



# Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

An ISO 9001  
Company

## ENQUIRY

### NOTICE INVITING TENDER

Phone: +91 431 257 79 38

Fax : +91 431 252 00 31

Email : [tvenkat@bheltry.co.in](mailto:tvenkat@bheltry.co.in)

Web : [www.bhel.com](http://www.bhel.com)

### TWO PART BID

Enquiry  
Number:

Enquiry  
Date:

Due date for submission of  
quotation:

Tender to be submitted in two Parts

**2851300037**

**29.11.2013**

**09.01.2014**

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	Delivery Schedule
10	<b>Automatic Film Processor</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> )	1.00 No	9 months from date of PO

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

1. Checklist No. BND/IMP/02 & BND/IND/02A and 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, POWER EQUIPMENT FABRICATION PLANT, BHARAT HEAVY ELECTRICALS LIMITED, Mundipar- 441804, Taluka: Sakoli, District: Bhandara, Maharashtra State.
3. Time period required for Erection & Commissioning shall be 1 week from the date of intimation by BHEL requesting supplier to depute Service Engineers about site readiness.
4. EMD for this Tender will be ( ₹ ) : 1,00,000.00
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 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 "2851300037".

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

**T. VENKATESWARAN**  
Senior Manager  
Capital Equipment / MM  
BHEL, Tiruchirappalli - 620 014.

**PART A****QUALIFYING CRITERIA FOR THE SUPPLY OF AUTOMATIC FILM PROCESSOR****Qty: 1 No.****SECTION – I**

The BIDDER / VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the Automatic Film Processor.

<b>S. No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR's COMMENTS</b>
<b>1.0</b>	The BIDDER / VENDOR shall have a minimum FIVE Years of Continuous Experience in the Design, Manufacture of Automatic Film Processors. Vendor to indicate the actual no.of years of experience in this field.	
<b>1.1</b>	Only those vendors (OEMs), who have manufactured and commissioned <b>at least ONE number of Automatic film processor</b> in the past five years (as on original date of opening of Tender) and such machine is presently working satisfactorily for a minimum period of one year after commissioning (as on original date of opening of Tender) should quote.	
<b>1.2</b>	Vendor has to submit at least one Performance Certificate from their customers, for satisfactory performance of Automatic film processor of quoted model supplied to them with in the past five years and is 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.	
<b>1.3</b>	<b>The vendor should submit following information of the performance certificate issued customer.</b> a) Name and postal address of the customer or company where similar machine is installed. b) Name and designation of the contact person of the customer. c) Phone, FAX no and email address of the contact person of the customer.	
<b>1.4</b>	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.	

AUTOMATIC FILM PROCESSOR

**SECTION – II**

Bidder/vendor should provide the following information:

S. No.	PARTICULARS	VENDOR'S RESPONSE
<b>2.0</b>	YEAR of LAUNCH of the Model quoted against this ENQUIRY	
<b>2.1</b>	Is there any other model launched after the quoted Model?	
<b>2.2</b>	Number of Automatic Film Processors supplied, installed and commissioned till date, in the QUOTED MODEL in India and other countries	
<b>2.3</b>	Number of Automatic Film Processors supplied, installed and commissioned till date for the following category of CUSTOMERS (in INDIA): a) Government Organizations b) Private Sector Companies [Large Scale Industries]	
<b>2.4</b>	Number of Automatic Film Processors supplied, installed & commissioned till date in the following Category (around the GLOBE) : a) Universities b) R&D Labs c) Reputed Heavy Engineering Works/Manufacturing firms	
<b>2.5</b>	Details of Design Set-Up and Technology Back-Up assured for the PRINCIPAL Equipment Maker	
<b>2.6</b>	Details on International Standards followed in Design of the System	
<b>2.7</b>	Details of Quality System followed (Kindly furnish the salient aspects of the QA system followed)	
<b>2.8</b>	Details on SERVICE-after-SALES Set-Up in India including the addresses of Agents/Service Centres in India and Asia	
<b>2.9</b>	Any Additional Data to supplement the manufacturing capability of the BIDDER	
<b>2.10</b>	Reference List of Customers with full contact details of CONTACT PERSON to be provided by the vendor	

**PERFORMANCE CERTIFICATE**

(on Customer's Letter Head)

- 1 Supplier of the machine
- 2 Make & Model of the M/C
- 3 Month & Year of Commissioning
- 4
  - a. Application for which M/C is used
  - b. Film sizes used
  - c. Film sizes m/c can process
- 5 Performance of the Machine  
(Strike off whichever is not applicable)
- 6 After sales service  
(Strike off whichever is not applicable)
- 7 Any Other remarks

Satisfactory / Not Satisfactory

Satisfactory / Not Satisfactory

Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

AUTOMATIC FILM PROCESSOR

**PART B**  
**TECHNICAL SPECIFICATION FOR AUTOMATIC FILM PROCESSOR**

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
1.0	Description of the Automatic film Processor	<ul style="list-style-type: none"> <li>• Automatic Film Processor is a device, which automatically develops the films exposed to X-Ray or Gamma Radiation.</li> <li>• All the processes involved like developing, fixing, washing and drying should be automatic by using roller transport system</li> <li>• It should have the facilities like film length detection system, a replenishment system, a recirculation system for the developer and fixer solutions and an automatic stand by feature.</li> </ul>	
2.0	Principle of operation	In the Processing of radiographic film, an invisible latent image produced on the film by exposure to x-rays, Gamma rays is made visible or permanent. An Automatic Processor carries out these processes quicker by accurate control of Temperature, Agitation, replenishment of solutions etc. The roller-transport mechanism carries the films throughout the operations from input to output.	
3.0	Area of application	For Processing of Exposed Radiographs of Weldments in Boiler components with Steel thickness Ranging from 4mm to 200mm using Radiation Sources – 15 to 450kV X-Rays, Ir-192 & Co-60 Isotopes and Linear Accelerators (4 MeV / 6 MeV)	
4.0	Design base	Shall conform to ASTM E 999-05. Shall conform to ISO Standards for Design, & Electrical safety.	
5.0	Equipment configuration	The equipment shall be compact. Details are as given by sections 5.1 to 5.11	

AUTOMATIC FILM PROCESSOR

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
5.1	Constructional features	<p>An Automatic film processor for film processing shall necessary comprise of</p> <ol style="list-style-type: none"> <li>a. Film feed tray</li> <li>b. Film surface detection system</li> <li>c. Developer tank, fixer tank and washer tank with removable upper covers</li> <li>d. Automatic roller transport with a motor drive system to carry the film throughout the film developing operations from input to output</li> <li>e. Dryer</li> <li>f. Film collection tray</li> <li>g. Developer replenishment pump</li> <li>h. Fixer replenishment pump</li> <li>i. Control panel</li> <li>j. Draining system for developer, fixer and wash water</li> <li>k. Arrangement for maintaining a constant temperature for film development and a corresponding temperature control and display</li> </ol> <p>The container assembly should be made of material, which is non-corrosive and of latest technology. Vendor to specify the material of containers.</p>	
5.2	Dimensions (external) of auto film processor	<p>Length -Maximum 2000 mm                      Width -Maximum 1000 mm                      Height -Maximum 1000 mm</p> <p>Vendor to specify the actual dimensions of the machine.</p>	
5.3	Film feed tray width	The Feed tray shall be wide enough for minimum 4 numbers of 10 cm wide films to be fed parallel to each other or 40 cm wide films for increased production.	
5.4	Film Feeding type	Continuous roller-feeding type.	
5.5	Film receiving tray	The film-receiving tray should be adjustable to suit sheet film and roll film. The processed films shall always be collected in the tray in the correct order.	
5.6	Film size	Equipment shall be Compatible with various sizes of films (30x40cm, 24x30cm, 18x24cm, 10x40cm, 10x24cm, 13x18cm, 6x12cm etc.) and minimum length shall be 12cm	

AUTOMATIC FILM PROCESSOR

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
5.7	Tank capacity	<ul style="list-style-type: none"> <li>• <b>Developer</b> -Minimum 8 liters</li> <li>• <b>Fixer</b> - Minimum 8 liters</li> <li>• <b>Wash tank</b> -Minimum 8 liters</li> </ul> <p>The Developer and fixer replenishment containers should have capacity of at least 25 liters and the replenishment should be automatic.</p> <p>Vendor to Specify the actual capacity of tank and replenishment containers.</p>	
5.8	Intermediate washer tank (Optional)	<p>Vendor to provide intermediate washer tank between developer and fixer tank to minimize the carryover of developer to fixer tank thus ensuring in keeping the fixer fresh.</p> <p>Vendor to specify the volume of the intermediate washer tank and water consumption rate</p>	
5.9	Drying mechanism	The Auto processor should have a dryer - preferably infrared dryer. Vendor to specify.	
5.10	Materials of equipment	The material should be highly corrosion resistance. Vendor to specify the material.	
5.11	Weight	<p>Weight of</p> <ul style="list-style-type: none"> <li>• Main unit (when empty)-Maximum 150 kg;</li> <li>• Main unit with processing chemicals -Maximum 200 kg ;</li> </ul> <p>Vendor to specify the actual weights</p>	
6.0	Operating Parameters		
6.1	Input Power supply	230V +/-10 % , 50Hz, 5 / 16 A. Appropriate Voltage Stabilizer / CVT to be provided with the unit. Over load protection system shall be provided. Vendor to specify the power consumption in KW/KVA	
6.2	Processing speed	<p>Dry to Dry (from feed tray to collection tray)-2 to 12 minute range.</p> <p>Time in Developer shall be 30-170 seconds, depending on the processing cycle.</p> <p>Supplier shall specify the processing speed for different processing cycles</p>	
6.3	Developer and Fixer temperature range	<p>Temperature to be maintained for</p> <ul style="list-style-type: none"> <li>• Developer : 25 degC to 30degC.</li> <li>• Fixer : 25 degC to 30degC</li> </ul> <p>Provision to be provided for setting the temperature for developer and fixer with in the above range.</p>	

AUTOMATIC FILM PROCESSOR

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
		Constant set temperature to be maintained automatically. Vendor to provide the details for maintaining set temperature. Digital display of actual and set temperature can be provided.	
6.4	Wash water flow Control	The flow of wash water shall be regulated automatically as per the requirement of cycle and film surface area. Vendor to provide the details.	
6.5	Wash water Temperature	Vendor to take care in maintaining the temperature of wash water between 25-30 degC. Vendor to provide details.	
7.0	Essential Features		
7.1	Operating panel/Control panel	The Operating panel shall provide visual information about each processing parameters including the <ul style="list-style-type: none"> <li>a. Current processing temperature.</li> <li>b. Cycle time</li> <li>c. Replenishment quantities for developer and fixer</li> <li>d. Indication for film input</li> <li>e. Remaining cycle time.</li> <li>f. Temperature of the fixer and developer shall be adjusted incrementally to suit the processing program chosen.</li> </ul> Vendor to confirm.	
7.2	Pre-Programmable processing cycle	Vendor to provide Pre-programmed processing cycles for various film sizes and temperature. User can be able to select any one of the available pre-programmed cycles as per the requirement. Vendor to confirm.	
7.3	Main drive mechanism	Main drive motor shall ensure the smooth movement (rotary and longitudinal) of the film from in feed to out feed. It shall be preferably an enclosed gear head motor with an automatic thermal overload protector. The main drive should stop automatically during idle time to prevent wear and tear and remain ready in standby. Vendor to provide details.	
7.4	Rollers	Roller feed mechanism for smooth rotary and longitudinal movement of the film shall be made of non-corrosive and shall be free of wear and tear.	

AUTOMATIC FILM PROCESSOR

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
7.5	Replenishment pump	Replenishment pump for automatic replenishment of chemicals (developer and fixer) to be provided. There shall be a provision to control the replenishment capacity in the control panel. The replenishment pump should accurately deliver replenishment solutions regardless the solution level in replenishment tanks preferably by positive displacement bellow pumps. Supplier has to specify the rating and other details of the Pump.	
7.6	Circulation mechanism	Circulation pumps shall continuously stir the developer and fixer to maintain a uniform mixture of the processing fluids.	
7.7	Draining system	Proper drainage system with valves shall be provided for developer, fixer and wash water. It shall also prevent the formation of toxic fumes into the waste collection tank	
7.8	Safety circuitry	There shall be Developer & fixer overheat-prevention circuit preferably with circuit breaker formed by a safety thermostat. There shall be protection against overheating during Drying preferably with circuit breaker formed by thermistor. Vendor to provide the details.	
7.9	Standby Mode	When all the films are processed in the auto film processor, it should automatically come to standby mode. The standby mode Shall reduce water and energy consumption	
7.10	Concentration of Processing solutions	Supplier to specify the concentration details of various chemical solutions for processing.	
7.11	Proper Earthing	Supplier should ensure proper earthing of the machine. The details of the earthing should be provided in offer.	
8.0	Environmental Factors		
8.1	Relative humidity	It shall work satisfactorily for relative humidity range 20% - 80%	
8.2	Room temperature	Ambient working temperature range 15 deg C – 45 deg C. Vendor to confirm.	
9.0	Stand for automatic film processor(Optional)	Stand for Automatic film processor can be offered optionally Supplier to specify the details of the optional features if any.	

AUTOMATIC FILM PROCESSOR

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
10.0	Scope of Supply	<p><b>Auto processor</b> which performs the processes developing, fixing, washing and drying of Radiographic exposed films automatically by using roller transport system meets all the requirement of this technical specification and with the following facilities</p> <ul style="list-style-type: none"> <li>● Film feed tray</li> <li>● Control panel with LCD/LED display and program selection option.</li> <li>● Developer tank</li> <li>● Fixer tank.</li> <li>● Film length detection system</li> <li>● A replenishment system with level detection for Developer, and Fixer solutions.</li> <li>● Recirculation system for the developer and fixer solutions</li> <li>● Rollers</li> <li>● Dryer</li> <li>● Film collection basket</li> <li>● Automatic standby feature</li> <li>● Draining mechanism</li> <li>● Main drive motor</li> <li>● Manuals as per clause 14.0</li> </ul>	
11.0	Spares for Main Equipment and Accessories	<p>Itemized breakup of Mechanical, Electrical &amp; Electronic Spares in sufficient quantity for the Main Equipment &amp; Accessories for 2 years of trouble free operation on three shift running basis should be offered by vendor.</p> <p>Part nos. of all the spares has to be clearly mentioned.</p> <p>Following spares to be quoted compulsorily</p> <ol style="list-style-type: none"> <li>1. All Control PCBs – 1 set</li> <li>2. Temperature Sensor/indicator – 1 no.</li> <li>3. All types of valves – 1 Set</li> <li>4. All types of pumps – 1 Set</li> <li>5. Dryer-1 no</li> <li>6. Roller-1 Set</li> </ol>	

AUTOMATIC FILM PROCESSOR

Sl.No.	Particulars	BHEL Specifications	BIDDER'S OFFER
12.0	Documentation in ENGLISH Language	3 Copies (In English) of the Operation & Maintenance Manuals and one softcopy in CD containing Electric Schematics, Circuit Diagrams, PCB Drawings, Trouble Shooting Charts, Mechanical Sub-Assemblies, Rating of Bought-Out Items, etc. shall be supplied.	
13.0	Installation and Commissioning	The Auto film Processor system and accessories is to be Installed & commissioned at BHEL Works by the vendor.	
14.0	Performance Prove-Out at BHEL	On supply of the equipment it is essential to Demonstrate the satisfactory performance of the system	
15.0	Training on Operation & Maintenance	Complete Training for BHEL Staff has to be given on Operation & Maintenance of the OFFERED equipment at BHEL, after the successful commissioning of the Equipment & Accessories.	
16.0	Performance Guarantee	The Auto film Processor system and accessories are to be guaranteed for a minimum period of 12 months from the date of Commissioning of the equipment.	
17.0	Service and Spares Support Requirements	Vendor shall ensure service 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 the shortest possible time.	
18.0	Annual Maintenance Contract - AMC	The BIDDER has to QUOTE for AMC with detailed scope of work.	
19.0	Safety and Quality Standards	Supplier to ensure that Safety and Quality of Auto film Processor System shall conform to International Standards. Conformance certificate to be provided along with the equipment.	