



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 76 53

Email : skaruna@bheltry.co.in

spsy@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	2601700012	15.05.2017	26.06.2017

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 should reach physically on or before 14.00 Hrs(IST) on the Date of tender opening. Tenders received after 14.00Hrs (IST) will not be considered for evaluation.

Item	Description	Quantity	(Indigenous Vendors) Matl. Will be Delivered to
10	Hot Wire Narrow Gap TIG Welding Station With Column and Boom, Job Rotator and Job Positioner / Manipulator as per the technical specification & commercial conditions applicable(To be downloaded from web site www.bhel.com or http://tenders.gov.in)	1.00 Set.	FOR, BHEL,Stores, High Pressure Boiler Plant, Trichirappali - 620014

Important points to be taken care during submission of offer

- 1) Material shall be delivered to(By Indegenous vendors): As stated above.
- 2) By Foreign Vendors: CFR Chennai Seaport / Airport
- 3) Delivery required 7 months(including PDI) from the date of purchase order.
- 4) Erection & Commissioning period required 3 Weeks from the date of intimation by BHEL to vendor for deputation of their Engineers for E&C.
- 5) EMD for this Tender will be (INR) : 2,00,000.00
- 6) Compliance Forms. TRY/IMP/01 & TRY/IND/01A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
- 7) 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.
- 8) Integrity Pact applicable. Format attached. It should be duly signed and sealed and to be sent with offer.

BHEL's General guidelines / instructions (refer MM / CE / GENL / 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 .

Tenders should be submitted before 14.00Hrs (IST) 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

X DGM Capital Equipment / MM

PART - A**Hot Wire Narrow Gap TIG Welding Station with Column & Boom, Job Rotator & Job Positioner/Manipulator****SECTION – I: Qualifying Criteria**

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

S. No.	TENDER PARTICULARS	VENDOR's RESPONSE
1..1	Only those (OEMs), who have supplied and commissioned at least ONE complete "Hot Wire Narrow Gap TIG welding system" of the offered model in the past ten years (on the date of opening of Tender). Vendor to specify.	
1.2	Only those vendors (OEMs) should quote, who have supplied and commissioned in the last 10 years (as on the original date of tender opening) at least THREE "Hot Wire Narrow Gap TIG Welding System" of the offered model. EITHER (i) In at least one country other than the country of origin to establish vendor's global business activity. OR (ii) In India; and the referred machines are presently working satisfactorily for more than one year from the date of commissioning (as on the original date of tender opening). The name and contact addresses of the customers to whom the above said machine were supplied to be furnished with details.	
1.3	Vendor has to submit at least ONE PERFORMANCE CERTIFICATE for satisfactory performance of "Hot Wire Narrow Gap TIG welding system" as referred under clause 1.2 above, for a minimum period of one year from the Date of commissioning (as on the original date of tender opening) from their customers in India or in any other country outside the country of origin, supplied and commissioned in the last 10 years.	

S. No.	TENDER PARTICULARS	VENDOR's RESPONSE
1.3	Performance certificate as Original Certificate of E-mail directly from the customer may be submitted. The original certificate may be returned after verification by BHEL, if required. For furnishing the Performance Certificate, a suggestive format is provided as an enclosure (ANNEXURE-A) .	
1.4	BHEL reserves the right to verify the information provided by the Vendor for the referred machine at their referred customer's works. It shall be the responsibility of the vendor to facilitate the visit of BHEL's team at their refereed customer works. The Travel, Board, and Lodging expenses for BHEL Personnel shall be borne by BHEL. In case the information provided by vendor is found to be false / incorrect, the offer shall be rejected. BHEL reserves the right to accept or reject the OEM'S based on the assessment of their technical and financial capability.	

SECTION – II

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

S. No.	TENDER PARTICULARS	VENDOR's RESPONSE
2.1	The BIDDER / VENDOR to furnish Reference List of Customers, with complete address, details of contact person, where "Hot Wire Narrow Gap TIG welding system" have been supplied in the past	
2.2	Specify details of "Hot Wire Narrow Gap TIG welding system" supplied to other unit of BHEL, if any (Year of commissioning with details etc).	
2.3	Details on SERVICE –AFTER-SALES Set-up in India including the Address of Agent/Service Centers In India.	
2.4	Any Additional data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

SECTION – III

The BIDDER to note:

S. No.	TENDER PARTICULARS	VENDOR's RESPONSE
3.1	The BIDDER shall submit the offer in TWO PARTS - Technical [with PART A & PART B] & Commercial and Price Bid.	
3.2	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. In case of any deviations in any of the technical specifications, such deviations should be clearly specified in the comparative statement. All systems and sub systems proposed in the solution should be detailed in description with illustrations/photographs, if required	
3.3	The BIDDER shall assure a continuous support for SPARES and SERVICE for five 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 in ORIGINAL and complete technical details / literature on the QUOTED MODELS of Hot Wire Narrow Gap TIG welding system (s).	
3.5	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 for the scope of supply.	
3.6	Earlier performance & field experience (service support) with BHEL (if any) will be a reckoning factor for the technical qualification of the OFFER. Vendor can quote of supply to BHEL units of systems of similar capability.	

ANNEXURE -A

Suggested Format of Performance Certificate

The Performance should be certified by the customer on Customer's Letter Head and submitted along with the offer.

PERFORMANCE CERTIFICATE

1.0	Name of the Machine:	
2.0	Suppliers name	
3.0	Make & Model Number of the Welding System, Powersource, Welding Head / Torch and other Major Accessories	
4.0	Month & Year of Commissioning	
5.0	Application for which the Welding System is used	
6.0	MACHINE DTAILS :	
6.1	Size of the jobs performed in the machine	
	a) Pipe thickness (minimum and maximum) in mm b) Pipe diameter (minimum and maximum) in mm c) Pipe materials	
7.0	Performance of the Machine (Please tick the appropriate option)	Satisfactory Non Satisfactory
8.0	Service after sales (Please tick the appropriate option)	Satisfactory Non Satisfactory
9.0	Other remarks (if any)	
Date :		Signature & Seal of the Authority Issuing the Performance Certificate

PART B**TECHNICAL SPECIFICATIONS FOR 'Hot Wire Narrow Gap TIG Welding Station with Column & Boom, Job Rotator and Job Positioner / Manipulator'**

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
1.0	PURPOSE & APPLICATION	
1.1	a) The system is suitable for carrying narrow gap hot wire TIG welding process on thick wall pipe to pipe butt joint. b) The welding equipment is intended to weld high wall thickness pipe to pipe & pipe to end cover joints for similar & dissimilar materials. c) The welding equipment is intended to weld high wall thickness pipe to pipe butt joint using column & boom with cross slide to hold the narrow gap welding torch and carry out the welding in down hand position by rotating the job using rotator. d) The system should offer the column and boom (4x3 m) with 360 degree rotation and can be travel over the rail track of 6 meter length. e) The welding equipment is intended to weld high thickness pipe to pipe butt joint by clamping and rotating the pipe using heavy duty rotator and welding will be performed in down hand position f) The welding rotator is equipped with bottom self-centering roller support which travels over the rail of 6 meter length and can adjust the height according to pipe diameter. g) The system also contains an addition 5 ton positioner with tilting & rotating facility to rotate the job in vertical position for buttering purpose.	

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
1.0	PURPOSE & APPLICATION	
	h) Further, the system offered shall be capable of viewing the weld droplet using camera provided with the NG torch, data acquisition system, seam tracking system, necessary electrical and mechanical spars, and consumables for trouble free operation for 5 years. i) The schematic diagram of proposed pipe to pipe joint arrangement is provided in Annexure I (at the end of specification).	
2.0	WORK PIECE / JOB DETAILS	
2.1	PIPE DIMENSIONS (GENERAL)	
	a) Range of Diameter (O.D)	350 mm to 1200 mm
	b) Range of Wall Thickness	30 mm to 200 mm
	c) Size of the pipe can be weld	600 mm to 6000 mm
	d) Pipe to pipe joint, Pipe to end cover joint	
2.2	MATERIAL SPECIFICATION	
	a) Inconel 617 to Inconel 617 (Similar joint) b) Grade P-91 to Grade P-91 (Similar joint) c) Inconel 617 to Grade P91 (Dis similar joint) d) Inconel 625 to Inconel 625 (Similar joint) e) Inconel 625 to Inconel 617 (Dissimilar joint) f) Inconel 625 to Grade P-91 (Dis similar joint) g) Inconel 617 to Alloy steel forging h) Inconel 617 to Alloy steel casting	
3.0	WELD JOINT DETAILS	
	a) Style of Edge preparation : Narrow Groove J style (single pass with waving & multi pass without weaving) as per Annexure -2 b) Pipe end condition : Machines in automatic end preparation machine c) Weld joint location : Length of straight portion on either side of weld joint ≥ 300 d) Preheating temperature : Max. 250° C for P-91 material e) Weld joint testing requirement : Radiography & UT quality f) Weld quality appraisal : As per ASME Sec V	

S. No	PARTICULARS AND BHEL SPECIFICATION		VENDOR'S OFFER
4.0	HOT WIRE NARROW GAP TIG WELDING SYSTEM WITH COLUMN BOOM & POSITIONES SCOPE OF SUPPLY		
4.1	Hot Wire TIG Welding Power source, controller and Remote pendent	1 set	
4.2	1. Welding Head & cross slides 2. Two individual set of welding torch for following thickness :- a) Conventional Torch to weld up to 40mm b) Narrow Gap welding torch with inbuilt video camera for online monitoring for weld up to 200 mm 3. Control cabinet with video monitoring system, industrial PC and data acquisition system	1 set	
		1 No	
		1No	
		1 set	
4.3	1. Column and Boom manipulator fitted with cross slide for holding the welding head. 2. The column & boom assembly should travel over the rail of 6 meter length and has 360 degree rotation facility.	1 set	
4.4	Heavy duty 20 ton rotator for holding & rotating the job, with pneumatic control rollers support from bottom, travelling over the rail track of 6 meter length.	Minimum four set	
4.5	5 Ton Positioner	1 set	
4.6	Data Recorded system	1 set	
4.7	Additional accessories, mechanical & electrical spares, interconnecting cables and hoses (min 10 m cable length)	As per required	
4.8	Pre-dispatch inspection at vendors place	NA	
	Operation & Maintenance Manuals of all components and systems – Two Copies in both hard and soft forms.	3 sets	
4.10	Commissioning of Equipment at BHEL Works and Performance Prove-out of the offered equipment by Supplier/Supplier's representative	NA	
4.11			
4.12	Guarantee	As given below	

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
5.0	WELDING POWER SOURCE AND CONTROLLERS	
5.1	Type	Micro-Processor control, Programmable, Inverter type Constant current/voltage power source
5.2	Make & Model	Vendor to specify
5.3	Switching Frequency	Vendor to specify
5.4	Welding Process & Polarity	Hot Wire TIG with DCEN
5.5	Memory	Minimum 99 or more
5.6	Equipment to have provision to transfer welding program from and to Pen drive (memory stick) through USB port	Vendor to Confirm
5.7	Equipment to have provision of sequential programming consist of different parameters (sector wise programming facility)	Vendor to specify the maximum numbers of sectors that can be programmed
5.8	For each program the following parameters should be programmable common to all passes. Vendor to specify/Confirm with details	Program Number Number of Passes At the beginning of welding /start sequence a) Pre purge time b) Up slope time c) Wire start delay d) Rotation start delay At the end of welding / stop sequence: a) Post purge time b) Down slop time c) Wire sop delay

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
5.0	WELDING POWER SOURCE AND CONTROLLERS	
5.9	Following parameter should be programmable for each pass Vendor to specify / Confirm with details	a) Pulsing On/Off b) Oscillation On/Off c) Current d) Wire feed speed e) Travel speed f) Oscillation speed g) Oscillation width h) Oscillation dwell In / Out i) Peak Current / Base Current j) Peak time / Base time k) AVC sensitivity l) AVC speed m) Synchronized travel speed with pulsing n) Synchronized wire feed with pulsing
5.10	It should be possible to manually override the following parameter during welding with in the pre-set range. Vendor to confirm	a) Current b) Travel Speed c) Wire feed speed d) ACV e) Oscillation speed f) Oscillation amplitude g) Torch cross beam self-centering
5.11	Welding Data Entry on controller / power source	Through a dust & moisture proof membrane key pad- rugged type fitted in the cabinet / Industrial Laptop with all advanced features with installed software

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
5.0	WELDING POWER SOURCE AND CONTROLLERS	
5.12	Front panel Display (In English only)	Vendor to describe
5.13	Output Current Range	5 to 600 A (D.C)
5.14	Current Duty Cycle	450 A @ 100% dc
5.15	Current Accuracy	± 1% of setting
5.16	Welding voltage range	Vendor to specify
5.17	Gas Pre-flow / Gas Post flow time	Vendor to specify
5.18	Input power	3-pH, 50/60 Hz, 415 (±10%)
5.19	Current pulse frequency	Vendor to specify
5.20	Pulse current time	Vendor to specify
5.21	Background current time	Vendor to specify
5.22	Current up slop time	Vendor to specify
5.23	Current down slop time	Vendor to specify
5.24	Wire feed Start / Stop delay	Vendor to specify
5.25	Filler wire feed speed	Vendor to specify
5.26	Filler wire speed regulation	± 1% of setting
5.27	Synchronization of function with current pulsing should be possible on selection	Wire feed Oscillation dwell AVC
5.28	Torch oscillation speed	Vendor to specify
5.29	Oscillation dwell time both right and left	Vendor to specify
5.30	AVC function	±1% regulation
5.31	Hot wire current & Duty Cycle	150 Amps with 100% dc
5.32	Power / Rated Voltage	28 kVA
5.33	Welding parameter override during welding, override to be maintained for the remaining segments.	Programmable limit (vendor to specify the range)
5.34	Arc Starting mode	Vendor to specify
5.35	Arc Sensing (Self Centering)	Vendor to specify

S. No	PARTICULARS AND BHEL SPECIFICATION		VENDOR'S OFFER
5.0	WELDING POWER SOURCE AND CONTROLLERS		
5.36	Power source with standalone trolley with secure cylinder holder	Vendor to specify	
5.37	Refrigerant type water chiller unit	Refrigerant type water chiller having minimum capacity of 0.5 T to cool the weld head and torch while welding.	
		Vendor to provide all technical details	
5.38	Gas hose with end fittings & regulator – Gas cylinder to power source	Quick release type, Length to suit long travel on cable festoon	
		Vendor to specify	
5.39	Fault Projection Sensors & Safety features	All safety alarms for stoppage of shielding gas, purging gas, stoppage of water or chiller unit, stoppage of wire feeding, arc strike failure etc.	
		Vendor to specify	
5.40	EMI Interference Suppressor	Vendor to specify the detail of EMI suppression for the equipment, especially column& boom, rotator and positioners	
5.41	Data logger connectivity to PC	Vendor to confirm, the data logger output will be displayed in a PC output assembled in control cabinet.	
5.42	Remote Control Pendant	Remote pendant with high visibility screen and programmed and trim minimum parameter of current, arc voltage, frequency, travel speed, Oscillation frequency, oscillation width, programmed start and restart button, emergency stop, welding with & without arc etc.	

S. No	PARTICULARS AND BHEL SPECIFICATION		VENDOR'S OFFER
6.0	WELDING HEAD & CROSS SLIDE		
6.1	Weld head adjust unit	Weld head adjust unit consist of vertical slide and horizontal slide with step motor, to be fitted on the Column & Boom with a set of Cross slide having AVC and OSC function for torch adjustment	
6.2	Servo Controlled Oscillation & Dwell AVC Stroke length Speed Dwell time – In & Out independently variable Servo control wire feed speed	Vendor to specify Vendor to specify Vendor to specify the actual stroke Vendor to specify in mm/min Vendor to specify in sec Vendor to specify (vendor to provide the motor and gear ratio details)	
6.3	Number of TIG torches	a) One set of conventional TIG torch to weld up to 40 mm thickness b) One set of Narrow Gap TIG torch with oscillation electrode and wire to weld up to 200 mm thickness integrated with video monitoring camera	
6.4	Visual monitoring system (Camera integrated in narrow gap torch)	a) It is the monitor system during insert the torch into the welding gap and torch positioning adjustment before and during welding. b) It should help operator for monitoring the arc status and weld pool during welding and avoid arc light harmfulness. c) It also has the feature for saving the video recording during welding.	

S. No	PARTICULARS AND BHEL SPECIFICATION		VENDOR'S OFFER
6.0	WELDING HEAD & CROSS SLIDE		
6.5	Rating of TIG torches	a) 350 Amps @ 100 Duty Cycle	
6.6	Cooling for Torch & Body	a) Water Cooled	
6.7	Servo controlled synchronized pulsing or continuous wire feed motor	Vendor to specify	
6.7	Wire Size	The equipment to be capable of welding with wire dia 0.8, 1.0 & 1.2 mm wire diameter	
		Vendor to confirm	
6.8	Welding torch adjustment (Manual)	Vertical, Horizontal and angular Torch lead / Lag angle adjustment, Torch Tilt In / Out	
		Vendor to specify	
6.9	Wire spool size and specification	Vendor to specify	
6.10	Tungsten Electrode side	Ceriated tungsten electrode for diameter up to 3.2 mm	
6.11	Cable and Hose Package	Vendor to provide the details' like length and diameter of cables	
7.0	CONTROL CABINET WITH FOLLOWING		
7.1	1. The machine should be supplied with a cabinet with Industrial PC with screen and alphanumeric keyboard for programming parameter. 2. A video control unit with one screen for one camera and separate for data acquisition system.		

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
8.0	COLUMN & BOOM MANIPULATOR FITTED WITH CROSS SLIDE FOR HOLDING TORCH	
8.1	- One set of 4 m x 3 m rigid Column & boom assemblies are used to support the welding head for providing vertical and horizontal movement. - The Column & boom assembly can able to rotate in 360 degree and manual quick lock to fix the boom in required position. - For all circular or linear motion it has motor controlled by variable frequency drive for smooth movement without much fluctuation. - The column & boom must have the base on 6 meter rail for further linear movement. - The column & boom can be integrated with power source control cabinet for auto movement and also using remote control when switch to manual. - Emergency stop buttons synchronized with the power source - Brake and drop prevention mechanism for vertical stroke - Electrical and mechanical limit switch should be provided for the power source. - Vendor has to mention the maximum load capacity on the boom. - Boom reach speed and Lift speed :- Vendor to specify - Input voltage :- Vendor to specify	
9.0	HEAVY DUTY ROTATOR FOR HOLDING & ROTATING THE JOB, WITH PNEUMATIC CONTROL ROLLERS SUPPORT	
9.1	- A heavy duty rotator / Headstock of holding and rotating maximum work piece weight of 20 Ton - The rotator can be able to hold the pipe diameter range from 300 mm to 1200 mm - The rotator can able to withstand the maximum temperature of 300 degree - Is must have the inbuilt feature of 4 jaws, individually open and close & rotating clockwise and anti-clock wire direction - Motorized supports rollers with pneumatic control with load capacity of 10t/pc - Each support rollers is adjustable both in vertical and horizontal position - Each support rollers is equipped with two self-cantering rollers that are adjusted electrically in position. - In horizontal axis the roller are travelling on 6 m rails with locking facility at the end.	

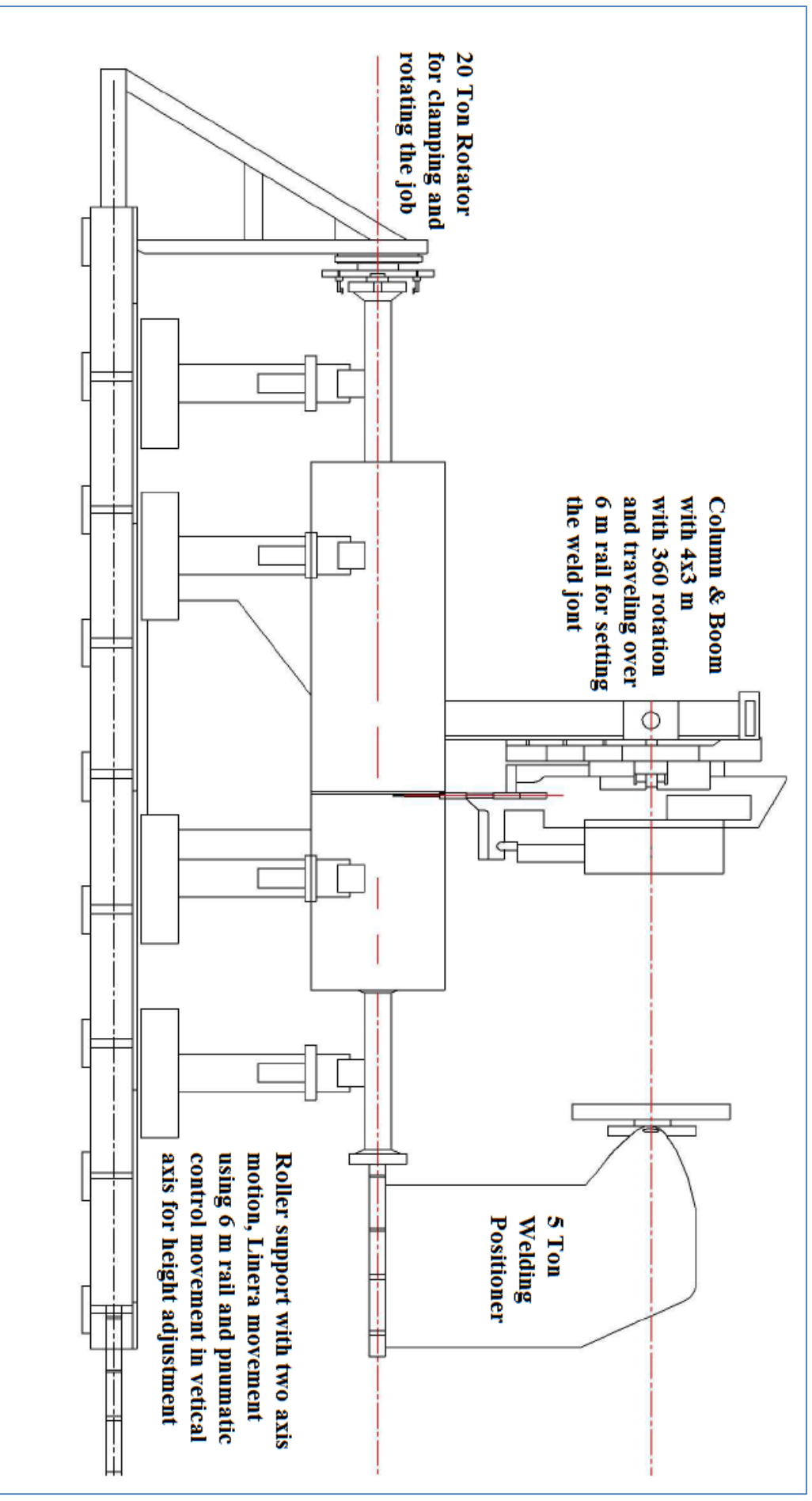
S. No	PARTICULARS AND BHEL SPECIFICATION		VENDOR'S OFFER
10.0	5 TON POSITIONER		
10.1	1. One set of 5 Ton positioner for clamping & rotating the pipe of diameter range 300 mm & above 2. The positioner has to rotate in clock wire and anti-clock wise direction controlled by both power source (automatic) & remote control (remote control) 3. The position also has the tilting facility controlled by a remote control/powersource		
11.0	DATA RECODED SYSTEM		
11.1	1. Application: - The data recorder shall be capable of measuring and recording all operating variables including voltage, current, gas flow rate etc. for the entire duration. 2. Configuration: - The recorder should have sufficient channels to record the operating variables including the pre heat temperature of the valve body and sufficient provisions to take the data away for further processing. 3. Software: - Any software requirements for addressing the data recording and processing (to analyze the data in a computer in different forms) to be supplied as part of the system. 4. Input Power: - Any software requirements for addressing the data recording and processing (to analyze the data in a computer in different forms) to be supplied as part of the system.		
12	MACHINE SPARES & CONSUMABLES		
12.1	Itemized break-up of mechanical, electrical and electronic spares used in the machine in sufficient quantity as per recommendation of Vendors for 2 years of trouble free operation on three shift continuous running basis shall be suggested by vendor. The list to include following, in addition to other recommended spares (Unit price for each item of spare shall be offered)		Vendor to confirm
12.2	Mechanical Spares : All types of pumps, valves pressure switches, rollers, transducers, flow switches, filters, seals, O rings, water cooled hose, wire feed rollers and wire pressing rollers, fasteners, sprockets, gears, cams, bearing etc if any to be provided.		Vendor to confirm
12.3	Electrical / Electronic Spares : All types of printed circuit boards, relays, contractors, Proximity switches, push buttons, semiconductors, fuses, special fuses, circuit breakers, main power switch, encoders indication lams, spares for microprocessor based system, servo motors for feed drivers, power module & control cards for drives etc.		

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
12	MACHINE SPARES & CONSUMABLES	
12.4	Welding Consumables : Nozzle, Gas cup, Gas filters, Tungsten Tip, wire liner etc. to be included	Vendor to confirm & enlist
12.5	Recommended set of spares for all attachment are to be suggested with details.	Vendor to confirm
12.6	All types of spares for total machine and accessories shall 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 drawing of parts/details of spares & suppliers to enable BHEL to procure these in advance, if required	Vendor to confirm
12.7	Vendor to confirm that complete list of spares for machine and accessories, along with item part no/specification/type model, and name and address of the spare supplier shall be furnished along with documentation to be supplied with the machine.	Vendor to confirm
13	EQUIPMENT INSPECTIN & ACCEPTANCE "AT VENDORS WORKS	
13.1	1. The welding equipment and Accessories, before dispatch the system, the complete pre-dispatch inspection will be carried out by the BHEL executive at the manufacturer's site which included carrying out all the functional test, welding trials & acceptance of the same 2. The welding trials shall be carried out on any standard austenitic stainless steel material of minimum thickness of 70 mm or above. 3. The minimum 2-3 numbers of continuous weld joint should be welded and pass the radiography quality as per ASME Sec IX. 4. All the materials and consumable needed for the trials shall be arranged by the vendors only 5. The welded samples have to be return to BHEL along with the equipment for conducting further tests.	Vendor to offer

S. No	PARTICULARS AND BHEL SPECIFICATION	VENDOR'S OFFER
14	DOCUMENTATION	
14.1	The following documents in English language should be supplied along with the machine :- Hard Copies : 3 sets :- In CD form : 1 Set 1. Operating manuals of welding power source, controller, welding head, column and boom, rotator, positioner, chilling unit, welding torch, data acquisition system etc. 2. Operation and Maintenance manual of all accessories 3. Programming manual of the machine 4. Maintenance manuals with all assembly drawing of machine assemblies. sub-assemblies with parts list 5. Electrical wiring Drawing – power & control circuits. 6. Maintenance & Interface manuals for machine control system 7. Microprocessor / complete printed circuit board schematic indication check points for electronic controls. 8. Complete list of alarm log, error code, error messages and remedies and on line fault diagnostic to be provided by the vendors, 9. Specification ratings of all bought out items 10. Catalogs, O&M manuals for all bought out items used in the machine 11. Trouble shooting chart for main and all sub-system 12. Parameter selection software, file handling and display recording. Serial and USB ports to be ensured. 13. Preventive maintenance check list for Electrical and mechanical system. 14. Complete list of spares for machine, along with item part no/ specification/type /model and make and adders of the sub-vendor.	Vendor to offer
15	MACHINE ERECTION AND COMMISSIONING	
15.1	The manufacturer shall be responsible for the installation of the machine at the site and its subsequent start up at the site.	
15.2	All handling tools and mechanical / electrical help required for the installation and commissioning shall be provided by the BHEL.	
15.3	The required material and consumable for carry out prove out trials at site will be provided by the BHEL.	

S. No	PARTICULARS AND BHEL SPECIFICATION		VENDOR'S OFFER
15	MACHINE ERECTION AND COMMISSIONING		
15.4	After successfully commissioning of the welding system prove out welding trials to be carried out considering actual application (specially material, diameter & thickness) Minimum 10 numbers of joint to be welded covering different wall thickness covering all range from 50 to 200 mm.		
15.5	The supplier shall impart training to BHEL's machine operator and maintenance crew in operation and maintenance during commissioning of the machine at BHEL works, for 5 working days. It includes Safety, Operational of the machine PC based System & Operation, Trouble – Shooting, software application, all special features of the machine, electrical/mechanical/ electronics system etc.		
15.6	The manufacturer shall be responsible for providing the technical assistance for the machine during commissioning & training through its welding expert only.		
15.7	Tools, Tackles, Test Mandrels, instruments and other necessary equipment required to carry out all above activities should be brought by the Vendor		
16	GAURANTEE:		
16.1	Performance Guarantee to be given for 12 months from the date of commissioning or 18 months from the date of dispatch whichever is earlier	Vendor to confirm	
17.0	GENERAL POINTS (to be furnished with the TECHNICAL OFFER)		
17.1	Machine Model Number and other related details		
17.2	Total connected Load (in kVA)		
17.3	Total weight of the machine & Accessories		
17.4	General Arrangement drawings		
17.5	Calibration certificates for all machines, meters and equipment		
17.6	All electronic controls for integrated controller / drives that need stabilized supply shall be provided with suitable voltage stabilizer		
17.7	Civil & foundation details if any, for the equipment shell be provided 3 months before shipment of equipment		
17.8	Sea worthy & rigid packing for all items of complete machine, control system, all accessories and other supplied items to avoid any damage / loss in transit. When machined is dispatch in container, all small loose items shall be suitably packed in boxes		

Annexure I: Schematic Layout of proposed system



Annexure II: Sketch of Weld Groove Design

