliers shall quote competitive price and best delivery for all the items mentioned in the enquiry. BHEL reserves the right to reject partial quotations and to place order on overall landed cost basis. Correct date of effecting supplies in the event of an order should be indicated in the offer. If the supplier's quoted terms are different from BHEL standard payment terms, interest @10.5% per annum (or as indicated in the enquiry) will be loaded to the quoted prices for difference of payment period.
16. **Packing:** The supplier shall be responsible for the goods being properly and adequately packed so as to prevent any loss, damage or deterioration during transit and indicate packing charges, if any, separately.
17. **Part/ Split Ordering:** BHEL reserves right to Order part of the item/ quantity of the enquiry and split the order among qualified vendors.
18. In case the goods enquired are on Rate Contract basis with any other unit of BHEL, such fact should be clearly indicated in the quotation giving full particulars of Rate Contract number, validity and price and also your willingness to comply with order if placed against such Rate Contract. A true copy of Rate contract signed by the supplier should be sent with the quotation.
19. **Inspection:** On receipt, the goods shall be subjected to inspection and also test, if necessary, and our decision regarding the acceptability of the goods shall be final and binding on the suppliers.
20. **Consequences of Failure To Deliver:** The time stipulated for delivery of goods shall be deemed to be the essence of the contract and delivery must be completed within the stipulated date/s. In the event of supplier's failure to supply the goods by the stipulated date/s, BHEL shall be entitled to levy a penalty of ½% per week for the delayed no of weeks or part thereof for the undelivered portion of PO subject to a maximum of 10% total order value.
21. **Withdrawal from the Contract:** In case the supplier withdraws the quotation after its acceptance by BHEL or fails to supply the goods as per the terms and conditions of contract, or at any time repudiated the contract wholly or in part, BHEL shall be at liberty to cancel the Purchase Order and to recover from the supplier the extra cost and other loss incidental to the breach of contract on the part of the supplier.
22. **Guarantee/ Warranty certificate and Manufacturer's Test report:** Invariably in all cases where it is so stipulated, the supplier should furnish Guarantee/ Warranty certificate valid for a period of 18 months from date of supply or 1 year from the date of receipt, acceptance and commissioning(or more, if provide by oem) whichever earlier and manufacturer's Test report along with the goods, failing which, BHEL shall have the right to reject the goods.
23. All ferrous/ non-ferrous items shall be colour coded as per bureau of Indian standards/ or IS standards/ BHEL Standards.
24. **Recovery of Dues:** BHEL shall recover any amount due from the supplier or any amount outstanding to the credit of the supplier with BHEL R&D unit or any other BHEL unit(s) and/or by legal action.
25. **Arbitration & Forum for Legal Proceedings:** All disputes arising in connection with indigenous/ foreign supplies shall be settled through arbitration held at Hyderabad, AP, India and arbitration shall be appointed by Arbitration Tribunal of the Federation of Andhra Pradesh Chambers of Commerce and Industry, Hyderabad, AP, India. The Courts at Secunderabad/ Hyderabad, AP, India shall have jurisdiction in respect of any suit or other legal proceeding arising from or relating to this contract

The rights and remedies of BHEL stated in these General terms and conditions shall be in addition and supplemental to its rights and remedies under law and custom or usage of trade or business and shall in no way be deemed to limit, curtail, supercede or derogate from its said rights and remedies.

**ANNEXURE “AA”  
BHARAT HEAVY ELECTRICALS LIMITED  
CORPORATE RESEARCH & DEVELOPMENT DIVISION  
VIKASNAGAR, HYDERABAD – 500 093. INDIA**

**MATERIALS MANAGEMENT DEPARTMENT  
(Information for Technical & Commercial bids with general terms)**

**ENCLOSURE TO ENQ No:**

**DATE:**

- a) Please indicate( \_/ ) for applicable or (X) for not applicable against each clause of the enquiry
- b) Vendor shall confirm their compliance for applicable clauses ( \_/ ) in their offer without deviation.

**1) Technical offer:-**

- a) Vendors to confirm compliance to all points of specification attached at ‘A’ Deviations if any should be specified in the offer.
- b) Vendors shall furnish relevant technical Documents / Catalogues. Drawings and Quality plan duly taking care of Purchase Specification and Quality requirements along with their offer in duplicate for Purchaser’s review / Verification.

**2) Two Part Bid:-**

Vendor shall submit their offer in 2 parts.

**2.1 Technical Bid:-** Containing relevant technical data, drawings, catalogues, Quality Plan etc, along with Commercial Terms and Conditions and a copy of the price bid with the price columns left blank (unpriced price bid). If the price bid was found later to be different from the unpriced price bid in any way, the offer will be rejected.

**2.2 Price Bid:-** Containing the Price(s) quoted. Installation and or commissioning charges shall be spelt out in absolutely lucid terms taking into account the total charges rather than quoting vaguely such as charges as per man day or charges per Engineer per day etc.,

Technical bids will be opened on the due date of the enquiry or any other date fixed by BHEL. Further, vendor should furnish clarifications, if any, required within seven days after the same is sought by Purchaser. If no clarifications/reply received within 7 days, it will be construed that vendor is not interested in the tender and Purchaser will finalise tender accordingly. Price bids received on due date along with technical offers will be recorded and opened subsequently with due intimation to vendors after finalising of technical scope of supply.

These bids shall be submitted in separate sealed covers superscribing the nature of the offer (technical bid or price bid). BHEL Enq No. Due date etc.

**Note:** In case of non-compliance with the TWO \_-PART-BID ie.. clause number 2 and subclauses 2.1 and 2.2. Purchaser reserves the right to summarily reject all such offers.

**3) Delivery:-**

Vendor shall confirm supply of materials as per the delivery schedule indicated in the enquiry.

**4) Negotiations:-**

**Vendor shall quote competitive price and best delivery to avoid negotiations.**

**5) Commercial Terms & Conditions:-**

**Terms of Delivery:**

- a) Vendors shall clearly indicate terms of delivery Viz: Ex-Works/FOR Despatching station/FOR Despatching station FOR Destination/FOB port of loading/FAS Port of loading in their offer. If the terms of delivery is Ex-Works, then vendors shall clearly indicate the following:
  - 1. Packing and forwarding charges.
  - 2. Documentation / Handling charges if any
  - 3. FOB FAS charges (Inland Freight & Insurance charges from vendor works to port of Loading).
- b) All Indian Vendors shall clearly specify the Excise Duty in percentage applicable for their supplies. Offers containing expressions such as “Extra as applicable” or “As applicable at the time of Delivery” will be summarily rejected.
- c) CST/Local Sales Tax in percentage shall be clearly indicated.

**6) Validity of Quotation:-**

**Validity of offer should be 90 days after the opening of price bid.**

**7) Part or split ordering:-**

**Purchaser reserves the right to order part of item / quantity of the enquiry.**

**8) For clauses not mentioned in this document see the enclosed “GENERAL TERMS AND CONDITIONS OF ENQUIRY AND CONTRACT FOR THE PURCHASE OF GOODS”**

- 9) In case your terms of payment are different from our standard payment terms, interest at the rate of 10.5% per annum (or BHEL’s standard rate of interest) will be loaded to your prices for the difference of period of payment.



### Suppliers' compliance statement to basic conditions of enquiry

Condition	BHEL R& D's terms	Supplier's compliance (indicate Yes/No. if 'No', state terms desired)
1) Validity of offer	90 days from the tender opening date	
2) Delivery requirements	Free delivery at our stores or FOR destination (as indicated in the enquiry)	
3) Warranty	All supplied items to be provided with warrantee for one year (or more, if provided by the OEM) from the date of acceptance/commissioning. In case of equipment involving erection and commissioning, warrantee shall be for 18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier	
4) Terms of payment	100 % within 30 days of receipt, inspection and acceptance (and where involved, erection and commissioning) of the material/equipment at our stores/destination	
5) Taxes & Duties	Unless specifically mentioned in the enquiry, we do not provide 'C' or 'D' form. Supplier to specify rates of taxes and duties elementwise and related percentages	
6) Penalty for late delivery	0.5% per week beyond the delivery date as mentioned in the Purchase order on undelivered portion subject to a maximum of 10% of the total order value	

\* BHEL R&D reserves the right to reject any offer due to non-compliance with the above conditions and/or non-receipt of this form in duly filled condition

\*\* Any other elements of cost in addition to the above may please be specified in detail



**BHARAT HEAVY ELECTRICALS LIMITED**  
**CORPORATE R&D Division**  
**Vikasnagar, Hyderabad – 500093.**

**IMPORTED**

**Suppliers' compliance statement to basic conditions of enquiry**

**(In case Order to be placed on the Principal and foreign currency)**

<b>Condition</b>	<b>BHEL R&amp; D's terms</b>	<b>Supplier's compliance</b> (indicate Yes/No. if 'No', state terms desired)
01) Validity of offer	90 days from the tender opening date ( or as per enquiry)	
02) Delivery requirements	FCA – Nearest International Airport (or as indicated in the enquiry)	
03) Warranty	Unless specifically mentioned in the enquiry, all supplied items to be provided with warrantee for one year (or more, if provided by the OEM) from the date of acceptance/ commissioning. In case of equipment involving erection and commissioning, warrantee shall be for 18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier	
04) Terms of payment	Sight draft. All bank charges inside India will be to BHEL R&D account and out side India will be to suppliers account. Documents through State Bank of India, HAL Complex, Balanagar, Hyderabad, AP, India-500 042.	
05) Agency commission	Pl specify percentage charges, if any. Indian agency/agent commission will be in Indian Currency only.	
06) Erection/ Commission	As per enquiry	
07) Documentation	As per enquiry	
08) Insurance	BHEL will arrange Insurance based on intimation to our Insurance agency, United India Insurance Co., DO-2, Secunderabad, AP, India.	
09) Penalty for late delivery	0.5% per week beyond the delivery date as mentioned in the Purchase order on undelivered portion subject to a maximum of 10% of the total order value	

\* BHEL R&D reserves the right to reject any offer due to non-compliance with the above conditions and/or non-receipt of this form in duly filled condition

\* Any other elements of cost in addition to the above may please be specified in detail

**(Signature and Stamp/ Seal of Vendor)**

BHARAT HEAVY ELECTRICALS LTD.  
Corp. R&D DIVISION  
VIKAS NAGAR,  
HYDERABAD-500 093 (INDIA)

**VENDOR REGISTRATION FORM (INDIAN SUPPLIER)**

Before filling please refer to instructions on page-4

**1.0 VENDOR PROFILE:**

**1.1 & 1.2 Name and address of the vender:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone Nos.:

Fax No.:

Email:

**1.4 Local representative of the vender in India/ Hyderabad:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone Nos.:

Fax No.:

Email:

Contact person:

Mobile No.:

**2.0 & 2.1 Type of Organisation:**

PROPRIETORSHIP	COMPANY	SISTER CONCERN	ANY OTHER (Please specify)
PARTNERSHIP	CORPORATION	Small Scale Industry	

**3.0 Annual Turn Over:**

**Name and address of the Banker:**

Sr.No.	Bank	Address

4.0 REGISTRATION PARTICULARS

4.1 IT Permanent Account No.(PAN):

4.2 State tax Registration No.:

4.3 Central sales tax Registration No.:

4.4.1 ED Registration No.:

4.4.2 Service Tax Registration No.:

PF Account No.:

Labour Licence No.:

ESI Account No.:

5.2 Contact person:  
Mobile No. :

5.3 Total Number of employees:

Graduates (Engr./Scientists/Mgmt/Fin.)	Consultants	Workers		
		Sup./Skilled	Semiskilled	Unskilled

6.0 Wish to register for supplies/ services :

<u>Sr.No.</u>	<u>Service/Supplies</u>	<u>Capacity</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		
<u>7</u>		

6.1 Reference list :

(Only recognized public and private sector companies, attach if printed copy available)

<u>Sr.No.</u>	<u>Customer</u>	<u>Volume / Year</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		
<u>7</u>		

7.0 & 8.0 Infrastructure / facilities :

<u>Sr.No.</u>	<u>Facility (with specifications)</u>	<u>Age/ Year procured</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		
<u>7</u>		
<u>8</u>		
<u>9</u>		
<u>10</u>		

9.0 Registration with other BHEL Unit/Units:

<u>Sr.No.</u>	<u>9.1.1 Unit</u>	<u>9.1.2 Registration No.</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		

Any Other information :

Declaration:

The information furnished above is true and authentic.

**(CEO / Proprietor)**

**SEAL:**

**Date:**

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The competent authority reserves the right to accept or reject the registration. Registered vendors will be informed by mail / email, as convenient. Contact Sr.DGM (MM) for clarification/ additional information on registration.

A separate communication will be sent to you in case of non-registration, citing reasons thereof.

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### **Instructions**

1. Answer all items, use NA for items not applicable.
2. BHEL units do not require this registration.
3. Submit the form in duplicate.
4. Use additional sheets for want of space if required.
5. Attach copies of latest documents in respect of items 4.0 (Registration no.s)
6. Photographs of registered office and the chief executive/proprietor shall be furnished.
7. Use A4 sheets for this document and the enclosures.

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\* REGISTERED BIDDERS, HAVING A BHEL (R&D) REGISTRATION NO. / HAVE SUBMITTED THIS FORMAT EARLIER, NEED NOT FURNISH THIS INFORMATION SECOND TIME (UNLESS DESIRE TO UPDATE IT).

**BHEL**  
**SUPPLIER REGISTRATION FORM**

(FOREIGN SUPPLIER)

ALL COLUMNS SHOULD BE PROPERLY FILLED IN THE SPACE PROVIDED FOR. WHEREVER IT IS NOT APPLICABLE PLEASE WRITE “NOT APPLICABLE”. INCOMPLETE OR INCORRECT FORMS MAY NOT BE CONSIDERED.

**1.0 GENERAL INFORMATION:**

1.1....NAME OF COMPANY

1.2....DETAILS OF HEAD OFFICE:

ADDRESS :  
TELEPHONE :  
FAX :  
.EMAIL :  
.WEB SITE :

1.3....DETAILS OF FACTORY/WORKS:

ADDRESS :  
TELEPHONE :  
FAX :  
.EMAIL :  
.WEB SITE :

1.4....DETAILS OF MARKETING AGENT

ADDRESS :  
TELEPHONE :  
.FAX :  
.EMAIL :  
.WEB SITE :

1.5 CHIEF EXECUTIVE

NOTE: PLEASE ATTACH SEPARATE SHEETS, IF SPACE FOUND IS INADEQUATE

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AUTHORISE SIGNATORY

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**BHEL**  
**SUPPLIER REGISTRATION FORM**

(FOREIGN SUPPLIER)

1.6 CONTACT PERSON(S)  
FOR PRODUCT OFFERED  
NAME(S)  
OFFICIAL CPACITY  
ADDRESS:  
TELEPHONE  
FAX  
E-MAIL

1.7 YEAR OF ESTABLISHMENT

1.8 PRODUCTION CAPACITY PER ANNUM

1.9 PARTICULARS OF PRODUCT INCLUDING  
SPECIFICATION AND RANGE OFFERED  
FOR REGISTRATION  
(ATTACH BROCHURES AND CATALOGUE)

1.10 NAME(S) OF BANKERS

1.11 BANKER'S CERTIFICATE

1.12 PORT OF LOADING

1.13 NEAREST AIRPORT

1.14 NAME OF THE INDIAN AGENT, IF ANY  
WITH AUTHORISATION LETTER

1.15 ANY OTHER INFORMATION:

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AUTHORISE SIGNATORY

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**BHEL  
SUPPLIER REGISTRATION FORM**

(FOREIGN SUPPLIER)

**2.0 FINANCIAL INFORMATION**

2.1...TOTAL CAPACITY

2.2...ANNUAL TURN OVER FOR LAST 3 YEARS

2.3...WHEHER CREDIT LICENSE ACCEPTABLE      YES/NO

**3.0 QUALITY MANAGEMENT SYSTEMS  
ENCLOSED FORMAT PART-B**

3.1 EXPERIENCE LIST FOR SAME/SIMILAR ITEMS  
TO BE ENCLOSED

4.0.....FUTURE EXPANSION PLANS:  
(GIVE DETAILS)

5.0 LIST OF ENCLOSURES:  
INCLUDING BROUCHERS, CATALOGUES, TECHNICAL  
LITERATURE ETC.

6.0 ANY OTHER INFORMATION

SIGNATURE OF SUPPLIER  
NAME  
DESIGNATION  
DATE  
.....OFFICIAL SEAL

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AUTHORISE SIGNATORY

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