BHARAT HEAVY ELECTRICALS LIMITED
CORPORATE RESEARCH & DEVELOPMENT DIVISION
VIKASNAGAR, HYDERABAD - 500 093, INDIA
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RD:DP:MPX:F-04

ENQUIRY

To
-
-
Pin
Email :
Attn. .

Enquiry No:	Enq Date:	Due Date:	Delivery By:
840706921	13-DEC-07	22-JAN-08	

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

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	* STEAM GENERATOR * TECHNICAL SPECIFICATION IS ENCLOSED IN ANNEXURE -1	NO	1

Note: Please submit your offer in two parts as per the enclosed annexure "aa" in separate sealed covers as detailed below:

1) First cover shall contain the following:

A) Technical commercial bid along with compliance statement, mentioning applicable duties, taxes etc., and delivery time clearly, (terms, conditions and compliance form enclosed)

B) A copy of the price bid without the prices (unpriced price bid)

2) Second cover containing price bid

3) If the price bid is found to be different from the unpriced price bid in any way, your offer will be rejected

4) Guarantee Certificate : Required

5) Manufacturer's Test Certificate : Required

6) Erection & Commissioning : Required

Important: Taxes & duties quoted by you will be taken for cost evaluation and order placement and no change will be entertained later except in the case of changes made by the government. Changes in taxes and duties because of the changes in turnover etc also will be to the supplier's account. In case no tax/duty is included, a self declaration for the exemption may be attached along with the offer.

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

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)

Yours faithfully
for
BHARAT HEAVY ELECTRICALS LTD

NARASIMHA RAO V.
Sr Engineer
Email: raovn@bhelrnd.co.in

ANNEXURE-I

TECHNICAL SPECIFICATION OF STEAM GENERATOR SYSTEM FOR HIGH PRESSURE THERMO GRAVIMETRIC ANALYSER

1. INTRODUCTION

Description of High Pressure TGA system:

Thermo Gravimetric Analyzer (TGA) is a precision instrument for experimental determination of conversion of a solid reactant in a gas solid reaction through record of dynamic mass change with time. A high pressure Thermo Gravimetric Analyzer (TGA) has been installed at BHEL Corporate R&D Division for determination of the reactivity of coal char in gasification reactions with steam, CO2, H2, etc. The HP TGA is designed to operate at pressures from 1 bar to 50 bar (app. 50 kg/sq. cm) and at temperatures up to 1100 Deg. C. For the study of gasification reactions with steam, it is required to pass through the HP TGA reaction chamber the reactant steam (either 100 vol. % or admixed with inert nitrogen in different vol. % levels to create the required partial pressure conditions). The total volumetric flow of gaseous media through the reaction chamber ranges from 200 to 400 ml per min and is maintained constant at all the operating pressures of the HP TGA. Thus the mass flow of the reactant gases will vary in relation to the operating pressure.

The HP TGA has provisions to admit a maximum of two gases or vapor which will get mixed in the bottom section of the HP TGA and the mixture will pass through the reaction chamber. When a condensable vapor (like steam) and inert nitrogen are to be mixed, a minimum of 60 Deg. C. superheat above the saturation temperature corresponding to the partial pressure of the vapor at the operating pressure is to be maintained. Thus, for each of the operating pressure, the steam temperature at the outlet of the steam generator is to be at least 60 Deg. C. above the saturation temperature at the steam generator pressure to account for the heat loss in the insulated piping connecting the steam generator and HP TGA gas inlet.

The existing HP TGA gas inlet is provided with a Tee joint to admit two gases. Presently, studies are being made with CO2 and nitrogen mixture and hence through one inlet of the Tee joint, nitrogen is admitted and through the other, CO2 is admitted. For admitting steam in addition to CO2 and N2, an additional Tee joint to the CO2 inlet with isolation valves in all the inlets will be provided by BHEL. The arrangement is to permit admission of steam, CO2 and Nitrogen in varying proportions as may be required. The proposed arrangement is shown in **drawing no. 4-BYN-07-874-002**. In view of handling of condensable vapor (steam), thermal insulation of the steam line from the steam generator outlet to the inlet of TGA Tee joint including the isolation valve is to be provided. Further, from the Tee connections where the gases and steam are admitted up to HPTGA, the line is to be wrapped with heating tape. The heating tape will be provided to the vendor by BHEL as free issue material. The heating tape wrapped line is to be insulated. Wrapping of heating tape and thermal insulation work shall be carried out by the steam generator vendor.

2. STEAM GENERATOR

Function: To generate superheat steam at pressures ranging from an atmosphere to 50 Kg/sq.cm (g) from DM water at ambient temperature.

Constructional features: The steam generator shall consist of evaporator and super heater sections fabricated from tubular high temperature materials (SS 310) or Incoloy/ Inconel seamless tubes. The generator pressure parts shall be designed to withstand an internal pressure of 60 Kg/sq.cm. (g) at a metal temperature of maximum of 700 Deg.C. The evaporator and super heater shall be electrically heated. The heated length shall be designed and provided more than adequate for complete evaporation and superheating of steam to the required super heat temperature at the operating pressure. The temperature of superheated steam at the exit of superheated sections shall be maintained at 325 - 330 Deg. C. at 50 Kg/sq. cm and can be maintained the same at lower pressures as well.

The electrical heating can be by heating elements wrapped on the tube directly or over a ceramic sleeve. Alternately, the generator evaporator and superheat can be fabricated in the form of helical coils or straight tube sections and housed in an electrically heated furnace. The design shall be compact.

The electrical heating system shall have controlled power supply to the heater elements to attain desired steam temperature at the super heater exit. The heater elements shall be interconnected segments to enable replacement of the failed element alone in stead of replacement of entire heater element. A temperature controller with temperature set point shall be provided to control the power supply to maintain the set temperature of super heated steam at the super heater exit. The temperature controller shall operate on feed back loop with super heated steam temperature signal from the temperature sensor at the super heater exit. The temperature sensor shall be a dual element thermocouple. One element shall be connected to the temperature transmitter which in turn will send signal to the temperature controller. The other element shall be connected to a temperature switch which in turn will shut the solenoid operated valve at a temperature below the set low temperature limit. The power supply control loop tentative configuration is shown in Fig. 1. The pressure parts of the steam generator shall be designed as per applicable pressure vessel/pressure piping design standards of ASME or equivalent. The vendor shall carry out the thermal mechanical design of the steam generator and associated parts as well as the electrical heating, feed water flow control and other controls.

The steam generator preferably be arranged in vertical orientation with DM feed water entering at the bottom and the superheated steam leaving from the top as shown in **drawing no. 4-BYN-07-874-002.**

2.1 STEAM GENERATOR DESIGN OPTIONS

The generator design can be in two options (i) constant superheated steam temperature of 362 Deg. C. at all pressure levels for the DM water flow rate in the range of 5 – 400 gm/hr.,(ii) 60 Deg.C. superheat above the saturation temperature at the respective operating pressures for all the DM water flow rates in the range of 5 - 400 gm/hr.

If the latter design options is provided (60 Deg. C. superheat) the TC – 01 shall be provided with adjustable set point to set the temperature anywhere from 160 Deg. C. to (Tsat + 60 Deg. C) at 50 Kg/sq.cm. pressure. Vendor may quote for both constant super heat steam temperature of 360 Deg. C. or variable super heat temperature of (Tsat + 60 Deg. C) at the respective pressure of operation as optionals.

Heat supply system: Electrical heating with suitable power supply.
Power Supply: 415 V, 3 phase, 50 Hz.
Heating system: Option 1: Kanthal or equivalent heating wire or strip wrapped over a ceramic tubes (hollow tube or in two halves) enclosing the generator metallic tube. The heating element shall be wrapped in sections covering the DM water preheating, evaporator and super heater sections of the steam generator. The heating element for each of the three sections shall be separated and provided with power supply connections individually from powr5 supply control unit.

The generator metal tube and welded metal parts shall be electrically insulated from; the electrical heating elements. Thermal insulation shall be provided over the heated sections on the outside and polished aluminium sheet cladding shall be provided over the thermal insulation. The cladding sheet shall be electrically insulated from electrical heating elements.

Option II: In this design option, the generator shall be in the form of helical coils made out of high temperature high alloy steel tubes (SS 310 or inconel) and shall be housed inside a vertical tubular furnace. The furnace shall be made from refractory bricks/tubes with the heating elements wound tightly on the inside surface resting on the slots. The furnace shall be under atmospheric pressure and the inside of heating coil shall be under pressure.

3. DM water feed and pressurization

A storage tank of 10 liter. water hold up capacity for de-mineralized feed water (DM water) shall be provided to cater to a minimum of 8 hrs. of steam generation at the maximum rated flow rate and to have buffer storage volume. For pressurizing the water feed to the steam generator pressure, a nitrogen pressurization of DM water tank is envisaged. The storage tank shall be a tall cylindrical vessel with a higher aspect ratio (Height to Diameter ratio).The scheme is described below:

The DM water tank is pressurized with nitrogen gas to the required pressure set level. The pressurized water flow rate to steam generator shall be measured and controlled as per the water flow control scheme shown in drawing no. 4-BYN-07-874-002. The flow control is by a flow controller with adjustable set point for flow setting to ensure the desired flow within the range specified in the technical specification data sheet. The storage tank shall be provided with nitrogen pressurization line, vent line, drain line, water inlet and out let and safety relief valve with adjustable pressure setting up to the maximum design of the tank.

An electrically operated solenoid shut off valve shall be provided in the pressurized DM water feed line inlet to the steam generator. The DM water shut off valve actuating conditions are described under C & I. The scheme suggested above is tentative. Vendor can offer other schemes for DM water pressurization and controlled feeding to the generator as optional in addition to the above proposed scheme. However, BHEL reserves the right to consider or otherwise the optional schemes that are offered by the vendor.

4. INITIAL PRESSURE BUILD UP AND VENTING ARRANGEMENT

The outlet of superheated steam from the generator shall be branched into two streams, one going to the TGA and other to a vent line for controlled venting of steam initially or whenever required. Both the branches shall be provided with quick closing shut off isolation valves. A non-return valve shall be provided in the line to TGA immediately after the shut off isolation valve. The isolation valve on the steam line to TGA shall

remain closed till the desired pressure and temperature of super heated steam is attained. The controlled vent line shall be provided with a pressure regulating valve to gradually build up the steam pressure in the steam generator till the desired pressure and temperature are attained. Till such time, the generated steam will be partially vented. After attaining the desired pressure and temperature of superheated steam, the isolation valve in the vent line shall be closed and isolation valve to the TGA line shall be opened. The operation of the isolation valves in the line to the TGA, the vent line and the pressure regulating valve in the vent line are intended for manual operation in view of multiple set points for pressure in the range specified in the specification data sheet.

5. Control & Instrumentation

The main controls of the system are:

(i) DM feed water flow control.
(ii) DM feed water pressurization control.
(iii) Steam temperature control.
(iv) Safety interlocks, alarms, and trips.

(i) DM feed water flow control scheme envisaged is as follows:

The DM feed water mass flow shall be controlled by a flow control valve on feed back loop consisting of flow transmitter to sense and give signal to a flow controller which will give signal for control valve actuation. The flow control shall have adjustable set points to set the flow at any of the desired set valve in the range given in the specification data sheet. If the setting is in %, the vendor shall provide a table of relating the % setting and the corresponding DM water mass flow rate. The water flow control scheme is shown in drawing no. 4-BYN-07-874-002.

As the mass flow range is wide, vendor may provide two parallel water flow control loops each catering for a flow range of 1: 10. Alternately, vendor may provide single control loop if possible. The scheme shown is indicative and vendor may offer other schemes as optional in addition to the suggested scheme to meet the intended service.

Vendor shall select suitable flow transmitters, controllers and control valves for the intended service. The control valve(s) shall be electrically actuated and all transmitters and controllers shall be electronic type.

(ii) DM feed water pressurization control:

The pressurization of water is proposed to be by nitrogen supplied from cylinders through regulators. Manual control of the pressure is envisaged based on the pressure indication from a Pressure Transmitter mounted at the bottom section of the tank within the water level. A manually operated needle valve shall be provided in the nitrogen inlet line in addition to isolation valve for fine tuning of nitrogen flow.

(iii) Steam temperature control:

The temperature of the superheated steam shall be controlled at the set point in the temperature control lop comprising temperature controller with adjustable temperature set point. The temperature transmitter located at the exit of the steam generator will give the actual temperature signal to the temperature controller. The temperature controller signal shall control the power supply to the generator evaporator and super heater sections to maintain the superheated steam temperature at the desired level. The temperature sensor shall be a dual element thermocouple. One element shall be connected to the temperature transmitter. The second element shall be connected to a low temperature switch and a high temperature switch as well. When the temperature either falls below the low temperature limit or increases beyond the high temperature limit, power supply to the heater shall be cut off and solenoid operated shut off valve shall be closed simultaneously by the temperature limit switches

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(iv) Safety interlocks, alarms and trips:

(i) When the power supply is off/switched off, the solenoid operated shut off in the DM feed water inlet to generator shall be closed. Interlock to be provided

(ii) The temperature sensor shall be a dual element thermocouple. One element shall be connected to the temperature transmitter. The second element shall be connected to a low temperature switch and a high temperature switch as well. When the temperature either falls below the low temperature limit or increases beyond the high temperature limit, power supply to the heater shall be cut off and solenoid operated shut off valve shall be closed simultaneously by the temperature limit switches

6. Control panel

A control panel shall be provided to mount DM water flow controller, steam temperature controller, water pressure transmitter, heater power supply indicator and solenoid operated valve position.

7. Steam generator assembly

All the components of steam generator shall be self supported and shall be skid mounted.

8. Scope of supply

Vendor's scope of supply is indicated as dotted rectangle in the **drawing no. 4-BYN-07-874-002.**

9. Detailed technical specification for steam generator is given in **Table-1**

General notes

1. **The steam generator scheme shown in 4-BYN-07-874-002 is a tentative scheme. The vendor can offer alternative schemes for water flow control, pressurization of water, super heated steam temperature control, electrical heater configuration as optional schemes. Alternately, vendor can also offer flow control on the steam side in place of DM water side and the other configurational variations in the electrically heated steam generator as well. These optional schemes will be considered as long as they meet the functional requirement of the steam generator. BHEL reserves right to either select or reject any of the offered schemes.**

2. If statutory requirements such as IBR certification are required to be fulfilled, the vendor should meet the requirement.

3. The vendor shall furnish details such as specification and manufacturer's name of all the components/subsystems of steam generator along with quotation. All the instruments offered shall be with latest technology and shall be equipped with advanced sophisticated features.

4. The vendor should fill up the technical parameters as offered in the column titled 'vendor's offer'.

5. Detailed technical catalogues of all the major components of steam generator 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.

6. The vendor should furnish guarantee certificate/ warranty certificate and test certificate for pressure parts of steam generator. Any part/component not covered under the guarantee and/or warranty shall be mentioned exclusively.

7. Any deviation from the specification may be brought-out clearly by the vendor in the technical bid.

8. BHEL (Buyer) reserves the right to order any or all or none of the optional items.

9. **The performance of steam generator should be demonstrated at rated conditions as specified in the specification table-1 at BHEL, R&D Division.**

10. **Vendor's scope also includes erection and commissioning of steam generator at BHEL, R&D Division**

Table 1 - SPECIFICATION OF STEAM GENERATOR

Sl No	Description of specification	Indentor's specification	Vendor's offer
1.0	**STEAM GENERATOR**		
1.1	**Type of generator**	**Electrically operated once-through water tube boiler cum super heater**	
1.2	**Flow Range**		
1.2.1	Minimum at 2 ata pressure	**5 grams/hr***	
1.2.2	Maximum at 2 ata pressure	20 grams/hr	
1.2.3	Minimum at 50 ata pressure	100 grams/hr	
1.2.4	Maximum at 50 ata pressure	400 grams/hr	
1.2.5	Flow accuracy	± 1 %	
1.3	**Pressure Range**		
1.3.1	Minimum Pressure	2 ata	
1.3.2	Maximum Pressure	50 ata	
1.3.3	Accuracy	± 1 % of min of range	
1.4	**Temperature Range**		
1.4.1	At 2 ata pressure	≥ 170 ^{o}C	
1.4.2	At 50 ata Pressure	≥ 360 ^{o}C	
1.4.3	Temperature resolution	± 2 ^{o}C	
2.0	**HEATER**		
2.1	Heater Element	Vendor to specify the details	
2.2	Heat duty	Vendor to specify the details	
2.3	Heating rate	Vendor to specify the details	
3.0	**STEAM TEMPERATURE CONTROLLER**		
3.1	Type	PID controller	
3.2	Control action	Heater Power supply input	
3.3	Temperature set point	Adjustable from 150 to 360 ^{o}C	
3.4	Alarm levels	Very low: 120 ^{o}C/ Very high: 400	
3.5	Alarm trips with either through temperature controller or through separate temperature switches		
3.5.1	Trip action for both very low temp. & very high temp	Power supply cut off to heater & closure of solenoid operated valve	

Sl No	Description of specification	Indentor's specification	Vendor's offer
4.0	**WATER FLOW CONTROLLER**		
4.1	Type	PID controller	
4.2	Control action	Controlling actual water flow to the set point	
4.3	Flow set point	Adjustable from 5 grams/hr to 400 grams/hr in one control loop or adjustable for two flow ranges with 1:10 flow ratio (5 to 50 grams/hr and 40 to 400 grams/hr) in two control loops (one loop comprises a set of flow transmitter, flow control valve and a flow controller)	
4.4	Flow transmitter	Vendor to specify the details	
4.5	Flow control valve	Electrically actuated control valve	
5.0	**Water pressure transmitter**		
5.1	Type	Diaphragm sensing	
5.2	Pressure range	0 to 50 ata.	
5.3	Pressure indication at the transmitter	To be provided	
5.4	Isolation valve at the transmitter	To be provided	
6.0	**Water tank**		
6.1	Capacity	10 liters	
6.2	Height to diameter ratio	About 3	
6.3	Design pressure	60 ata	
6.4	Number of nozzles	6	
6.4	Safety relief valve	One number and to be provided on top of the tank	
6.5	Number of isolation valves	6 nos. One on each nozzle	
6.6	One needle valve at the gas inlet	To be provided in addition to an isolation valve	
6.7	Suitable arrangement for water filling from top of tank	To be provided	
6.8	Pressure vessel design	As per ASME standard or its equivalent	
7.0	**Piping**		
7.1	Line size in DM water line and steam line	Vendor to specify	

Sl No	Description of specification	Indentor's specification	Vendor's offer
7.2	Design Pressure	60 ata	
7.3	Material	Stainless steel	
7.4	Water line temperature	Up to max 50 ^{o}C	
7.5	Steam line temperature	Up to 360 ^{o}C	
8.0	**Isolation valves**	Vendor to specify	
8.1	Type of valve	Gate or ball valve	
8.2	Material	Stainless steel	
8.3	Water line temperature	Up to max 50 ^{o}C	
8.4	Steam line temperature	Up to 360 ^{o}C	
9.0	**Regulating valve**		
9.1	Type of valve	Needle valve	
9.2	Medium	Nitrogen gas	
9.3	Material	Stainless steel	
9.4	Temperature	40 ^{o}C	
10.0	**Safety relief valve**		
10.1	Pressure range	Up to 50 ata	
10.2	Material	Stainless steel	
11.0	**Insulation**	Insulation of Steam Generator and associated steam piping etc.	
11.1	Type of Insulation	Ceramic wool with aluminium sheet cladding	
11.2	External surface Temp.	< 60 ^{o}C	
12.0	**Power supply**	3-phase, 4 wire 415 V, 50 Hz AC will be provided by BHEL at the battery limit.	

*** If the vendor can not meet the requirement of minimum flow of 5 grams per hour at 2 ata pressure, a minimum flow range of 10 grams per hour at 2 ata pressure will also be considered.**

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 though 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) <u>Technical offer:-</u>

a) **Vendors to confirm compliance to all points of specifications, attached if any. 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) <u>Two Part Bid</u>:-

Vendor shall submit their offer in 2 parts.

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

2.2 <u>Price Bid</u>:- 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 CONDITIOINS 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.

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

Suppliers' compliance statement to basic conditions of enquiry

(In case Order to be placed on Indian supplier in Indian currency)

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	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	
4) Terms of payment	Full payment will be made within thirty days after receipt, inspection and acceptance of the material at BHEL R&D (and where involved, erection and commissioning of the material/equipment at BHEL/destination), by Crossed Cheque and no Bank commission charges are admissible.	
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 element wise 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

(Signature and Stamp/Seal of Vendor)

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

IMPORTED

Suppliers' compliance statement to basic conditions of enquiry

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

Condition	BHEL R& D's terms	Supplier's compliance (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

[FORM TO BE SUBMITTED* BY THE BIDDER ALONG WITH TECHNICAL-BID]

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 & 4.3 State and central sales tax Registration No.:

4.4 ED/ 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 other than one bidding for :

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

6.1 Reference list :

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

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

7.0 & 8.0 Infrastructure / facilities :

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

9.0 Registration with other BHEL Unit/Units:

Sr.No.	9.1.1 Unit	9.1.2 Registration No.
1		
2		
3		
4		

Any Other information :

Declaration:

The information furnished above is true and authentic.

(CEO / Propritor)

SEAL:

Date:

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.

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 document s 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 BHEL (R&D) REGISTRATION NO./ HAVE SUBMITTED THIS FORMAT EARLIER, NEED NOT FURNISH THIS INFORMATION SECOND TIME (UNLESS DESIRE TO UPDATE IT).

BHEL CORPORATE R & D
VIKAS NAGAR- HYDERABAD - 500 093
ANDHRA PRADESH – INDIA
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

AUTHORISED SIGNATORY

BHEL CORPORATE R & D
VIKAS NAGAR – HYDERABAD – 500 093
ANDHRA PRADESH – INDIA

SUPPLIER REGISTRATION FORM

(FOREIGN SUPPLIER)

1.6 CONTACT PERSON(S)
FOR PRODUCT OFFERED
NAME(S)
OFFICIAL CAPACITY
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 BROUCHERS 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:

AUTHORISED SIGNATORY

BHEL CORPORATE R & D
VIKAS NAGAR – HYDERABAD – 500 093
ANDHRA PRADESH – INDIA

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 SUPPIER
NAME
DESIGNATION
DATE
…….OFFICIAL SEAL

AUTHORISED SIGNATORY
