



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

An ISO 9001
Company

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 76 53 Fax : +91 431 252 00 31 Email : skaruna@bheltry.co.in Web : www.bhel.com
NOTICE INVITING TENDER	

TWO PART BID Tender to be submitted in two Parts	Enquiry Number: 2631500038	Enquiry Date: 24.11.2015	Due date for submission of quotation: 24.12.2015
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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 as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	10 Nos.	4 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/06 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 4 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 ₹ 1,50,000.00
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 "2631500038"

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.
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PART - A
QUALIFYING CRITERIA FOR 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 "ELECTRIC OVENS/ELECTRIC FURNACES". 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 INDUSTRIAL ELECTRICALLY OPERATED ELECTRODE BAKING OVENS WITH TEMPERATURE CONTROL AND WITH CHARGE CAPACITY OF 600KG OR MORE in the last TEN years should quote. Vendor must provide the supporting documents- Purchase order/supply document /commissioning report with tech spec/relevant documents along with offer.	
1.3	Vendor has to submit at least one Performance Certificate from their customers, for satisfactory performance of INDUSTRIAL ELECTRICALLY OPERATED ELECTRODE BAKING OVENS WITH TEMPERATURE CONTROL AND WITH CHARGE CAPACITY OF 600KG OR MORE AND TEMPERATURE RANGE OF 400 DEG.C OR HIGHER , and is presently working satisfactorily for a minimum period of one year (as on original 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	Number of ELECTRIC OVENS for electrode baking supplied and commissioned till date.	
2.2	The BIDDER/VENDOR to furnish Reference List of Customers with contact details	
2.3	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.**

Date:

PERFORMANCE CERTIFICATE

- 1 Type of the Oven: Electrically operated / Others
(Strike off whichever is not applicable)
- 2 Equipment used for Electrode Baking purpose: YES/ NO
(Strike off whichever is not applicable)
- 3 Supplier of the Equipment
- 4 Month and Year of commissioning
- 5 Maximum charge capacity of the equipment in kgs:
- 6 Maximum temperature range of the equipment in Deg.C:
- 7 Temperature control available in the equipment: Yes/No
(Strike Off whichever is not applicable)
- 8 Types of jobs used in this equipment:
- 9 Performance of the equipment : Satisfactory / Not satisfactory
(Strike off whichever is not applicable)
- 10 Service after Sales: Satisfactory/Not satisfactory
(Strike off whichever is not applicable)
- 11 Any other remarks:

Signature & Seal of the Authority
Issuing the Performance Certificate

Date:
Name:
Designation:
Email ID:
Office No:

PART-B
SPECIFICATION FOR ELECTRODE BAKING OVEN

No. of Electrode Drying ovens: 10 Nos

Sl. No.	Description	Specification	BIDDER'S OFFER
1.0	Purpose	The Electrode Drying ovens are required for heating and drying Electrodes	
1.1	Operating Temperature range	Ambient to 400 deg.C	
1.2	Rate of Heating	150 deg.C to 200 deg.C / hr	
1.3	Total weight of the Electrodes	600 kg	
1.4	Power rating (kW)	Bidder to specify	
1.5	Input power supply	415 V with a fluctuation of $\pm 10\%$, 50Hz, 3Ph (3 wire system – without neutral)	
2.0	Heating Chamber		
2.1	Clear heating chamber dimensions	Height 950mm X Width 600mm X Depth 600mm.	
2.2	Internal material	The inner wall and the baffle shall be made of 2mm SS 304 to withstand temperatures of up to 400 ^o C on continuous duty.	
2.3	Insulation	The oven casing shall be of double wall construction with minimum 200mm of ceramic fiber blanket / ceramic wool insulation in between inner and outer wall.	
2.4	Outer wall and oven construction	The outer shell shall be of MS plates of suitable thickness. Vendor to specify the thickness. The construction of oven frame and outer shell shall be rigid enough to withstand the weight of electrodes and to avoid distortion due to heat and mechanical handling	
2.5	Skin temperature on continuous duty	The skin temperature on all outer walls and doors shall not exceed 60 deg C. The ambient temperatures varies between 35 deg C and 45 deg C. Suitable insulation design details to be provided.	
2.6	Safety	Heating element contactors to be electrically interlocked with door to shut off power to heaters as door opens and restores power when closed. Also, suitable protection in the form of removable type perforated SS sheet should be provided in front of heating elements to prevent the operator from electrical shock.	
2.7	Fan for circulation	<ul style="list-style-type: none"> • The fan and motor to be mounted on the top. • The fan to be connected to the motor by a belt drive so that the motor shaft does not get heated up. Forced air circulation is effected by an external pedestal/ flange mounted, belt driven motor for uniformity of inner chamber temperature. • Vendor to specify motor capacity. • Make of motor to be Crompton / Bharat Bijlee, NGEF/ABB/KEC/ Siemens. • Noise level should not exceed 85 dB • Motors shall conform to IEC or Indian standards. 	
2.8	Heating Elements	Ni-Cr 80/20 resistance wires in the form of coils. Vendor to confirm and specify the wire size. Make: KANTHAL(A-1grade/APM grade) OR any other make 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.	

Sl. No.	Description	Specification	BIDDER'S OFFER
2.9	Design of Heating Elements	Bidder to furnish heating element design drawing with all relevant design details. Mounting of heating elements to be clearly indicated	
2.10	Mounting of equipment	The oven shall be mounted on four steel wheels. The front wheels shall be castor wheels. Wheel shall be of minimum 150 mm dia. No rubber lining required.	
2.11	Furnace Door features	<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. • Suitable door locking mechanism shall be provided. The door locking shall be tight enough to prevent any hot air from inside the furnace escaping through the gaps. It shall be leak proof. • 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. 	
2.12	Lifting arrangement	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.	
3.0	Electrode holding cage		
3.1	No. of partitions	18 partitions - as shown in the sketch (Annexure-1) (6 horizontal partitions and each horizontal partition divided into 3 equal vertical partitions)	
3.2	Electrodes holding cage	<p>As per the dimensions given in the sketch.</p> <ul style="list-style-type: none"> • Height 880mm x Width 540mm x Depth 450mm • 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 600 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. 	
3.3	Material of holding cage and inner walls	Stainless Steel (SS 304).	

Sl. No.	Description	Specification	BIDDER'S OFFER
4.0	Controls	The temperature controller and control panel should consist of the following:	
4.1	Oven Temperature Controllers	Programmable temperature controller with PID function to be provided. Minimum 4 programs can be stored.	
4.2	Function of Temperature controller	<ul style="list-style-type: none"> 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 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 Indication j. 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. 	
4.3	Calibration	The controller to be calibrated and the calibration certificate to be provided along with the equipment.	
4.4	Size of controller	Temperature controller panel cut-out size -92mm x 92mm (min)	
4.5	Make of the controller	Eurotherm, Yokogawa, Honeywell, Fuji or Chinu-Laksons.	
4.6	Temperature variation inside chamber	Within the oven at any location shall be within +/- 5 degree Celsius.	
4.7	Tolerance	Within +/- 5 degree Celsius temperature of set temperature.	
4.8	Thermocouple	'K' Type thermocouple (Chromel - Alumel) with suitable compensating leads.	
4.9	Switches	<ul style="list-style-type: none"> (i) Circulation Fan control push button (ii) Control power ON-OFF switch (iii) Heater element contactors (iv) Reset button 	
4.10	Indicators	<ul style="list-style-type: none"> (i) Mains on indicator for three phases separately (ii) Fan on indicator (iii) Heater on indicator 	
4.11	Control Transformer	Control transformer for Single-phase supply for control unit to be provided.	

Sl. No.	Description	Specification	BIDDER'S OFFER
4.12	Pilot hole	Pilot hole shall be provided on the back wall as well as side wall for inserting thermocouple for inspection.	
4.13	Control panel	Control panel can either be attached to side of the furnace or separate electrical control panel shall be provided. Vendor to specify.	
4.14	Temperature display	Temperature display shall be provided on the front of the panel.	
5.0	Spares		
5.1	Vendor must provide the following spares along with the equipment a) Heating coils - 2 sets (Each set must have the entire heating coils used for 3 phases in a single equipment) b) Thermocouple - 3 Nos c) Fan to motor belt - 1 No d) On/Off switch - 1 No		
6.0	GENERAL		
6.1	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.		
6.2	General arrangement drawing for the oven with the door design details shall be provided with the offer.		
6.3	Details like rating, specification, make of electric and mechanical bought-out items shall be listed in the general arrangement drawing.		
6.4	O & M manuals: 15 copies of the detailed Operation and Maintenance manual and safety instructions in English to be provided along with the equipment. The controller operation manual and circuit diagram with proper identification of potentiometers to be provided.		
6.5	Pre dispatch Inspection: The equipment shall be offered for inspection prior to dispatch at vendors works. 1 Set of documentation (in English) shall be offered during inspection		
6.6	Commissioning: Supplier to commission the equipment at BHEL works.		
6.7	Performance Guarantee: 12 months from the date of acceptance of the Electrode baking oven at BHEL or 18 months from dispatch whichever is earlier		
7.0	Check list: the following documents (in English) shall be furnished along with the technical offer to the technical evaluation a) completely filled "Technical specification" b) GA drawing/ detailed catalogue of the offered Electrode baking oven with details and dimensions. c) Construction features d) Details like rating, specification , make of electric and mechanical bought-out items shall be listed in the general arrangement drawing e) Catalogues of the Bought-out items.		
	Note: No column shall be left blank in "Bidders Offer" Values / details shall be provided where ever requested		

Enclosure: Annexure 1

ANNEXURE - 1

ELECTRODE HOLDING CAGE

SCHEMATIC SKETCH (Not to the scale)

