



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

An ISO 9001
Company

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY

NOTICE INVITING TENDER

Phone: +91 431 257 76 53

Fax : +91 431 252 00 31

Email : skaruna@bheltry.co.in

Web : www.bhel.com

TWO PART BID

Tender to be
submitted in two Parts

Enquiry Number:
2631500024

Enquiry Date:
14.10.2015

Due date for submission of quotation:
06.11.2015

You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order.

Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the Date of tender opening.

Item	Description	Qty.	Delivery Required	Delivery Terms Required
10	Electrode Baking Oven 100 Kg-540°C as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	2 Nos.	3 months from the date of Purchase Order	F.O.R, BHEL Stores, Tiruchirappalli.

Important points to be taken care during submission of offer:-

1. Compliance Form No. TRY/IND/07 to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
2. Material shall be delivered to FOR ,BHEL Stores, HIGH PRESSURE BOILER PLANT, BHARAT HEAVY ELECTRICALS LIMITED, Tiruchirappalli- 620014, Tamilnadu State.
3. The time period required for Erection & Commissioning of the item shall be 2 Weeks from the date of intimation from BHEL requesting supplier to depute Service Engineers about site readiness.
4. EMD amount of this Tender will be ₹ 40,000.00
5. All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.

BHEL's General guidelines / instructions (refer MM/CE/GENL/001-EMD) including bank guarantee formats and list of consortium banks, commercial terms Compliance Form can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2631500024"

Tenders should reach us before 14:00 hours on the due date
Tenders will be opened at 14:30 hours on the due date
Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**


DGM / Capital Equipment / MM

S. KARUNANIDHY

Dy. General Manager

Capital Equipment / MM

BHEL, Tiruchirappalli - 620 014.

PART - A
QUALIFYING CRITERIA FOR ELECTRICALLY HEATED 100 KG-540 DEG. C
ELECTRODE BAKING OVEN

S.No	BHEL Specification	Vendor's Offer
1.0	QUALIFYING CRITERIA	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of TEN Years of Continuous Experience in the Design, Manufacture & Supply of "ELECTRODE BAKING OVEN". Vendor may indicate the actual no. of years of experience in the field	
1.2	Only those vendors (OEMs), who have supplied and commissioned at least TWO numbers of ELECTRODE BAKING OVEN similar to the oven specified under Part B, in the past two years (as on date of opening of Tender) and such oven is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit at least one Performance Certificate from their customers, for satisfactory performance of ELECTRODE BAKING OVEN quoted against this enquiry , for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	
1.4	BHEL reserves the right to verify the information provided by the vendor. In case the information provided by the vendor is found to be false/ incorrect, The offer shall be rejected.	

2.0	INFORMATION TO BE PROVIDED BY VENDOR	
2.1	Year of launch of the model quoted against this enquiry	
2.2	Number of ELECTRODE BAKING OVEN supplied and commissioned till date in the quoted model.	
2.3	The BIDDER/VENDOR to furnish Reference List of Customers	
2.4	Contact details(phone no & email id) including the Address of Agents / Service Centres in India to be provided	

Suggestive Format of Performance Certificate:

The performance certificate should be produced **on Customer's Letter Head.**

PERFORMANCE CERTIFICATE

- | | | |
|---|--|---------------------------------|
| 1 | Supplier of the Electrode baking oven | |
| 2 | Make & Model of the Electrode baking oven | |
| 3 | Month & Year of Commissioning | |
| 4 | Capacity of the baking oven in kgs | |
| 5 | Maximum Heating capacity of the oven in deg.C | |
| 6 | Performance of the Electrode baking oven
(Strike off whichever is not applicable) | Satisfactory / Not Satisfactory |
| 7 | After sales service
(Strike off whichever is not applicable) | Satisfactory / Not Satisfactory |
| 8 | Any Other remarks | |

Date:

Signature & Seal of the Authority
Issuing the Performance Certificate

PART-B

Specification for Electrically heated 100 kg-540 deg. C Electrode Baking Oven

QTY: 2 Nos

SI.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S RESPONSE
1.0	Scope: The scope of supply includes design, manufacture, supply, erection and commissioning of 100 Kg electrode baking oven with complete accessories. Electrode baking oven shall be heavy duty industrial design for long operating life.	
2.0	Application: The Electrode baking oven is required for heating and drying of welding electrodes to a temperature range between 200 deg.C to 540 deg.C keeping them at that temperature for a desired duration and then keeping the electrodes at a desired lower temperature (approx. 150-250 deg C) continuously. Welding electrodes of maximum 100 Kg is to be loaded.	
3.0	Heating oven parameters	
3.1	Type: Electric Oven	
3.2	Oven Design Temperature: 600 deg C . Vendor to confirm	
3.3	Electrode Baking Temperature: 540 deg C (Maximum). Vendor to confirm	
3.4	Rate of Heating: Ranging from 20 deg C to 200 deg C/Hr. Vendor to confirm	
3.5	Weight of Electrode to be handled in a single charge: 100 Kg (Maximum). Vendor to confirm	
3.6	Power Rating: 21 KW (Minimum) . Vendor to specify	
3.7	Skin temperature: 60 deg C maximum on all outer walls / doors (Ambient Temp varies from 35 deg C to 45 deg C). Thermal calculation sheet to be enclosed with details	
4.0	Construction of Oven: Heating Chamber construction:	
4.1	The oven casing and door shall be of double walled rigid construction with adequate reinforcement and suitable thickness of ceramic fibre blanket/ceramic wool insulation in between inner and outer wall. There should not be any heat leak. The outer shell shall be constructed with MS plate of suitable thickness. The construction of the shell should be rigid enough to avoid distortion due to heat and mechanical handling. Detailed heat calculations to be provided.	
4.2	Internal material: The inner wall and the baffle shall be made of SS 304 (minimum of 2mm thickness) to withstand temperature of up to 600 degree Celsius on continuous duty. Materials of construction and exact thickness to be specified.	
4.3	Door: <ul style="list-style-type: none"> • Furnace shall have double door type construction and loading should be done from the front side of the furnace. • Handle should be provided on the door for opening and closing of the door. • The door handle should be fitted with suitable lock for self-locking of the door after closing to prevent heat leakage and it should be able to release the lock by operating the handle for opening. • The door position should be firm and should not shift with self-weight. Suitable Heavy duty hinges to be provided. • The automatic engagement of temperature control switch with door while opening and closing to be ensured for long trouble free working life of the oven. 	
4.4	The oven shall be mounted on four steel wheels. The front set of wheels shall be of castor wheels. Wheels shall be of minimum 150 mm diameter. No rubber lining required.	
4.5	The base frame shall be rigid enough to transport the oven by using Fork lift and four lifting hooks shall be provided at suitable locations to lift and transport by using crane.	
4.6	Clear heating chamber dimensions: 600 mm (Min. Depth) X 600 mm (Min. width) X 560 mm (min. height)	

Sl.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S RESPONSE
4.7	<p>Electrode holding Cage Construction: The Electrode Holding cage must be constructed with the following features: Vendor to confirm and provide details</p> <ol style="list-style-type: none"> Minimum dimensions: Depth 450mm x Width 540mm x Height 390mm No.of Partitions: 9 Nos as shown in sketch. The Electrode cage shall be removable to facilitate cleaning of the chamber. The cage with partitions should be of rigid construction with suitable supports to hold 100 kg of Electrodes. The outer enclosure of electrode holding cage that is bottom most plate, sides and rear of the enclosure should be of at least 2mm thick Stainless steel plates (SS304). Plates provided in the sides of enclosure to be perforated with not more than dia.15mm holes/slots evenly spaced to provide sufficient ventilation for air circulation. Vendor to specify suitable hole/slot size for proper heat circulation. Plate provided at the rear side and at bottom of the cage to be without any holes. Bottom side and sides of the individual partitions with in the electrode holding cage should be of SS 304 rod/mesh type for easy cleaning & sufficient circulation. The front side of the cage to be open for loading electrodes. The entire electrode holding cage will be kept in the center of heating chamber-leaving space on all sides for air circulation and uniform heat distribution. 	
4.8	<p>Input power supply of 415 v +/- 10%, 50Hz, 3ph (3 wire system without neutral) will be provided by BHEL.</p>	
4.9	<p>Design of Heating Elements: Vendor to furnish heating element design drawing with all relevant design details. Mounting and terminal connection of heat elements to be clearly indicated. Drawings to be submitted along with offer.</p>	
4.10	<p>Heating elements: Ni-Cr 80/20 resistance wires in the form of coils. Vendor to confirm and specify the wire size. Make: KANTHAL (A-1 grade) OR any equivalent grade of other makes acceptable to BHEL. The original manufacturer's certificate for resistance wire shall be provided with oven. Heating element drawing showing the constructional aspects & dimensional details are to be submitted along with offer.</p>	
4.11	<p>Pilot hole shall be provided on the back wall as well as side walls for inserting thermocouple for inspection.</p>	
4.12	<p>Circulation fan: 1) Suitable fan for air circulation with motor to be mounted on the top of furnace. 2) The fan to be connected to the motor by a belt drive so that the motor shaft does not get heated up. 3) Noise level should not exceed 85 dB.</p>	
4.13	<p>Fan motor capacity. Vendor to specify</p>	
4.14	<p>Motor make: shall be of Crompton/Bhart Bijlee, Siemens, KEC / NGEF /ABB only. Vendor to specify the make</p>	
4.15	<p>Motors shall conform to IEC or Indian standards.</p>	
4.16	<p>All adapters / receptacles should have compatibility with Indian equivalents.</p>	
5.0	<p>Safety: (i) Heating element contactors to be electrically interlocked with door to shut off power to heaters on open and automatically restores power when closed in a heating cycle. Also, suitable protection like in the form of removable type perforated SS sheet should be provided in front of heating elements to prevent the operator from electrical shock. (ii) In addition to the main PID controller an excess temperature controller is to be provided to shut off the oven in case of PID controller failure. Refer clause 6.4</p>	
6.0	<p>Controls: Functional and constructional requirement of Temperature and Timer control.</p>	
6.1	<p>Programmable temperature controller with PID function and minimum 8 no. of programs to be stored. 92X92 minimum cut out sized programmable PID temperature controller to be provided. Details & make of controllers to be provided</p>	

SI.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S RESPONSE
6.2	a. The controller should have two temperature settings -one high and one low and Timer setting. b. The "set temperature (high)" is to achieved at the specified rate of heating (set temperature in the specified time duration) c. Once the high temperature is reached the Timer should automatically reset for the "holding time "and for the entire holding time, the temperature is to be maintained at the same high temperature. d. After the set holding time elapses, the controller is to switch over automatically to low temperature setting. e. For High temperature to the low temperature, rate of cooling also to be maintained at the specified rate. f. Once the low temperature is reached, the controller should maintain the same temperature inside the chamber continuously without any time limit and also without getting disturbed by the opening and closing of the door (i.e.).ON/OFF of the power supply should not affect the programmed value of the temperature. g. Provision to stop and alter the program cycle at any point of time. h. Operator can select the program number/name and can start the cycle. Password lock to be provided for changing the basic parameters with in the program. i. The temperature controller shall have Digital display	To be confirmed
6.3	The controller to be calibrated and the calibration certificate to be provided along with the equipment.	
6.4	Safety temperature controller: ON/OFF type temperature controller shall be provided to switch off the oven automatically if the temperature of the oven exceeds the maximum SET point of PID controller. Separate contactor (different from the control contactor) to be provided for actuation from the excess/safety temperature controller. This should switch-off the main power automatically in case the control contactor gets jammed.	To be confirmed
6.5	Temperature controller shall be only with mineral insulated (MI) duplex Cr/AI thermocouple ('k' Type) and compensating lead wires.	To be confirmed
6.6	Make of the controller: shall be Eurotherm, Yokogawa, Honeywell, Fuji or chinu-laksons only.	To be confirmed
6.7	Temperature Tolerance: within +/- 5 degree Celsius of set temperature.	To be confirmed
7.0	Requirements in the control panel:	
7.1	The control panel shall be provided with the following: (a) Main PID controller to be supplied as per 6.1 (b) Excess temperature controller to be supplied as per 6.4 (c) "ON" push button to start a new cycle / program (d) "OFF" push button to stop cycle / program (e) "Reset" push button in the front panel to restart the cycle / program (f) "Main - ON" indicators for three phases separately. (g) Fan "ON" indicator (h) Heater "ON" indicator (i) Necessary control transformer required for control circuit & temp.Controller to be supplied & mounted. Vendor to confirm and Panel layout to be submitted	
7.2	Location of the control panel: It is preferable that the control panel can be annexed to side of the furnace with adequate protection from heat and vibration. However if it is not possible, then it can be kept separately. All the options as per 7.1 shall be provided at front face of the panel. Details to be provided with the drawing.	
8.0	Documentation: 1 set of following documents (in English) shall be offered during PDI and total 3 sets shall be submitted along with machine supply. Soft copy of the same to be provided in PDF format.	
8.1	GA drawing: Exploded view and cross section details to be provided	
8.2	Make of Brought out items with part no/Specification with catalogues	
8.3	The operator instruction manual	
8.4	Maintenance instruction manual	
8.5	Safety instruction manual	
8.6	The controller operation manual and circuit diagram with proper identification of potentiometers.	

SI.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S RESPONSE
9.0	<p>O&M spares (Electrical and mechanical) are to be supplied along with oven: To be confirmed</p> <p>a. Plummer Block - 1 No</p> <p>b. Fan motor - 1 No</p> <p>c. Control Transformer - 1 No</p> <p>d. PID Controller - 1 No</p> <p>e. Heating elements (1 complete set required for connecting across one phase) - 1 Set</p> <p>f. Thermocouple - 2 Nos</p> <p>g. Fan to motor belt - 1 No</p> <p>h. ON /OFF Switch - 1 No</p> <p>i. Contactor for excess temp controller - 1 No</p>	
10.0	<p>Painting: Durable powder-coated steel exterior with 2 coats of SIEMENS grey RAL 7032 shade for all non-working surfaces. The control panel shall be with one primer coat and 2 coats of SIEMENS grey paint.</p>	
11.0	<p>Acceptance:</p>	
11.1	<p>Acceptance of vendor's works: The Electrode baking Oven shall be offered for BHEL Inspection at vendor's works prior to dispatch. All features shall be demonstrated.</p>	
11.2	<p>Acceptance at BHEL works: During commissioning the vendor should prove out all features of the Electrode baking oven.</p>	
12.0	<p>Installation and commissioning at BHEL: Installation and commissioning of the Electrode baking oven at BHEL is in the scope of vendor.</p>	
13.0	<p>Packing: The oven and the other accessories, spares etc shall be packed rigidly to avoid any transit damage and dispatched.</p>	
14.0	<p>GUARANTEE: 12 months from the date of acceptance of the Electrode baking oven at BHEL or 18 months from dispatch whichever is earlier.</p>	
15.0	<p>Check list: The following documents (in English) shall be furnished along with the technical offer to the technical evaluation</p> <p>a) Completely filled "Technical specification"</p> <p>b) GA drawing/ detailed catalogue of the offered Electrode baking oven with details and dimensions.</p> <p>c) Construction features and Heat calculations.</p> <p>d) Details like rating, specification, make of electric and mechanical bought-out items shall be listed in the general arrangement drawing</p> <p>e) Catalogues of the Bought-out items.</p>	

Note: No column shall be left blank in "Bidders response". Values / details shall be provided where ever requested

Enclosure: Annexure I

ANNEXURE - 1

ELECTRODE HOLDING CAGE

SCHEMATIC SKETCH (Not to the scale)

