



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

An ISO 9001
Company

ENQUIRY	Phone: +91 431 257 7938 Fax : +91 431 252 0031 Email : tvenkat@bheltry.co.in Web : www.bhel.com
NOTICE INVITING TENDER	

TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in two Parts	2851400004	06.01.2014	12.02.2014

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	Industrial X-Ray Equipment as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	1.00 No.

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 8 months from the date of purchase order.
3. Erection and Commissioning period required 2 Weeks from the date of intimation by BHEL.
4. EMD for this Tender will be (INR) : 40,000.00
5. Compliance Form No: BND/IMP/03, BND/IND/03A 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 "2851400004".

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**

Sr. Manager / Capital Equipment / MM

PART A

**VENDOR QUALIFYING CRITERIA FOR PORTABLE 300KV CONSTANT POTENTIAL X-RAY EQUIPMENT
FOR INDUSTRIAL APPLICATIONS.**

SECTION – I

The BIDDER / VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the portable 300KV constant potential X-Ray equipment.

S. No.	REQUIREMENTS	VENDOR COMMENTS
1.0	The BIDDER / VENDOR shall have a minimum of last FIVE Years of Continuous Experience in the Design, Manufacture of portable 300KV constant potential X-Ray equipment. Vendor to indicate the actual No.of years of experience in this field.	
2.0	Only those vendors (OEMs), who have manufactured and commissioned at least ONE number of portable 300KV constant potential X-Ray equipment in the last five years (as on original date of opening of Tender) should quote	
3.0	Vendor has to submit at least one Performance Certificate from any of their customers, for satisfactory performance of portable 300KV constant potential X-Ray equipment of quoted model supplied to them with in the last five years and is working satisfactory for a minimum period of one year from the date of commissioning (as on original date of opening of tender). For obtaining the Performance certificate, a suggestive format is provided.	
4.0	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	

SECTION – II

Bidder to provide the following details:

S. No.	PARTICULARS	VENDOR COMMENTS
5.0	YEAR of LAUNCH of the Model quoted against this ENQUIRY	
6.0	Number of 300KV constant potential X-Ray equipment supplied, installed and commissioned till date, in the QUOTED MODEL	
7.0	Details of Design Set-Up and Technology Back-Up assured for the PRINCIPAL Equipment Maker	
8.0	Details on International Standards followed in Design of the System	
9.0	Details of Quality System followed (Kindly furnish the salient aspects of the QA system followed)	
10.0	Details on SERVICE-after-SALES Set-Up in India including the addresses of Agents/Service Centers in India and Asia	
11.0	Any Additional Data to supplement the manufacturing capability of the BIDDER	

PERFORMANCE CERTIFICATE
(On Customer's Letter Head)

1. Vendor of the Equipment :
2. Make & Model of the Equipment :
3. Month & Year of Commissioning :
4. Application for which Equipment is used :
5. Jobs Performed by the Equipment
- a. Job material :
 - b. Job thickness :
 - c. Voltage/constant potential of the equipment:
6. Performance of the Equipment : Satisfactory /
(Strike off whichever is not applicable) Not Satisfactory
7. After Sales Service : Satisfactory /
(Strike off whichever is not applicable) : Not Satisfactory
8. Any other remarks :

Contact details of issuing authority

Name & Designation:
Office No/Mobile no:
Email Id:

Signature and seal of authority
Issuing the performance certificate

PART-B
TECHNICAL SPECIFICATION FOR PORTABLE 300KV CONSTANT POTENTIAL X-RAY EQUIPMENT
FOR INDUSTRIAL APPLICATIONS.

S. No.	PARTICULARS	BHEL SPECIFICATIONS	Vendor comments
1.0	Area of Application	The portable 300kV Constant potential X-Ray system is used for Film Radiography of Boiler Components . It is intended for testing welds, piping, castings, machined components etc. made from different materials of thickness up to 40mm steel equivalent.	
2.0	Principle of Operation	300kV constant potential X-Ray equipment is used as the Radiation source in Film Radiography. It generates continuous X-rays by bombardment of high speed electrons on high atomic number Target (Tungsten)	
3.0	Design Base	Constant potential metal ceramic X ray tube with rating of minimum 3 mA at 300kV (by varying potential difference across the electrodes from 50kV to 300kV . The Continuous power rating of the tube shall be around 900W . High frequency: 40KHz technique for output stability, low ripple and better sensitivity.	
4.0	Equipment Configuration	The minimum desired features are enlisted below	
4.1	Operating Parameters	Tube voltage: 50kV to 300kV (Variable in steps of 1kV). Tube Current: minimum 3mA at 300kV (in steps of 0.1mA to maximum value at operating voltage.). Vendor to specify the current range	
4.2	Focal Spot	Focal spot of 3.0 mm as per EN12543 (~1.5 as per IEC 336)	
4.3	Exposure chart	Vendor to provide the exposure chart (showing mA*minute vs steel thickness) for various kV values for standard films	
4.4	Emergent Beam Cone angle	~ 40 deg	
4.5	Exposure Time	Digital display: 1 Second to 60 minutes in steps of 1 second.	
4.6	Pre warning	1 to 30 seconds	
4.7	Programmed operation	For storing minimum 100 data sets, with read out message for error and having password protection. vendor to specify	
4.8	Inherent filter	Preferably Beryllium filters. Vendor to specify	
4.9	Dose output with inherent filter	Radiation output data at various kV at 1 m from focal spot to be furnished. Vendor to specify	
4.10	Dose-Rate	in Sv/min (R/min) at 1 M with and without filter -Vendor to specify	

S. No.	PARTICULARS	BHEL SPECIFICATIONS	Vendor comments
4.11	Leakage level radiation (at full load)	Leakage radiation levels measured at a distance of 1m at max voltage of 300kV and max current shall be given. These should be within the limits prescribed by AERB, India. During installation this must be demonstrated. Shall not exceed 1R / 1Hour/1metre from focal spot.	
4.12	Control Unit	Digital Control Unit containing <ul style="list-style-type: none"> • Power Module, • Control Module [with clear labels in English] • Control Cabinet [with table top] • Standard Operating Programs 	
4.12.1	Warm up program	Built in automatic warm-up program	
4.12.2	Auto trip facility	Auto-trip facility at higher target loadings & higher target /cooling medium temperatures.	
4.12.3	Cables	Inter-Connecting Cables [with length of approximately 20 meters]	
4.12.4	Safety lock out	Control Unit Start up Safety Lock Out mechanism. (Lock & Key)	
4.12.5	Display	Display must be LCD, with RS232C Interface [with clear text in English]	
4.12.6	Adjustable Parameters	Provisions for adjusting kV , mA, time	
4.12.7	Fault Identification	Error code display for fault identification & rectification	
4.13	Cooling Unit	a. Heat Exchanger Type Cooling Unit (Medium: Water preferably) with suitable rating and efficient coolant pump, to meet the peak-load operational requirements. b. The unit shall have in-built warning system for unit failure, low level of coolant, lack of flow, leakage, etc and connected with the tripping mechanism of the main equipment. c. Vendor to furnish complete details on the Cooling System with Accessories provided and to list down Essential Spares like Cooling Fans, pair of Coolant Circulation, Hoses with end connectors etc.	
4.14	Flash Lamp	A Warning Flash Lamp with fail-proof safety circuit shall be supplied with 20 meter long cable	
4.15	Door Limit Switch	Door Limit interlock Switch connection to be provided	
5.0	X-Ray Unit Manipulator	A suitably designed mechanical Manipulator having arrangement for vertical position adjustment of the X-Ray head and a suitable trolley to carry control unit and cooling unit to be provided	
6.0	Weight	Vendor to specify the weight of x ray tube and accessories individually.	
7.0	Safety interlocks	Built in safety interlocks to switch off the system in case of emergency and safety door interlocks	

S. No.	PARTICULARS	BHEL SPECIFICATIONS	Vendor comments
8.0	Input Electric Power Supply	a. BHEL will provide Electric Input Power Supply at one point only ,With 230±10% V,50 Hz, Single Phase AC through a 3 wire system [Phase, Neutral & Protective Earthing]. b. Vendor to take supply from this single Point to all the sub-systems of the equipment through proper step-up or step-down transformers.	
9.0	Ambient Condition	a. The uncontrolled ambient room conditions are: Temp:18 to 45 deg C Relative Humidity: 45to 85%RH b. Vendor to specify the atmospheric conditions, as the working environment for the OFFERED Equipment to deliver precise results and serve for a prescribed life of the Equipment.	
10.0	Accessories	Vendor to list down (with unit rate) the various accessories to be procured with the equipment to enhance the Operating Efficiency and Features of the offered equipment, over and above those mentioned in the specifications.	
11.0	Safety and Quality Standards	a. Vendor to ensure Safety and Quality of X-Ray System, which shall conform to International Standards. b. Conformance certificate to be given along with the equipment	
12.0	Scope of supply	Following shall be supplied compulsorily with the Equipment: 1. X ray head as per BHEL specifications – 1 no. 2.Power connection cables:1no 3. Digital Control unit – 1 no. 4. Cooling system – 1 no. 5. Warning flash lamp (As per 4.14) with 20 m cable– 1 no. 6. Mechanical Manipulator for vertical movement (height adjustment)of x-ray head-1 no 7. Service tool kit -1 no 8. Necessary Standard / Certificate traceable to National/ International Standard. 9. Optional / Compulsory Accessories 10. Spares (As per 14.0) 11. Consumables if any 12.Installation,Commissioning & Performance Prove-Out and Training on Operation, Trouble Shooting &Maintenance 13.Documentation: Testing & Calibration Certificates 14. O &M Manuals [3 Sets] 15. Zone monitor/Radiation survey meter 1 no with power source and battery 16. Warning lamps with Audible siren – 5 nos. – Manually operated (Separate units)	

S. No.	PARTICULARS	BHEL SPECIFICATIONS	Vendor comments
13.0	Consumables for Main Equipment	Vendor has to list down the consumables to be used in the Operation of the Equipment and quote with unit rate for all the listed consumables, to be procured with the equipment.	
14.0	Spares for Main Equipment & Accessories	<p>a. Vendor has to list down the SPARES under Mechanical, Electrical & Electronic Category for the Main Equipment & Accessories for Equipment Operation in 3shifts a day and for 365 days in a year.</p> <p>b. Vendor has to compulsorily quote & Supply for the following Commissioning Spares with the technical offer:</p> <ol style="list-style-type: none"> 1) All types of PCBs for X-Ray Control System – 1 set 2) Critical Spares for X-Ray Head - 1 set 3) HT Transformer – 1 set 4) Cooling unit – Flow switch & temperature switch – 2 nos. 4) All Signal Cables -1No. each 5) All Fuses – 3 Sets. 	
15.0	Documentation in ENGLISH Language	3 Copies (In English) of the Operation & Maintenance Manuals containing Electric Schematics, Circuit Diagrams, PCB Drawings, Trouble Shooting Charts, Mechanical Sub-Assemblies, Rating of Bought-Out Items, etc. shall be supplied, at the time of inspection by BHEL Engineers. In addition, one SOFT COPY in CD to be supplied.	
16.0	Pre dispatch Inspection	The X-Ray system and accessories (consisting of the items mentioned in the scope of supply) shall be offered for Pre dispatch Inspection by BHEL at Vendors works.	
17.0	Installation and commissioning	The X-Ray system and accessories(consisting of the items mentioned in the scope of supply) Is to be installed & commissioned at BHEL Works by the Service Engineer of the Vendor.	
18.0	Performance prove out	Vendor to prove the performance of the machine at BHEL works by conducting job trails	
19.0	Training on Operation & Maintenance	Complete Training for BHEL Staff on Operation & Maintenance to be provided at BHEL Works, after the successful commissioning of the Equipment & Accessories.	
20.0	Guarantee	The X-Ray system and accessories (consisting of the items mentioned in the scope of supply) are to be guaranteed for its performance for a minimum period of 12 months from the date of commissioning at BHEL Works.	
21.0	Service and spares Support Requirements	Vendor shall ensure after the guarantee period, through trained service personnel in India for next 5 years as and when need arise. Spares to be made available with in 1 week from the date of ordering.	

S. No.	PARTICULARS	BHEL SPECIFICATIONS	Vendor comments
22.0	Annual Maintenance Contract-AMC	The Vendor has to QUOTE for AMC with detailed scope of work.	
23.0	Safety and Quality Standards	Vendor to ensure that Safety and Quality of X-Ray system and accessories (consisting of the items mentioned in the scope of supply) shall conform to International Standards. Conformance certificate to be along with the equipment.	
23.1	Type Approval	Supplier shall confirm that the quoted model has the type approval from Atomic Energy Regulatory Board, India and the copy of this certificate shall be furnished along with the offer	