



# Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

An ISO 9001  
Company

<b>ENQUIRY</b>	Phone: +91 431 257 7938 Fax : +91 431 252 0031 Email : <a href="mailto:tvenkat@bheltry.co.in">tvenkat@bheltry.co.in</a> Web : <a href="http://www.bhel.com">www.bhel.com</a>
<b>NOTICE INVITING TENDER</b>	

<b>TWO PART BID</b>	<b>Enquiry Number:</b>	<b>Enquiry Date:</b>	<b>Due date for submission of quotation:</b>
Tender to be submitted in two Parts	<b>2851400018</b>	<b>04.02.2014</b>	<b>05.03.2014</b>

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	Quantity
10	<b>Electrode Baking Oven</b> as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	<b>5.00 Nos.</b>

**Important points to be taken care during submission of offer**

1. Material shall be delivered to  
**Indigenous Vendors:**  
FOR, BHEL, Stores  
Power Equipment Fabrication Plant  
Bharat Heavy Electricals Limited  
Mundipar – 441 804, Taluka: Sakoli, District: Bhandara, Maharashtra State
2. Delivery required 5 months from the date of purchase order.
3. Erection and Commissioning period required 1 Week from the date of intimation by BHEL.
4. EMD for this Tender will be ( INR ) : 1,00,000.00
5. Compliance Form No: BND/IMP/02, BND/IND/02A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
6. 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 check-list 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 "2851400018".

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

**PART A:ELECTRODE BAKING OVEN****SECTION – 1:Qualifying Criteria**

The BIDDER has to compulsorily meet the Qualifying criteria indicated in SECTION –I to get qualified. Otherwise the technical offer will not be considered.

<b>S. No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR's RESPONSE</b>
1.0	Only BIDDER /VENDOR (OEM) who have a minimum of last Five Years (as on date of opening of tender) of Continuous Experience in Design, Manufacture & Supply of “ <b>Electrode Baking Oven</b> ” are eligible to quote for this tender. Vendor shall indicate the actual no. of years of experience in the field.	
2.0	Only those vendors (OEMs) should quote, who have commissioned in the last 5 years, at least 1 No. of “Electrode Baking Oven” of capacity 750 kg or above with Programmable Temperature Controller preferably with PID function and such equipment is working satisfactorily for more than one year after commissioning.	
3.0	Number of “Electrode Baking Oven” supplied & commissioned till date.	
4.0	Year of Launch of the quoted Model in this tender.	
5.0	Vendor to submit ONE Performance certificate for satisfactory performance of minimum 1 No. of Electrode Baking Oven as specified in Clause no. 2.0, from the customer, for a minimum period of one year from the date of commissioning (as on original date of opening of tender). A suggestive format of Performance certificate is provided as annexure.	
6.0	Servicing facility to be available in India. Details on Service-After-Sales Set-Up in India (Address of Agents / Service Centres), to be furnished compulsorily.	
7.0	BHEL reserves the right to accept or reject the OEMs based on the assessment of their technical capability. BHEL reserves the right to verify the information provided by the Vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	

## Electrode Baking Oven

### **SECTION - 2**

The BIDDER / VENDOR is requested to provide the following information:

<b>S. No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR'S RESPONSE</b>
8.0	The BIDDER shall give details about supply of similar Electrode Baking Oven to BHEL units if any with Make, Model and Year of Supply & Commissioning etc.	
9.0	A complete reference list of Customers shall be furnished to whom such offered model has been supplied in the last ten years with Qty., Year of commissioning with contact details of the customers.	
10.0	Any Additional Data to supplement the manufacturing capability of the BIDDER.	

### **SECTION - 3**

The BIDDER to note:

<b>S. No.</b>	<b>PARTICULARS</b>	<b>VENDOR'S RESPONSE</b>
11.0	The BIDDER shall submit the offer in <b>Two Parts</b> – 1. Technical [with PART A & PART B] & 2. Commercial and Price Bid.	
12.0	The VENDOR'S RESPONSE against each clause in PART A & B of the offer should be filled by the BIDDER compulsorily with complete details.	
13.0	The BIDDER shall assure a continuous support for Spares and Service for Ten Years, from the date of commissioning of the equipment at BHEL Works.	
14.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in original and complete technical details / literature on the quoted models of Electrode Baking Oven.	
15.0	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

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

***Suggestive Format of Performance Certificate***

*(On Customer's letter head)*

**PERFORMANCE CERTIFICATE**

1. Supplier of the machine :
2. Make & Model of the m/c :
3. Month & Year of Commissioning :
4. Quantity :
5. Machine Details
  - a) Holding Capacity (kg) :
  - b) Chamber Dimension :
  - c) Rated Temperature :
  - d) Temperature controller type :  
(PID with ramp)
6. Application for which m/c is used :
7. Performance of the Machine : Satisfactory / Good / Average / Not Satisfactory  
(Strike off whichever is not applicable)
8. After sales service : Satisfactory / Good / Average / Not Satisfactory  
(Strike off whichever is not applicable)
9. Any Other remarks :

Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

**PART B: TECHNICAL SPECIFICATION FOR ELECTRODE BAKING OVEN**

Qty.: 5 Nos.

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>	<b>BIDDER'S OFFER with technical details</b>
<b>1.0</b>	<b>SCOPE</b>	Design, Manufacture, Supply, Erection and Commissioning of 750 kg Electrode Baking oven with complete accessories at the specified location. The Baking oven including electrode holding cage, controller etc. shall be a complete package.	
<b>2.0</b>	<b>APPLICATION</b>	The electrode baking oven shall be designed for heavy duty Industrial application and long operating life. The Electrode Baking ovens are required for heating and baking Electrodes for welding booths maintained by WTC.	
<b>3.0</b>	<b>BAKING OVEN PARAMETERS</b>		
3.1	Type	Electric type Electrode Baking oven	
3.2	Make & Model no.	Bidder to specify	
3.3	Operating Temperature range	Ambient to 400°C	
3.4	Rate of Heating	200°C / hr	
3.5	Total weight of the Electrodes	750 kg	
3.6	Power rating (kW)	Bidder to specify	
3.7	Input power supply	415V±10%, 50Hz±3%, 3Ph ( 3 wire system - without neutral )	
<b>4.0</b>	<b>HEATING CHAMBER</b>		
4.1	Clear heating chamber dimensions	Height 950mm × Width 600mm × Depth 600mm.	
4.2	Internals material	The inner wall and the baffle shall be made of 2mm SS 304 to withstand temperatures of up to 400°C on continuous duty.	

## Electrode Baking Oven

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>	<b>BIDDER'S OFFER with technical details</b>
4.3	Construction & Insulation	The oven casing shall be of double wall construction with ceramic fibre blanket / ceramic wool insulation in between inner and outer wall. There should not be any heat leakage. Bidder to specify the thickness of Insulation.	
4.4	Outer wall temperature on continuous duty	60°C (maximum). Bidder to confirm. Bidder to also specify the mode of measuring this temperature. Thermal calculation to be enclosed.	
4.5	Safety	Heating element contactors to be electrically interlocked with door to shut off power to heaters as door opens and restore power when closed.	
4.6	Fan for circulation	a) Suitable fan with motor for air circulation to be mounted on the top of furnace. b) The fan to be connected to the motor by a belt drive so that the motor shaft does not get heated up.	
4.6.1	Motor capacity	Bidder to specify.	
4.6.2	Make of motor	CROMPTON / BHARAT BIJLEE, NGEF or SIEMENS.	
4.7	Heating Elements	Ni-Cr 80/20 resistance wires in the form of coils. Supplier to specify the make of heating elements	
4.8	Design of Heating Elements	Bidder to furnish heating element design drawing. Mounting of heating elements to be clearly indicated.	
4.9	Mounting on wheels	The oven shall be mounted on four steel wheels of min 150 mm diameter lined with hard rubber for mobility. The front wheels shall be castor wheels.	

## Electrode Baking Oven

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>	<b>BIDDER'S OFFER with technical details</b>
4.10	Lifting Hooks	Shall be provided at the top of the furnace for lifting and handling of furnaces	
4.11	Door type	Furnace should be of double door type 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.	
<b>5.0</b>	<b>ELECTRODE HOLDING CAGE</b>		
5.1	Material	Stainless Steel sheets and SS angle supports only to be used.	
5.2	No. of partitions	18 partitions - as shown in the sketch ( 6 horizontal partitions and each horizontal partition divided into 3 equal partitions )	
5.3	Overall Dimensions of cage	Height 900mm x Width 540mm x Depth 450mm As per the dimensions given in the sketch.	
5.4	The Electrode cage shall be removable type to facilitate cleaning of the chamber.		
5.5	The cage with partitions should be of rigid construction with suitable supports to hold 750 kg of Electrodes.		
5.6	The bottom support and sides for each partition should be of at least 2 mm thick Stainless steel plates.		
5.7	Plates to be perforated with not more than dia. 15 mm holes evenly spaced to provide sufficient ventilation for air circulation.		
5.8	The front side of the cage to be open for loading electrodes and the rear side to be covered fully with SS plate without slots.		
5.9	The electrodes holding cage will be kept in the centre of heating chamber leaving space on all sides for air circulation and uniform heat distribution.		
<b>6.0</b>	<b>CONTROLS</b>		
<b>6.1</b>	<b>The temperature and timer control panel should consist of the following:</b>		
6.1.1	Oven Temperature indicator cum Controllers	Programmable temperature controller with PID function and 4 no. of ramps	

## Electrode Baking Oven

S. No.	DESCRIPTION	SPECIFICATION	BIDDER'S OFFER with technical details
6.1.2	Timer	Bidder to specify suitable timer	
6.1.3	Switches to be provided	a) Fan motor control push button b) Control power ON-OFF switch c) Heater element contactors d) Reset button	
6.1.4	Indicators to be provided	a) Mains on indicator for three phases separately. b) Fan on indicator. c) Heater on indicator.	
<b>6.2</b>	<b>Temperature and timer controller Features:</b>		
6.2.1	The controller to be of simple Two set point temperature controller with timer and re-set button.		
6.2.2	The temperature controller should have Digital indication.		
6.2.3	The temperature inside the oven chamber to be controlled by means of ON/OFF type temperature controller with <u>Cr/Al thermocouple ('K' Type)</u> and compensating lead wires.		
6.2.4	The controller should have two temperature settings one high and one low. Once the high temperature is reached the timer should automatically switch ON. Till the set time elapses, the temperature to be maintained at high temperature setting. After the set time elapses, the controller to switch over automatically to low temperature setting. Once the reset button is switched on, the controller should switch to the high temperature setting and the cycle should start again. Both the high and low temperature settings and timer should be settable.		
6.2.5	A programmable type of Temperature and timer controller which can perform the above functions can be used.		
6.2.6	The controller to be calibrated and the calibration certificate to be provided along with the equipment.		
6.2.7	Temperature controller panel cut-out size	92mm x 92mm (minimum). Bidder to specify.	
6.2.8	Make of the controller	EUROTHERM, YOKOGAWA, HONEYWELL, FUJI OR CHINU-LAKSONS	
6.2.9	Tolerance	Within +/- 5° C of set temperature	

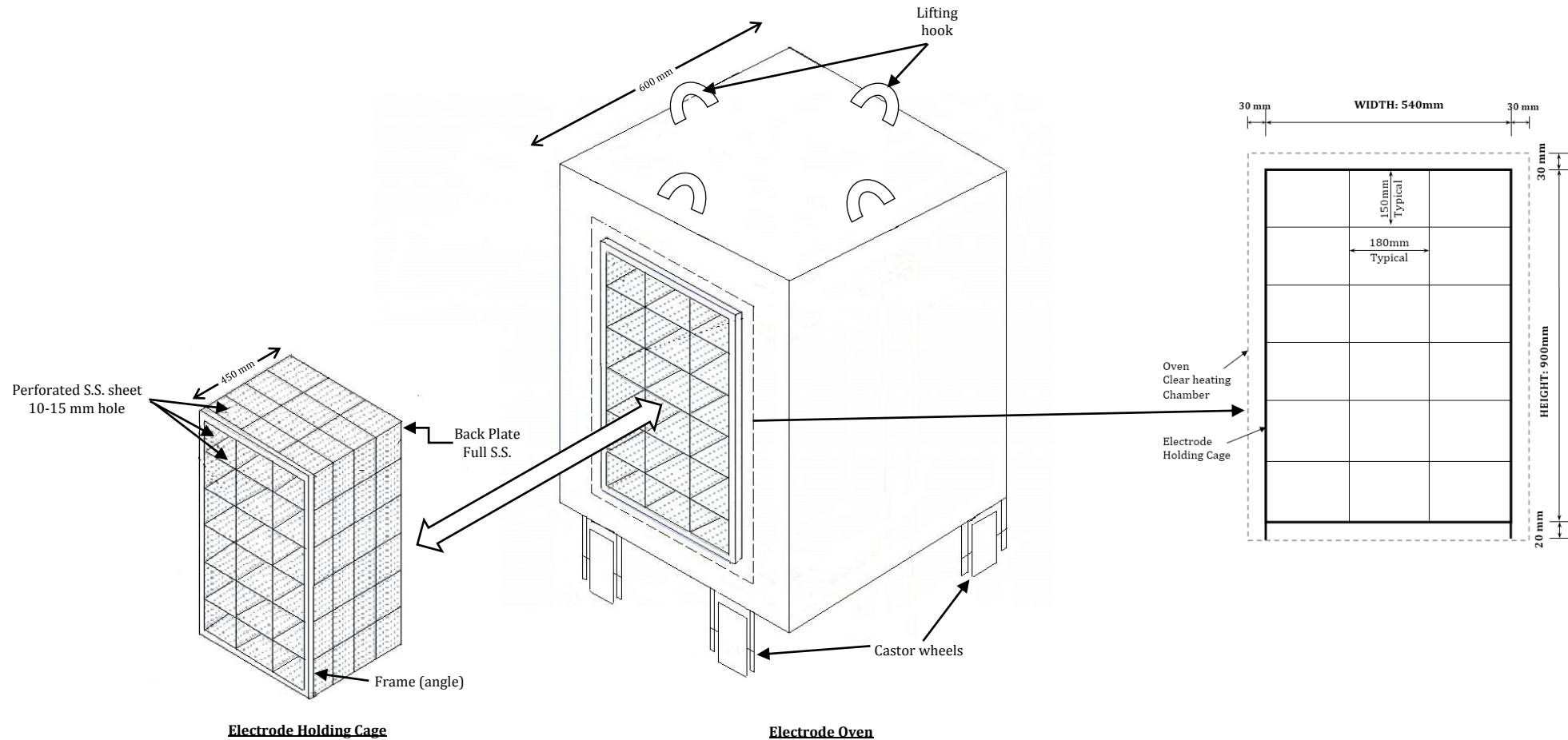
## Electrode Baking Oven

S. No.	DESCRIPTION	SPECIFICATION	BIDDER'S OFFER with technical details
6.2.10	Thermocouple	'K' Type thermocouple (Chromel - Alumel) with suitable compensating lead wires.	
6.2.11	Control Transformer	Control transformer for Single phase supply for control unit to be provided.	
6.2.12	Control panel can either be annexed to side of the furnace with adequate protection from heat or separate electrical control shall be provided. Bidder to specify.		
6.2.13	Temperature display shall be on the front of the panel. Bidder to confirm		
6.2.14	Pilot hole shall be provided on the back wall as well as side walls for inserting thermocouple for inspection. Bidder to confirm.		
<b>7.0</b>	<b>SPARES</b>		
7.1	O&M spares for two year trouble free operation apart from the above spares to be listed out along with item wise price. Bidder to specify.		
7.2	Following O & M spares for two year trouble free operation as listed out a) Heating elements - 2 sets b) Thermocouple - 3 Nos. c) Fan to motor belt - 1 No d) On/Off switch - 1 No Bidder to quote.		
<b>8.0</b>	<b>GENERAL POINTS:</b>		
8.1	<b>Painting:</b> Heat resistant aluminium paint. Bidder to confirm.		
8.2	Thermal calculations should be submitted by the bidder for BHEL approval. Bidder to confirm.		
8.3	General arrangement drawing for the oven shall be provided with the offer. Bidder to confirm.		
8.4	Details like rating, specification, make of electric and mechanical bought-out items shall be listed in the general arrangement drawing. Bidder to confirm.		
8.5	<b>O&amp;M manuals:</b> Three 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. Bidder to confirm.		
8.6	<b>Inspection:</b> The equipment shall be offered for inspection prior to despatch. Bidder to confirm.		
8.7	<b>Commissioning:</b> Supplier to commission the equipment at BHEL works. Bidder to confirm.		

Electrode Baking Oven

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>	<b>BIDDER'S OFFER with technical details</b>
8.8	<b>Performance Guarantee:</b>	The equipment performance shall be guaranteed for a minimum period of twelve months from the date of commissioning or 18 months from the date of supply whichever is earlier. Bidder to confirm.	

## Annexure ELECTRODE HOLDING CAGE - SCHEMATIC SKETCH (Not to scale)



### **Note:**

1. The oven body to be made of Stainless Steel angle supports for providing lifting hooks on the top of the oven as shown in the drawing.
2. 4 Castor wheels (min. 150 mm dia.) lined with hard rubber for mobility.
3. The bottom support and sides for each partition of electrode holding cage should be of at least 2 mm thick Stainless steel plates.
4. The oven casing shall be of double wall construction with minimum 200 mm of ceramic fibre blanket / ceramic wool insulation in between inner and outer wall.