An ISO 9001 Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY **NOTICE INVITING TENDER**	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com

TWO PART BID Tender to be submitted in two Parts	**Enquiry Number:** **2731100009**	**Enquiry Date:** **04.05.2011**	**Due date for submission of quotation:** **06.06.2011**

You are requested to quote the Enquiry number date and due date in all your correspondences. 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	**Digital Ultrasonic Flaw Detector** as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	**4 Nos**.

Important points to be taken care during submission of offer:

1. **Delivery required 3 months from the date of purchase order.**
2. **Grace period of 1 month beyond the above delivery period will be considered.**
3. **Check-list to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.**

BHEL's General guidelines / instructions 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 "2731100009".

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

QUALIFYING CRITERIA FOR THE SUPPLY OF DIGITAL ULTRASONIC FLAW DETECTOR QTY-4 NOS.

The BIDDER/ VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the Digital Ultrasonic Flaw Detector.

S. No.	REQUIREMENTS	VENDOR's COMMENTS
1.0	Number of Years of Experience of the BIDDER/ VENDOR in the field of design, manufacture and supply of Digital Ultrasonic Flaw Detector. Indicate the actual experience.	
2.0	The BIDDER / VENDOR shall have supplied at least one number of Digital Ultrasonic Flaw Detector within the last five years. Indicate the number of equipment (of QUOTED MODEL) sold in India & Other Countries.	
3.0	Reference List of Customers and Performance Certificate from CUSTOMERS (minimum ONE Customer) with full contact details of CONTACT PERSON.	
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.	
5.0	DELIVERY - The bidder shall quote the best possible delivery. However the delivery shall not exceed 3 months with an additional grace period of 1 month. The additional grace period will attract a penalty which is explained in the commercial terms of the enquiry. The delivery period shall be reckoned from date of purchase order to despatch from the vendor works.	

SECTION – II

S. No.	PARTICULARS	VENDOR's COMMENTS
6.0	Number of Years of Experience of the BIDDER/ VENDOR in the field of design, manufacture and supply of 'Digital Ultrasonic Flaw Detector'	
7.0	YEAR of LAUNCH of the Model quoted against this ENQUIRY	
8.0	Is there any other model launched after the quoted Model? Otherwise, indicate the likely year in which the next model is likely to be launched	
9.0	Number of Digital Ultrasonic Flaw Detectors supplied, installed and commissioned till date, in the QUOTED MODEL	
10.0	Number of Digital Ultrasonic Flaw Detectors supplied, installed and commissioned till date for the following category of CUSTOMERS (within INDIA): a) Government Organisations b) Private Sector Companies [Large Scale Industries]	
11.0	Number of Digital Ultrasonic Flaw Detectors 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	
12.0	Details of Design Set-Up and Technology Back-Up assured for the PRINCIPAL Equipment Maker	

13.0	Details on International Standards followed in Design of the System	
14.0	Comprehensive Details on Performance Testing - of the Equipment quoted, to be ensured in presence of BHEL Executives, prior to dispatch from Supplier's Works.	
15.0	Details of Quality System followed (Kindly furnish the salient aspects of the QA system followed)	
16.0	Details on SERVICE-after-SALES Set-Up in India including the addresses of Agents/Service Centers in India and Asia	
17.0	Any Additional Data to supplement the manufacturing capability of the BIDDER	

SECTION – III

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser :

S.No.	REQUIREMENTS	VENDOR's COMMENTS
18.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical **[with PART A & PART B]** & Commercial and Price Bid. The Technical Offer shall be in line with the BHEL Technical Specifications and the Guidelines or Annexure mentioned, wherever applicable.	
19.0	The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. A just 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	

20.0	The BIDDER / VENDOR shall assure a continuous support for SPARES and SERVICE for FIVE Years, from the date of commissioning of the equipment at BHEL Works.	
21.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria	
22.0	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 of Scope of Supply.	
23.0	The reference List of Customers shall be accompanied with the details (Phone Number / E-Mail ID) of the CONTACT PERSON for cross reference by BHEL.	

PART B

TECHNICAL SPECIFICATIONS DIGITAL ULTRASONIC FLAW DETECTOR

QTY= 4 NOS.

S. No.	Particulars	BHEL SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
1.0	Area of Application	Digital Ultrasonic Flaw detector used for Testing of materials and welded structures made of Steel.	
2.0	Principle of operation	The UT Flaw Detector works on the principle of Reflection of Ultrasounds at Interfaces of varying acoustic impedance. By using Piezoelectric Transducers, which can convert electric signals to ultrasonic vibrations, Ultrasound is sent to the test objects and the reflected Ultrasonic energy from the defects is converted back to electric signals, which in turn are displayed on the CRT.	
3.0	Design base	Compliant to EN 12668-1, IEC 60068-2-27, IEC-60068-2-6.,	
4.0	Pulse	Spike or Tunable Square wave pulse. The pulse is to be electronically controlled on both rising and falling edges to maximize probe performance and increasing near surface resolution.	
4.1	Pulse repetition frequency 'Transmitter-pulse rise time	10 Hz to 2000 Hz.(Supplier to specify) <10ns with selectable high or low	
4.2	Energy Settings	Supplier to specify	
4.3	Pulse width	Adjustable from 30 to 500 ns (0.1MHz)	

4.4	Damping	50 to 500 Ohms	
5.0	**Receiver**		
5.1	Gain	0 to 100 dB with 0.5,1,2,6,12,20dB step and user defined gain step adjustments and presets above function keys	
5.2	Total instrument Bandwidth	0.5 to 25 MHz	
5.3	Digital Filter settings	User selectable narrow band and broad band filter options to be provided to optimize receiver performance	
5.4	Rectification	Full wave, Positive half wave, Negative Half wave, RF	
5.5	System linearity	Horizontal, Vertical, and Amplifier shall meet the requirements of ASME Section V	
5.6	Reject	0 to 100% full screen height	
6.0	**Measurement**		
6.1	Types	Thickness, Sound path, Projection, Depth, Amplitude, Time of flight for both Gates.	
6.2	Echo to Echo	Standard	
6.3	DAC / TVG Standard	Up to 15 points captured, ASME Section I, Section III, 100 dB dynamic Range, full gain, range and delay adjustments during set up, view switchable between DAC / TVG	

6.4	CUSTOM DAC	With Multiple DAC curves	
6.5	DGS Probe Data	For time varied gain applications. DGS set ups to be built from DGS / AVG diagram with standard probe data and user defined probe data. Defect size evaluation to be performed with predefined probe settings. Defect size to be directly displayed. Data sheet for each probe giving all technical details shall be furnished here with..	
6.6	Amplitude measurement	0 to100% full screen height with 0.25% resolution.	
6.7	Curved Surface correction	For Angle measurements.	
6.8	X-Value correction	Beam index point to front of transducer	
7.0	Gates	Two fully independent Gates for Echo Height and Time of flight.	
7.1	Gate start	Variable over entire display range	
7.2	Gate width	Variable from Gate start to end of displayed range.	
7.3	Gate height	Variable from 2 to 95% full screen height	
7.4	Alarms	Positive and Negative thresholds: Minimum Depth on Gate1 and Gate 2.	
8.0	Display TFT/LCD	"A" scan display (Rectified as well as RF mode) and. Color Liquid Crystal Display, user defined, user selectable colour schemes and brightness, and split screen and full screen modes. Auto freeze facility. Supplier shall specify display mode.	
8.1	Base line break mode	All zero cross points on the RF wave form shall be shown as zero points in full wave mode.	

8.2	Amplitude Grid mode	100% Amplitude display	
8.3	Time base grid modes	Standard 0 to 10 major divisions, each having five equal minor divisions.	
9.0	**Instrument Input / Output**		
9.1	USB Client port	For communication with PC/DATA CABLES/FLASH DRIVE/MOUSE	
9.2	SD - CARD	SD card connector for easy data Archival.	
9.3	LEMO Hardware I / O (optional)	Alarm outputs, Trigger In / Out	
9.4	Data Storage	2GB with SB card. Supplier to specify the size of data files and also how many data files can be stored. At least 200 A scan data files storage capacity should be available.	
10.0	**Calibration**	Supplier to specify the calibration set up memory. At least 50 different calibration setups should be stored & recalled..	
10.1	Automated distance Calibration	For velocity and zero offset	
10.2	Test modes	Pulse echo, Dual or through transmission	
10.3	Units	Millimeters, Inches .	
10.4	Range	5 mm to 5000 mm (Steel).	
10.5	Velocity	1000 to 10000 m/s.	
10.6	Zero offset	Supplier to specify the details	
10.7	Display delay	Supplier to specify the details	

10.8	Refracted angles	10 Degrees to 85 Degrees in 0.1degree resolution	
11.0	Probes and Cables Accessories	1) **Longitudinal Probes-** a) 2MHz-8 Nos Diameter 24mm b) 4MHz-8Nos Diameter 10mm 1A) **Suitable standard Cables for above probes-32 nos.** 2) **Shear wave Probes-** a) 2 MHz-35^0-2 Nos Size- 20x22 mm b) 4MHz-35^0-4 Nos Size- 8x9 mm c) 2 MHz-45^0-4 Nos Size- 20x22 mm d) 4MHz-45^0-4 Nos Size- 8x9 mm e) 2 MHz-60^0-4 Nos Size- 20x22 mm f) 4MHz-60^0-4 Nos Size- 8x9 mm g) 2 MHz-70^0-4 Nos Size- 20x22 mm h) 4MHz-70^0-4 Nos Size- 8x9 mm 2A) **Suitable standard Cables for above probes-64 nos** 3) **Twin Crystal Probes**- a) 2MHz-2 No. Diameter 10mm b) 4MHz-4 No. Diameter 10mm 3A)**Suitable Cables for above probes-20 nos** **4) Longitudinal Wave 70 Degree for Under Clad crack UCC Probe with Focal Spot (FS-18mm)-1No.** 4A) **Suitable Cables for above probe-2 nos.** **Supplier should furnish Data sheet for the probes with the crystal diameter, probe centre frequency, Spectrum ,Roof angle of twin crystal probe, etc, along with technical data sheet as per ASTM E-1065 with Band width of operation for each probe. shall be provided.**	
11.1	Cables	Supplier to specify the details, of Power cables, Transducer connector cables etc. Also specify the number of cables required.	
11.2	Calibration Blocks	V1 AND V2 Steel Blocks (4 numbers in each) as per ASME standards and with calibration certificates for each block.	

11.3	Calibration Certificate and Test Certificate	Supplier shall supply these certificates along with the equipment.	
12.0	Software Options	Digital ultrasonic flaw detector shall have DAC, DGS / AVG,	
13.0	**General features:**		
13.1	Weight	Shall be less than 3 kgs.	
13.2	Transducer connections	Lemo type connections (equipment side and Transducer side)	
13.3	Battery	Lithium ion, Nickel Metal Hydride, and Alkaline C-Cells. The system shall have the provision for Internal rechargeable battery with charger adapter. The battery after charging should work for minimum 5 hours before recharging.	
13.4	Power requirement	AC – mains, 200 – 240V (50Hz)	
13.5	Environmental ratings	Temperature: 5 to 55 degree C Humidity: RH 20 - 80%	

14.0	Scope of Supply	1) Digital Ultrasonic Flaw Detector with Battery meeting BHEL specification.(with Software Options as clause 12.0)- 4Nos. 2) Probes as per clause 11.0 (along with Probe data sheet for each.) 3) Cables as per Clause 11.1 4) Calibration blocks as per Clause 11.2 5) Spare Battery as per 13.3 -1No for Each unit. 6) Battery charger -1No. for Each Equipment. 7) Calibration &Test Certificates as per Clause 11.3 8) Service tool kit 9) Optional / Compulsory Accessories 10) Installation, Commissioning & Performance Prove-Out and Training on Operation, Trouble Shooting & Maintenance 11) Operation and Maintenance manuals	
15.0	Inspection	The system and accessories (consisting of the items in the scope of supply) shall be offered for Inspection by BHEL and Performance Prove-Out.	
16.0	Installation and commissioning	The system and accessories (consisting of the items mentioned) is to be installed & commissioned at BHEL Works, FREE OF COST, by the Service Engineer of the SUPPLIER.	

17.0	Documentation in ENGLISH Language	3 Copies (In English) of the Operation & Maintenance Manuals containing Electric Schematics, Circuit Diagrams, 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.	
18.0	Performance Guarantee	The 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 one year from the date of performance acceptance at BHEL Works.	
19.0	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 within the shortest time.	
20.0	Training on Operation & Maintenance	Complete Training for BHEL Engineers is to be given on Operation & Maintenance of the OFFERED equipment at BHEL, after the successful commissioning of the Equipment & Accessories.	
21.0	Annual Maintenance Contract - AMC	The BIDDER has to QUOTE for AMC with detailed scope of work.	
22.0	Safety and Quality Standards	Supplier to ensure that Safety and Quality of 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.	

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