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 Web : www.bhel.com

TWO PART BID Tender to be submitted in two Parts	Enquiry Number: 2851400035	Enquiry Date: 26.06.2014	Due date for submission of quotation: 31.07.2014

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	Qty.	Delivery Required	Delivery Terms Required
10	**Submerged Arc Welding Machine - Track Mounted as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)**	**2 Nos.**	**6 Months from the date of Purchase Order.**	**F.O.R, BHEL Stores, POWER EQUIPMENT FABRICATION PLANT, BHARAT HEAVY ELECTRICALS LIMITED, Mundipar- 441804, Sakoli Taluk, Bhandara District, Maharashtra State.**

Important points to be taken care during submission of offer:-

1. **Compliance Form No. BND/IMP/02 & BND/IND/02A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.**
2. **EMD for this Tender will be Rs. 2,00,000.00/-**
3. **Delivery shall not exceed 6 months from the date of Purchase Order.**
4. **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.**
5. **The time period required for Erection & Commissioning of the item shall be 2 Weeks from the date of intimation from BHEL requesting supplier to depute Service Engineers about site readiness**
6. **All the technical documents should be submitted in duplicate.**

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 "2851400035".

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**

DGM / MM/ Capital Equipment

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

Track mounted, SAW machine

PART - A: Bidder Pre-evaluation

Section- I - Qualifying Criteria

The BIDDER has to compulsorily meet the Qualifying Criteria indicated in Section 1 to get qualified. Otherwise the technical offer will not be considered.

S no.	Requirements	Vendor's Response
1.0	Only those vendors who have manufactured, supplied and commissioned at least one **Track mounted SAW machine** with capability of 1. Effective column and boom movement shall be min. **4.0Mx4.0M** with column movement on track. 2. Produced SAW machine with power source as defined in spec. with min 1000Amps (100% duty cycle) with welding and boom movement control system 3. Used weld seam tracker with its control system 4. Used Flux flow system with recovery system in the past ten years in INDIA are only eligible to quote. Such supplied machine should at present be working satisfactorily for at least one year after its commissioning (counted backward from the date of opening of this Tender). The Vendor should get and submit along with the offer one performance certificate from a customer on the customer's letter head to whom such machine is supplied and which is meeting the above criteria. The performance certificate should be either in the format indicated at **Section 4** of Part-A of this Tender or disclose all necessary details prescribed in that format. **Those vendors/OEMs who do not fulfil the above requirements are requested not to respond to this Tender.**	
	The vendor should submit the following information where similar machine has been supplied for qualification of their offer.	

S no.	Requirements	Vendor's Response
1.1	Name and postal address of the customer or company where similar machine is installed.	
1.2	Name and designation of the contact person of the customer.	
1.3	Phone, FAX no. and email address of the contact person of the customer	
1.4	Month & Year of commissioning of the machine	
1.5	Type of Application for which the machine is supplied	
1.6	**BHEL reserves the right to verify the above information provided by vendor. In case the information provided is found to be false/ incorrect, the offer shall be rejected.**	

Section - II

The BIDDER / VENDOR are requested to provide the following information:-

S no.	Requirements	Vendor's Response
2.0	The BIDDER / VENDOR to furnish Reference List of Customers, with complete address, details of contact person, where Track mounted SAW machine have been supplied in the past.	
3.0	Specify details of Track mounted SAW machine supplied to other units of BHEL, if any (Year of commissioning, Capacity, features etc.)	
4.0	Details on SERVICE-AFTER-SALES Set-up in India including the Address of Agents / Service Centres in India.	
5.0	Any Additional data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

Section - III

The BIDDER to note:

S no.	Requirements	Vendor's Response
6.0	The BIDDER / VENDOR shall submit the offer in TWO parts. 1. Technical Offer [**with PART A & PART B**] 2. Commercial Offer and Price bid.	
7.0	The Technical Offer shall contain a comparative statement of Technical Specifications demanded by BHEL and Offer Details submitted by the Bidder	
8.0	The Technical Offer shall be supported by copies of product Catalogues, Data Sheets and technical details of Bought- Out- Items to the extent possible	
9.0	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.	
10.0	**Delivery:** Bidder shall quote the best possible delivery. However the delivery shall not exceed 6 months with an additional grace period of 2 months. 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 the date of purchase order to the date of dispatch from the vendor works.	

Section -IV

Performance Certificate

The Performance certificate should be produced on **Customer's Letter Head** and submitted along with the offer.

1.0	Machine Supplied by(Manufacturer's name)		
2.0	Make & Model number of the Machine		
3.0	Month & Year of Commissioning		
4.0	Application for which m/c is used		
5.0	**Machine Details**		
5.1	Range of movement of column and boom		
5.2	Welding head		
5.3	Make of power source		
5.4	Current range of power source		
5.5	Machine controller		
5.6	Communication system		
5.7	Weld seam tracker		
5.8	Flux flow and recovery system		
5.9	Quality of welding achieved		
6.0	Performance of the Machine (Please tick the appropriate option)	Not Satisfactory	
		Average	
		Good	
		Satisfactory	
7.0	Service after sales (Please tick the appropriate option)	Not Satisfactory	
		Average	
		Good	
		Satisfactory	
8.0	Other remarks (if any)		
Date:		Signature & Seal of the Authority Issuing the Performance Certificate	

TECHNICAL SPECIFICATION FOR SUBMERGED ARC WELDING MACHINE

R 01 - 26-05-2014

NOTE:-

1. Vendor must submit complete information against Part-A The offer meeting this clause would only be processed.
2. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.
3. The offer and all documents enclosed with offer should be in English language only.

ADDRESS OF THE SUPPLIER :	ADDRESS OF THE INDIAN AGENTS :
TELEPHONE NOS.:	TELEPHONE NOS.:
FAX NOS.:	FAX NOS.:
E-MAIL ADDRESS :	E-MAIL ADDRESS :

SCOPE: SUPPLY & COMMISSIONING OF COLUMN AND BOOM, SUBMERGED ARC WELDING MACHINE WITH SPECIFICATION AS GIVEN BELOW.

Sl. NO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED BY	OFFERED	DEVIATIONS	REMARKS
1	**PURPOSE & WORK PIECE MATERIAL**				
1.1	Purpose: (Operations/Jobs involved): Welding L-seams and C- seams of shells.	Confirm			
1.2	Submerged Arc Welding station. Shall consisting of a) Column & Boom (Mobile Base) b) Submerged arc welding head c) Power source min. 1000A (100% DUTY CYCLE) d) Flux feed & recovery system e) Control system for all the above and welding process controller. **Power sources, Welding head and process controller shall be of ESAB / Lincoln / Oerlikon / SAF Airliquide / Haane make only**	Confirm and furnish details			
1.3	Quantity of machines - 2 nos.	Confirm			
2	**Column & Boom specification (Mobile base)**				
2.1	Column & Boom base moving on four wheel Concrete / fabricated rail carriage Track width : 2000 to 2200 Travel speed(fixed) : 1000 - 2500 mm/min.	Confirm ; track width & Travel speed to be specified			

2.1.1	Rails for mounting : rails for 10 meter track to be supplied along with machine.	Vendor to confirm			
2.1.2	The track layout drawing to be supplied with in one month of placement of PO.	Vendor to confirm			
2.2	AC Motor for column and boom Unit movement on track	vendor to Confirm and specify Make and model			
2.3	Boom Horizontal Travel: 6000mm Welding speed : 100 - 1500 mm/ min , Speed accuracy +/- 5mm/min	Confirm			
2.4	AC Motor & VFD drive for boom horizontal travel (make and model)	vendor to Confirm and specify Make and model			
2.5	Rack and pinion type drive mechanism for boom horizontal movement:	vendor to Confirm			
2.6	Boom Hoisting : 6000mm Feed - 500mm/min (approx) ; Rapid : 1000 mm/min (approx)	vendor to Confirm			
2.7	AC Motor & VFD drive for boom vertical travel (make & model)	vendor to Confirm and specify Make and model			
2.8	Drive mechanism for boom vertical movement on column	vendor to specify			
2.8.1	Column rotation on base : 360 degrees	confirm			
2.8.2	Mechanism for clamping of swivelling column on base	specify			
2.9	Max load at boom end shall be 250 kgs. (at 6 meter from the center of the column) including operator	vendor to specify			
2.10	Height under boom Min :1200 mm (approx) Max :7200mm (approx)	vendor to specify			
2.11	Boom horizontal extension (from centre line of column) Min - 1000 mm (approx) Max - 7000 mm (approx)	vendor to specify			
2.12	Maximum height of column:	vendor to specify			
2.13	Deflection of the boom when it is 6000mm away from the center of the column with load at clause - 2.9	vendor to specify			

2.14	Indicator to be provided at the top of the column.The indicator lamp should glow while the column & boom is moving.	Confirm			
2.15	Controls for the column and boom should be placed along with welding controller and power source controls at an easily accessible location to the welding operator	Confirm and furnish pendant details			
2.16	The lift drive shall have reliable safety factor and shall be supplied with a security device, which regardless of boom position, immediately locks the boom to prevent unwanted descent in the event of a breakdown.	Confirm and specify			
2.17	The base shall have a two-wheel drive carriage with guide rollers to secure the positioning of the complete column and boom.	Confirm			
2.18	The vertical eccentric column is connected to the boom in a saddle using guide rollers to provide maximum load-bearing capacity with ample safety margins for reliable operation.	Confirm			
2.19	Machine shall have cable drag chains for all the movement of column, boom and base	Confirm			
2.20	The horizontal boom can be positioned both in the vertical and horizontal direction. The rack and pinion drive secures an even and stable welding speed of about 0.1– 1.2 m/min.	Confirm			
2.21	Operators seat at boom front end.	Confirm			
2.22	Column, boom and trolley controls should also be provided at suitable location that can be operated from base of the column	Confirm			
3	**SUBMERGED ARC WELDING HEAD**				
3.1	Power Source, welding head and controller shall be same manufacturer.	Confirm & specify			
3.2	Weld joint type: Butt joint / fillet	Confirm			
3.3	Front mounted 30 kg wire reel shall be suitable for 3 to 6 mm wire size	Confirm			
3.4	Motorised heavy duty slides with 300 x 300 mm traverse that secures the positioning of the head within +/- 1.5mm deviation.	Confirm & specify			
3.5	Wire feeder: motor & drive with built in gear box.(make and model)	Confirm & specify			
3.6	Heavy duty Servo Motor and drives for cross slides (make and model)	Confirm & specify			
3.7	Welding current: DC Max 1000 Amp, at 100% duty cycle	Confirm			
3.8	Weight of welding head	Specify			

3.9	Welding head to withstand temperature of welded vessel: 300 ° C (preheat at joint)	Confirm			
3.10	Clearance internal weld :	Specify			
3.11	The welding head shall be equipped with 90-degree swivelling plate for head swing when changing from circumferential to longitudinal welding.	Confirm			
3.12	Control panel shall have all Digital displays of various parameters	Confirm & specify			
3.13	The SAW welding head shall be fitted with Motor and gear Box having ratio sufficient to meet the wire feeding requirements.	Specify the ratio			
3.14	Front mounted 30 kg wire reel shall be suitable for 3 to 6 mm wire size	Confirm			
3.15	Flux Hopper - capacity 5Kg/9.5L	Confirm			
3.16	Consumable wire, feeding speed 0.3-25 m/min (depending on wire feed unit)	specify			
3.17	100 nos. hard chrome plated contact tips for 3.15-3.2 dia wire and 10 nos nozzle assy. shall be quoted as mandatory spares with each machine.	Confirm			
3.18	There shall be an electro-mechanical sensor to ensure accurate joint tracking, shall control the motorised slides of a stroke of 300 mm vertical x 300 mm Horizontal to adjust the welding torch into the correct position in the joint. The operator does not need to focus on the weld head and its position.	Confirm and Specify			
3.19	Joint/seam tracking unit shall be of ESAB / Lincoln / Oerlikon / SAF Airliquide / Haane/Dauhong make only.	Confirm and Specify			
3.20	Joint Tracker Controller and drive mechanisms synchronised with joint tracking system	Confirm and Specify			
4	**POWER SOURCE : 1000Amps DC POWER SOURCE**	confirm			
4.1	1000 Amps DC (100% duty cycle) ; 3-phase thyristorised power source suitable for Submerged Arc welding.	Confirm			
4.2	Output current : min. 1000 A at 100% duty cycle.	confirm			
4.3	20M long power source to earth cable, with heavy duty earth clamp to be supplied along with the equipment. Sufficient welding cable from Power source to welding head with all connectors.	confirm			
4.4	Output Voltage range	specify			
4.5	OCV	specify			

4.6	Mains input : 3 phase 415V+/-10%, 50Hz +/- 3% Vendor to supply	confirm			
4.7	Power source is to be placed on platform at column base.	specify			
4.8	Open Circuit Power in Watts (No Load power)	specify			
4.9	Power factor	specify			
4.10	Enclosure class -- IP23	Confirm			
5	**WELDING CONTROLLER**				
5.1	Emergency stop	confirm			
5.2	Retract wire	confirm			
5.3	Travel	confirm			
5.4	Travel, opposite direction	confirm			
5.5	Advance wire	confirm			
5.6	Change of menu	confirm			
5.7	Numerical key, number entry	confirm			
5.8	ENTER key	confirm			
5.9	SHIFT key	confirm			
5.1	Stop welding,	confirm			
5.11	Return to manual mode	confirm			
5.12	Start welding, switch to automatic mode	confirm			
5.13	Fast, wire feed or travel	confirm			
5.14	Close/open valve	confirm			
	Shall have feature for managing of data for individual welds: - Min, max and average current - Min, max and average travel speed - Min, max and average arc voltage	specify			
	All values shall be shown in digital meters				
6	**FLUX FEEDING SYSTEM and RECOVERY SYSTEM**	confirm			

6.1	Flux handling equipment shall be a powerful and reliable system including a flux recovery unit on top of the flux hopper shall be supplied with an inlet pipe to receive flux from the pressure tank with high capacity. The basic recovery unit shall work on the ejector principle using compressed air. Surplus flux shall be recovered into the flux hopper for re-use as welding progresses. A cyclone separator, fitted on top of the flux hopper shall efficiently separate the recovered flux from the dust. The dust shall then be collected in a fine filter. Flux recovered in this way shall pass through a metal sieve to retain slag before being returned to the flux hopper.	confirm			
6.2	5 kgs/9.5L litre flux hopper	confirm			
6.3	Capacity of Flux tank 75 litre/100 kgs	confirm			
6.4	For Flux, Max working temperature 150°C Short term temperature 190° Shall be tested with preheated flux to temperature max 220 °C	Specify			
6.5	Indicator for minimum flux level to be provided.	confirm			
6.6	Flux tank to be provided on base of Column and boom.	specify			
6.7	High volume cyclone filter	confirm			
6.8	Flux feeding hose	confirm			
6.9	Exhaust hose	confirm			
6.10	Flux recovery cyclone	confirm			
6.11	Suitable compressor with air dryer (refrigerant type) for drying of incoming compressed air supply to prevent flux from getting damped by taking up water from damp compressed air.	Confirm and Specify			
6.12	Weight of the flux recovery system which is mounted on the boom.	specify			
6.13	Air - consumption.	Specify			
6.14	Air supply for flux system (4- 5 kg/sq.cm)	specify			
6.15	Max temperature of flux that can be held in tank & hose	Specify			
6.16	Flux heating oven of Phoneix/Haridas make of min. 200 kgs capacity with each machine	Confirm			
7	**AMBIENT CONDITIONS & THERMAL STABILITY :**				
7.1	Total machine should work under following operating conditions. Temperature : 5 - 40 deg.C. Relative humidity : 95 % max.	Confirm			

7.2	Thermal Stability of the complete equipment keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the machine should be ensured by vendor.	Confirm			
8	**ELECTRICAL :**				
8.1	Power supply 415V ± 10%, 50HZ +/-3%, 3 Phase AC (3 wire system with out neutral) Power Supply Voltage will be provided by BHEL.	Confirm			
8.2	Tropicalization: All electrical / electronic equipment shall be tropicalized	Confirm			
8.3	Motors shall conform to IEC / Indian Standards	Confirm			
9	**SAFETY ARRANGEMENTS:**				
9.1	Equipment should have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes.Sudden falling of boom to be protected in case of failure of drive mechanism. Protective covers to be provided where ever necessary.	Confirm			
10	**ENVIRONMENTAL PERFORMANCE OF THE MACHINE :**				
10.1	Maximum noise level at normal load condition. 80 dB max.	Specify			
10.2	If any safety / environmental protection enclosure is required it should be built in the equipment by the vendor.	Confirm			
10.3	Paint of the machine should be oil resistant and should not peel off.	Confirm			
11	**SPARES**				
11.1	Itemized breakup of mechanical electrical, electronics and Pneumatic spares used on the equipment in sufficient quantity as per re-commendation of Vendor for 2 years of trouble free operation should be offered by vendor. Unit price of each item along with part numbers of spare should be offered	Confirm & specify			
11.2	All types of spares for total machine and accessories should be available for at least ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide drawings of parts / Details of spares and suppliers to enable BHEL to procure them in advance if required.	Confirm & specify			
13	**DOCUMENTATION**				

13.1	Five sets of following documents (Hard copies) in English language should be supplied along with the equipment.	Confirm			
13.2	Operating manuals & Maintenance manuals with detailed mechanical, electrical and electronics circuit drawings.	Confirm			
13.3	Complete Master list of parts used in the equipment shall be submitted by the vendor.	Confirm			
14	**INSPECTION, PROVE OUT & TRAINING**				
14.1	INSPECTION : at suppliers works by BHEL Engineers.	Confirm			
14.2	Complete equipment prove out with load shall be proved by vendor at BHEL works after complete erection & commissioning	confirm			
14.3	Training to be provided to BHEL personnel (TWO WELDERS, ONE MECHANICAL , ONE ELECTRICAL AND ONE ELECTRONICS MAINTENANCE PERSONNEL) at BHEL works	confirm			
15	**ERECTION & COMMISSIONING**				
15.1	Supplier to take full responsibility for carrying out the erection, start up, testing of machine, it's control & all types of other supplied equipment. Other requirements like crane and helping personnel shall be provided by BHEL. Details of these requirements should be informed by vendor in advance.	Confirm			
15.2	Vendor to lay the rail track for mounting the column and boom prior to erection and commissioning. Civil works of laying the track is in vendors scope.	Vendor to confirm			
15.3	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned (Machine Acceptance) shall form part of the commissioning activity.	Confirm			
16	Tests/Activities shall be carried out at supplier's works on the machine before despatch	Confirm			
16.1	Demonstration of all features of the equipment in all respects, control system & accessories as per scope of supply.	Confirm			
17	**PACKING**				
17.1	Sea worthy & rigid packing for all items of complete machine, all accessories and other supplied items to avoid any damage/loss in transit.	Confirm			
17.2	Delivery period.	Specify			

18	**GUARANTEE**				
18.1	24 months from the date of acceptance of the equipment.	Confirm			
18.2	Service beyond guarantee period.	Specify			
19	**GENERAL :**				
19.1	Total weight of the machine	Specify			
19.2	Total connected load (KVA) / Input of the Machine:	Specify			
19.3	Size of the machine	Specify			
19.4	Painting of Machine / Electrical Panels shall be Apple green, to colour code RAL 6011 (polyurethane)	Specify			