



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 7653
Fax : +91 431 252 0031
Email : skaruna@bheltry.co.in
Web : www.bhel.com

TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in two parts.	2631600060	29.08.2016	24.09.2016

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	Varestraint Testing Machine as per the technical specification, BHEL commercial terms & conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	01 No.

Important points to be taken care during submission of offer

1. Compliance Form to be duly filled and enclosed along with your offer, failing which the offer will not be considered for evaluation.
2. 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 including bank guarantee formats and list of consortium banks, commercial compliance form 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 "2631600060".

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

Saranya
D. SARANYA
Senior Engineer
MM / Capital Equipment
BHEL / Tiruchirappalli - 620 014.

VARESTRAINT TESTING MACHINES, Qty. – 1 no.

PART - A

S.No	BHEL SPECIFICATION	VENDOR's OFFER
1.0	Qualifying Criteria: The BIDDER has to compulsorily meet the Qualifying criteria to get qualified otherwise the technical offer will not be considered.	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of "welding related automated equipment" or Vareststraint testing machines . Vendor may indicate the actual no. of years of experience in the field	
1.2	Only those vendors (OEMs), who have supplied and commissioned at least 2 numbers of welding related automated equipment or Vareststraint testing machines similar to the equipment specified under Part B should quote.	
1.3	Vendor has to submit at least one Performance Certificate from their customers, for satisfactory performance of welding related automated equipment or Vareststraint testing machines , for a minimum period of one year (as on the initial date of opening tender) from the date of commissioning. For obtaining the Performance certificate, a suggestive format is provided in the Annexure 1 .	
1.4	BHEL reserves the right to verify the information provided by the vendor. In case the information provided by the vendor is found to be false/ incorrect, the offer shall be rejected.	
2.0	Information to be provided by the Vendor	
2.1	Number of welding related automated equipment or Vareststraint testing machines supplied and commissioned till date.	
2.2	The BIDDER / VENDOR to furnish Reference list of customers viz. Name and address of the customers or companies where the quoted model of equipment is installed, month / year of commissioning and application of the equipment supplied.	
2.3	The BIDDER shall give details about supply of similar equipment to BHEL units if any with Make, Model and Year of Supply & Commissioning etc.	
2.4	Contact details (phone no & email id) including the Address of Agents / Service Centres in India to be provided	
2.5	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	
3.0	Vendor to note the following	


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Page 1 of 3

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S.No	BHEL SPECIFICATION	VENDOR's OFFER
3.1	The BIDDER shall submit the offer in Two Parts – 1. Technical [with PART A & PART B] & 2. Commercial and Price Bid.	
3.2	The VENDOR's RESPONSE against each clause in PART A & B of the offer should be filled compulsorily with complete details.	
3.3	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.	
3.4	The Technical Offer shall be supported by Product Catalogue and Data Sheets and complete technical details / literature on the quoted model.	


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ANNEXURE 1

Suggestive Format of Performance Certificate:

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

PERFORMANCE CERTIFICATE

- 1 Supplier/Make of the Machine :
- 2 Model of the Machine :
- 3 Month & Year of Commissioning :
- 4 Purpose for which the machine is used :
- 5 Performance of the Machine : Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)
- 6 After sales service : Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)
- 7 Any Other remarks :

Date:

Signature & Seal of the Authority
Issuing the Performance Certificate


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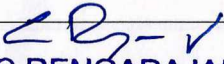


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VARESTRAINT TESTING MACHINE, Qty. – 1 no.

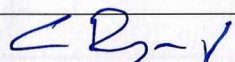
Part B – Technical Specification

S. No.	BHEL REQUIREMENT	BIDDER'S OFFER
1.0	Purpose: The Varestraint Weldability Testing System is used to evaluate the solidification, liquidation, and heat-affected-zone (HAZ) cracking susceptibility of materials. This system should perform both conventional (i.e. consecutive) and simultaneous Varestraint tests on test sample for spot, transverse and longitudinal welding by GTAW and GMAW. Conventional (consecutive) test method: strain is applied to the sample after the welding is completed. Simultaneous test method: strain is applied to the sample as the welding is being carried out.	
1.1	Equipment Description: The intended Varestraint test facility should be as per ISO/TR 17641-3:2005 standard. The equipment shall be employed for weldability testing like linear multi bead welding of test sample plates, varestraint testing, etc. For this purpose, the equipment shall comprise of a Welding area for test sample plate welding and a Varestraint testing area for varestraint testing with bending load as shown in the enclosed Annexure 2.	Vendor to note and confirm
2.0	Welding Area: The Welding area should comprise of a welding bed for clamping and single/multi welding of test sample plates with different weaving methods (Welding oscillation should be provided to adapt different bead weaving mechanisms) with suitable arrangements for mounting of welding test sample plates on the welding bed and a back purging gas system for providing the gas at the root of butt welding.	Vendor to confirm
3.0	Welding Head: The Welding head comprising of welding torch with wire feeder and oscillator unit should have provision for X, Y and Z axis travel with motorized control which can traverse in both Welding and Varestraint testing areas.	Vendor to confirm
4.0	Varestraint Test sample details	
4.1	Length of Test Sample : 100 – 300 mm	Vendor to note


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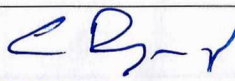

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S. No.	BHEL REQUIREMENT	BIDDER'S OFFER
4.2	Width : 25 - 250 mm	Vendor to note
4.3	Thickness : 2 – 10 mm	Vendor to note
5.0	Features of the equipment	
5.1	X axis Linear travel of the welding head (stroke): min. 1000 mm	Vendor to confirm
5.2	Y axis Travel of the welding head: min. 150 mm	Vendor to confirm
5.3	Z axis – Up & down travel of the welding head: min. 150 mm	Vendor to confirm
5.4	AC servo motor, gear box, AC variable speed drive should be given for X and Stepper motor should be provided for Y & Z axis movements	Vendor to confirm and give details
5.5	Precision of movement along X axis should be 0.1 mm	Vendor to confirm
5.6	Precision of movement along Y and Z Axis should be ± 0.05 mm	Vendor to confirm
5.7	The welding head shall be suitable to hold TIG, GMAW torch of diameter - 20 to 40 mm	Vendor to confirm
5.8	Welding head Load carrying capacity is min. of 4 kg in all X, Y and Z plane.	Vendor to confirm
5.9	Welding head speed in X axis : Precisely adjustable between 50 to 1500 mm/min	Vendor to confirm
5.10	Oscillator unit should have provisions for torch oscillation to different weaving styles	Vendor to confirm
5.11	Oscillation speed: 100 - 2000 mm/min	Vendor to confirm
5.12	Oscillation dwell: 0 - 20 sec independently adjustable (with increments of 0.1 sec)	Vendor to confirm
5.13	Oscillation stroke: 50 mm	Vendor to confirm
5.14	Wire feeder unit	
5.14.1	Wire Feeder Make, Model & Weight	Vendor to specify
5.14.2	Cold wire feeder with - Type 4 - Roll Drive [All Powered Drive Wheels]	Vendor to confirm
5.14.3	2T & 4T option to be provided	Vendor to confirm
5.14.4	Solid Wire Sizes: 0.8, 1.0, 1.2, 1.6 and 2.4 mm	Vendor to confirm
5.14.5	Feed Rolls & Guides shall be suitable to above Solid wires sizes	Vendor to confirm
5.14.6	Wire Feed Speed: 50 to 8000 mm/min.	Vendor to confirm


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S. No.	BHEL REQUIREMENT	BIDDER'S OFFER
5.14.7	Wire Feeder stepper motor – vendor has to indicate the Type of Motor used for wire feeding	Vendor to confirm
5.14.8	Wire Spool Facility shall be suitable to hold wire spools of diameter 300 mm and weight up to 25 kg	Vendor to confirm
5.14.9	Brake Torque on Wire Feeder Hub Shall be of adjustable type.	Vendor to confirm
5.14.10	Inter-connecting cables/hoses assembly	Vendor to confirm
5.15	Conceptual design & Dimensions (refer Annexure 2)	
5.15.1	Welding bed length min. 600 mm	Vendor to confirm & specify
5.15.2	Welding bed width: min. 500 mm	Vendor to confirm & specify
5.15.3	Varestraint area length: min. 400 mm	Vendor to confirm & specify
5.15.4	Varestraint area width: min. 500 mm	Vendor to confirm & specify
5.16	Vendor to provide details of provision for mounting of welding test plates on the welding bed in order to control distortion.	Vendor to confirm & specify
5.17	Back purging gas system with holes of diameter of 1mm or less for providing the gas at required pressure at root of the butt welding. Vendor to provide details.	Vendor to confirm & specify
5.18	Varestraint test sample holder and die	
5.18.1	The Bend Head Mechanism should provide the strain to the sample with two load rollers.	Vendor to confirm
5.18.2	The load rollers bend the sample around a stationary die block to provide a three point bending load to the sample.	Vendor to confirm
5.18.3	The load rollers and die block should be made of non-magnetic stainless steel.	Vendor to confirm
5.18.4	Width of the load rollers: 250 mm	Vendor to confirm


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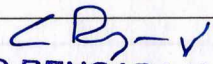

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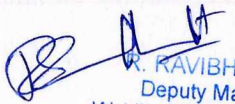
S. No.	BHEL REQUIREMENT	BIDDER'S OFFER
5.18.5	The load rollers shall be adjustable type to accommodate all the sample sizes mention in clause 4.0.	Vendor to confirm
5.18.6	The load rollers should rotate freely during the bend sequence to minimizing the amount of tensile stress on the sample.	Vendor to confirm
5.18.7	Strain levels applied to the sample are determined by the radius of the die block [% Strain = (thickness of the sample ÷ diameters of the die) X 100] and precise control of the stroke length.	Vendor to confirm
5.18.8	Vendor should provide die blocks to test 4 and 8 mm thick samples for strain levels of 0.5%, 1%, 2%, 3%, 4%, 5%, 6% and 7%	Vendor to confirm
5.18.9	Die blocks should be easily interchangeable.	Vendor to confirm
5.19	Varestraint testing hydraulic ram specification	
5.19.1	Ram speed: 6 mm/sec	Vendor to confirm
5.19.2	Max. ram stroke: 40 mm	Vendor to confirm
5.19.3	Max. ram force: 50 kN	Vendor to confirm
5.19.4	Selectable ram holding Time in exited position: 0 – 999 sec	Vendor to confirm
5.20	Limit switches to be provided for defining the X, Y, Z axis movements and positioning of ram movement during loading.	Vendor to confirm
5.21	Limit switches should be provided for auto/manual cut off for safety purpose.	Vendor to confirm
5.22	Control - PLC based control panel or PC based panel should be provided for synchronization, programmable and controlling function of wire feeder, oscillator, welding current & voltage, speed of welding, hydraulic ram movement, ram stock length selection, varestraint testing auto/manual function, etc.	Vendor to confirm
5.23	Touch screen 5.7 Inch or above HMI should be provided for data input for PLC control type.	Vendor to confirm
5.24	The graphical user-interface should be provided for the user to easily establish test parameters, which are controlled through PLC or PC based panel system. The parameters include: welding torch position and speed (X, Y and Z axis), wire feeder, oscillator, bend rate, bend delay time, bend holding time.	Vendor to confirm


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5.25	Programing for auto incremental speed depends on time should be available.	Vendor to confirm
5.26	The equipment should be capable to maintain the user specified Arc Gap (distance between the tungsten tip and the test sample) from beginning to end of the welding arc.	Vendor to confirm
5.27	Set parameter should be displayed during operation.	Vendor to confirm
5.28	Remote pendent should be provided with controls. Vendor to give details of the control and has to specify the remote mounting system.	Vendor to confirm and give details
5.29	250 amps 100% Duty cycle Water cooled automatic welding torch (straight torch) suitable for Kemppi MLS 3000 should be supplied	Vendor to confirm and give details
6.0	During commissioning, customising and integration of the Vareststraint testing machine with the KEMPPPI MLS 3000 welding power source available at BHEL works for all the functionalities shall be the responsibility of the vendor.	Vendor to confirm
7.0	Input Power Supply: Single phase AC supply, 230 V $\pm$ 10%, 50 hz $\pm$ 3% or 3 phase AC supply 415V $\pm$ 10%, 50 hz $\pm$ 3%, (4 wire system without neutral, 4th wire for earthing)	Vendor to note
8.0	Ambient conditions: Temperature up to 50°C; Humidity up to 90% but both upper limits do not occur simultaneously.	Vendor to note
9.0	Total connected load in kW	Vendor to specify
10.0	Overall Dimensions (LxWxH) of the equipment to be specified by the vendor	Vendor to specify
11.0	Constructional features/ GA drawing: Vendor to provide the constructional details and to provide GA drawing of the offered equipment along with the offer.	Vendor to specify
12.0	Spares: Vendor to provide complete list of spares and consumables required for 2 years of trouble free operation of the equipment.	Vendor to specify
13.0	O & M manuals in English language	
13.1	Details like rating, specification, make of electric and mechanical bought-out items shall be listed in the general arrangement drawing.	Vendor to confirm


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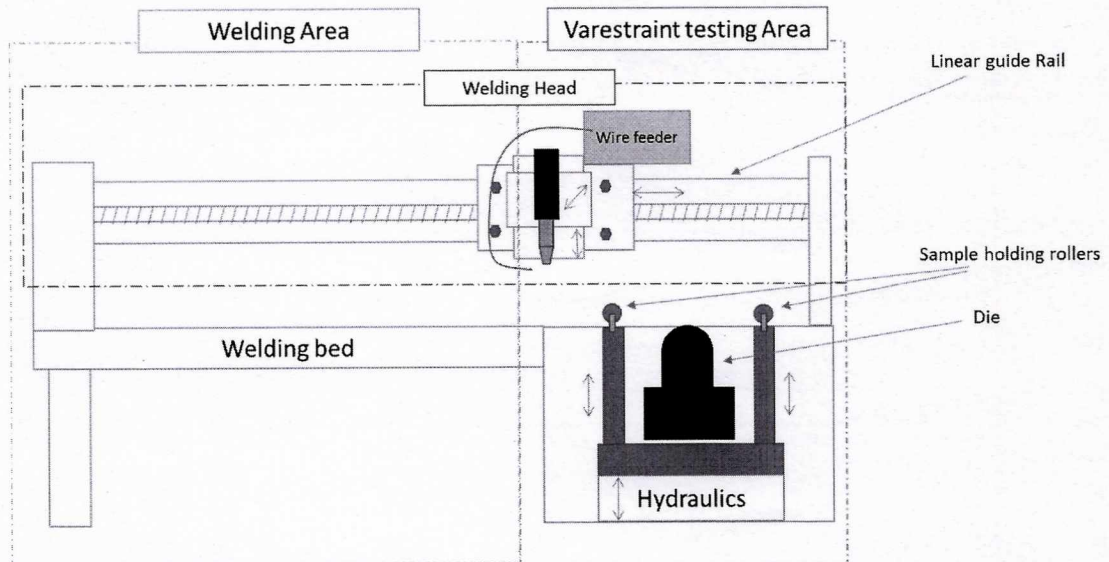

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S. No.	BHEL REQUIREMENT	BIDDER'S OFFER
13.2	3 nos. of hard copies of the detailed Operation and Maintenance manual and safety instructions to be provided along with the equipment	Vendor to confirm
13.3	Soft copy of the above manuals in CD or pen drive – 2 nos.	Vendor to confirm
14.0	Pre Despatch Inspection: The equipment shall be offered for inspection by BHEL at Vendor works prior to despatch.	Vendor to confirm
15.0	Commissioning: The Supplier's service engineer shall carry out the commissioning of the equipment at BHEL works.	Vendor to confirm
16.0	Training: The Supplier's Service Engineer shall give training in the Operation and Maintenance (mainly on electric/electronic troubleshooting) of the Machine to BHEL Staff, during commissioning.	Vendor to confirm
17.0	Performance Guarantee: The performance of the equipment shall be guaranteed for a period of 12 months from the date of commissioning at BHEL or 18 months from the date of despatch whichever is earlier.	Vendor to confirm

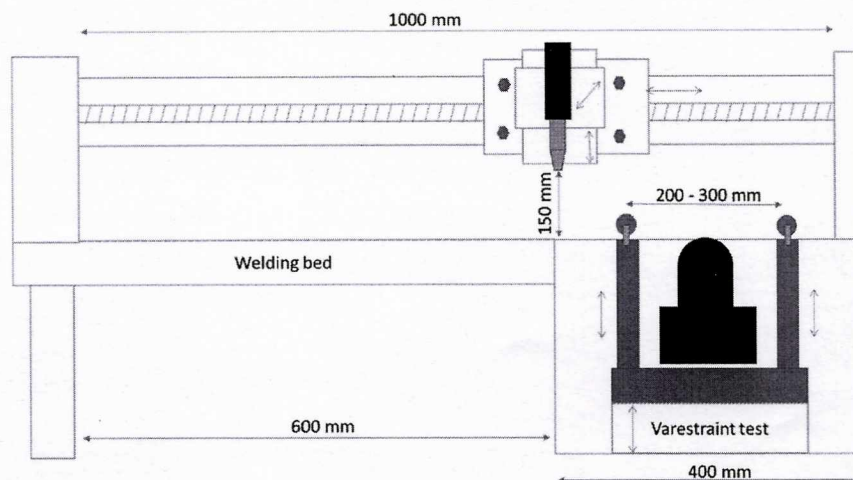

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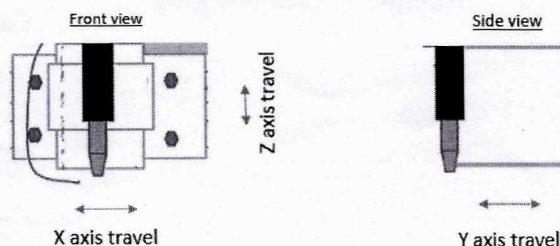
Conceptual design of the equipment



Dimension details



Welding Head Travel Axis



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