

**Bharat Heavy Electricals Limited,
Heavy Electrical Equipment Plant,
Haridwar - 249403, Uttarakhand, INDIA.**

**Enquiry No. &
Date:**
Due Date:
**Supplier's
Ref.:**
Date :

Technical Specification for Industrial 300 KV X-Ray Equipment

Note:-

1. The offer and all documents enclosed with offer should be in English language only.

2. The following format must be completely filled and deviations mentioned in the appropriate columns. Inadequate /incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.

3. Vendor must submit complete information against clause no. 4 (Qualifying condition). The offer meeting this clause would only be processed.

NAME & ADDRESS OF THE SUPPLIER :

Telephone No.

Fax No.

e-mail :

Scope: Supply and Commissioning of Industrial 300 KV X-Ray Equipment with the following specifications:

Annexure 'A' to Indent No.: 20096851, Dated 03.12.2009

MATERIAL CODE NO.: ZFTH19401027

SCOPE: SUPPLY AND COMMISSIONING OF INDUSTRIAL 300 KV X-RAY EQUIPMENT WITH SPECIFICATIONS AS BELOW:

S. No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
A	Application				
	The equipment will be mainly used for radiography of weld joints, Castings etc.	Vendor to note			
B	Scope of Supply				
	Supply and Commissioning of Industrial 300 KV X-Ray Equipment	Vendor to Comply			
C	Quantity Required				
	1	1 No.			
	Major Technical Specification: Industrial 300 KV X-Ray Equipment				
1.0	X-Ray Tube Head:				
1.1	Tube head weight without Guard Rings	40 kg. (maximum)			
1.2	Tube head type	Portable			
1.3	High voltage generator	Inside the tube head			
1.4	Output voltage range	Max. Tube voltage 300 KV or more			
1.5	Tube current at 300KV	2 mA (minimum)			
1.6	Radiation geometry	panoramic			
1.7	Beam angle	360° X 40° (maximum)			
1.8	Focal spot size	Up to 0.5 X 5.5 mm (as per EN12543) or Up to Φ 5 X 1.3 (as per IEC 336)			
1.9	Anode cooling type	Air cooling			
1.10	Penetration in steel	48 mm. (At 700 mm FFD / D7 film / lead screens / D=1.5 / T=20 min./ standard film processing parameters)			
1.11	Operating temperature	Up to 50°C			
1.12	Duty cycle	100% at 20°C			
1.13	Guard Rings	Suitable guard rings for ease in handling and safety of the tube head shall be provided along with the equipment.			
1.14	Exposure Chart	Exposure chart for steel to be provide along with the offer			
1.15	Power Cable	Length of power cable shall be minimum 10 metres			
1.16	Connection cable	Length of cable connecting tube head and control unit shall be at least 20 metres.			
1.17	Input power supply	230 Volts (+/-10%), 50Hz(+/-3Hz) , Single phase, AC			
1.18	Shock proof	The machine shall have adequate protection against electric shock.			

2.0	Control Unit				
2.1	Control unit type	Microprocessor based control unit with LCD display showing operating parameters, warming up parameters, memory of old shots , error / warning symbols etc.			
2.2	Indicators on control unit	Indicators for Power ON , X-Ray ON , Stand By mode etc.			
2.3	Warming up	Automatic selection of warming up parameters based upon equipment idle time.			
2.4	Entry of exposure parameters	Digital number pad for entry of exposure parameters (KV, mA and exposure time). Auto machine off after completion of exposure time.			
2.5	Overheat / Cooling failure protection	Inbuilt tube head overheat / cooling failure protection with auto machine OFF / message on control panel screen in case of overheat.			
2.6	Flash lamp	Radiation warning flash lamp along with interconnection cable to the control unit shall be provided.			
2.7	Gate limit switch	20 metres interconnection cable between exposure hall gate limit switch and control panel shall be provided.			
2.8	Menu language	English.			
2.9	Operational accessories	Any other essential accessory required for the machine operation shall be offered along with the machine.			
3.0	Other Requirements				
3.1	Test certificate and Guarantee Certificate	Test Certificate and Guarantee Certificate in original bearing the test date shall be submitted.			
3.2	Guarantee period	The supplier must give a guarantee for a period of at least two years from the date of commissioning of the equipment at BHEL, Hardwar.			
3.3	Operation and Maintenance Manual	Two copies of Operation and Maintenance Manual shall be supplied by the supplier.			
3.4	Commissioning and training	Commissioning shall be done by the supplier at BHEL, Hardwar free of cost. Necessary training shall be provided by the supplier to NDT laboratory operating staff for at least three days.			
3.5	Authority letter	For the imported machines Indian agents must attach the authority letter from the principal in the quotation stage itself.			
3.6	Other accessories and Spares	Other accessories and maintenance spares required for five years running shall be offered.			
3.7	Lead belt for directional exposure	Lead belt for directional exposure will be offered alongwith the equipment.			
3.8	Tube head stand	Compatible Tube head stand shall be offered alongwith the equipment.			
3.9	Service Facility	Suppliers will clearly mention the service facility available in India for the offered equipment.			
3.10	Reply to specification requirements	The supplier must give clear point wise reply with respect to individual specification points mentioned above in the space provided in the next column of the table. Deviation from the specification (if any) shall be clearly marked in the 'deviations' column.			

4.0	Qualifying Conditions :				
4.1	Experience	Offer of only those vendors will be considered who have supplied and commissioned at least one 300 KV panoramic or directional X-ray machine in the previous five years, for industrial radiography.			
4.2	List of customers	A list of customers to whom 300 KV panoramic or directional X-ray machine has been supplied shall be provided clearly mentioning the year of commissioning.			
4.3	Name and address of the customer's	Name / Designation of the customer's contact person alongwith the address, contact phone / fax numbers, email address etc. shall be provided.			