

PART A

Qualifying Criteria for the supply of

SELF-GUIDED GMAW SYSTEM FOR PANEL WELDING IN VERTICAL POSITION

SECTION – I

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.	PARTICULARS	VENDOR's RESPONSE
1.0	Number of Years of Experience of the BIDDER (Original Equipment Supplier) in the field of design, manufacture and supply of Equipment / Sub-systems proposed for the subject tender for Panel Welding Systems.	
2.0	Year of Launch of the Model/System quoted against this Enquiry	
3.0	Number of similar equipment/systems supplied till date in the Quoted Model internationally / within India. , mentioning the applications for which they are used.	
4.0	Details on International Standards followed in Design and Testing of the subject model of Welding Machines – copies of the relevant standards (IEC/EN/ISO) to be furnished with the TECHNICAL BID compulsorily.	
5.0	Comprehensive Details on Performance Testing of Equipment / Sub-Systems, proposed for the subject Panel Welding Machines, carried out at the Factory to be furnished with the TECHNICAL BID compulsorily.	
6.0	VENDOR to indicate the Country of Origin for the supply of welding machines. Machines manufactured in Countries like TAIWAN/CHINA/KOREA are not preferred.	

SECTION – II

The BIDDER has to compulsorily meet the following requirements to get qualified for submitting an offer for the 'SELF-GUIDED GMAW SYSTEM FOR PANEL WELDING IN VERTICAL POSITION'

S. No.	REQUIREMENTS	VENDOR's RESPONSE
7.0	The BIDDER / VENDOR to furnish Reference List of Customers, with complete address, details of contact person of past supply for Equipment / Sub-systems proposed for the subject tender for Panel Welding Systems.	

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S. No.	REQUIREMENTS	VENDOR's RESPONSE
8.0	Since the proposed welding system has to be established for project site applications, BIDDER/VENDOR has to furnish details on such a capability, in case the purchase order is placed on the BIDDER/VENDOR after the procedural formalities.	
9.0	Vendor has to submit at least ONE PERFORMANCE CERTIFICATE for satisfactory performance of similar welding systems proposed for the subject tender, which is working 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. Performance certificate as Original Certificate or E-mail directly from the customer may be submitted. The original certificate may be returned after verification by BHEL, if required. For obtaining the Performance Certificate, a suggestive format is provided as ANNEXURE- A .	
10.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centres in India, to be furnished compulsorily. The agents / service centers claiming to provide 'Service after sales' shall have been registered as an authorized service agency of the OEM (Original Equipment Manufacturer) on or before the date of release of this tender.	
11.0	Any Additional data to supplement the manufacturing / process establishment capability of the BIDDER for the subject equipment.	
12.0	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 referred 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 OEMs based on the assessment of their technical and financial capability.	

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SECTION – III

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

S. No.	REQUIREMENTS	VENDOR's COMPLIANCE
13.0	The BIDDER shall submit the offer in TWO PARTS - Technical [with PART A & PART B] & Commercial and Price Bid.	
14.0	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. In case of any deviations in any of the technical specifications, such deviations should be clearly specified in the comparative statement.	
15.0	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.	
16.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details / literature on the QUOTED MODELS of Panel Welding Equipment(s).	
17.0	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 for the scope of supply.	
18.0	Earlier performance & field experience (service support) with BHEL (if any) and any case of withdrawal after price-bid opening will be a reckoning factor for the technical qualification of the OFFER.	

Enclosure : ANNEXURE – A (Performance Certificate)



ANNEXURE – A

SUGGESTIVE FORMAT OF PERFORMANCE CERTIFICATE

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

1.0	Name of the Equipment/System Procured	
2.0	Supplier's Name	
3.0	Make and Model number of the Equipment	
4.0	Month & Year of Commissioning	
5.0	Application for which the machine is used	
6.0	Machine Details such as brief technical specifications	
7.0	General Performance and Availability of the Equipment / System mentioned above	Satisfactory
		Not Satisfactory
8.0	Service after Sales support given by the OEM / Indian Dealer / Service Provider	Satisfactory
		Not Satisfactory
9.0	Other Remarks (if any)	
Date:		Signature & Seal of the Authority Issuing the Performance Certificate

[Handwritten Signature]

**PART B: SPECIFICATION CUM COMPLIANCE STATEMENT FOR DESIGN & SUPPLY OF
SELF-GUIDED GMAW SYSTEM FOR TUBULAR BOILER WALL PANEL WELDING (IN VERTICAL POSITION) AT PROJECT SITES.**

NOTE:-				
1. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column, of this format shall be filled in by the BIDDER				
2. The offer and all documents enclosed with offer should be in English language only.				
3. Scope of Work : To establish mechanised welding technology for the fabrication of water wall panels in vertical position installed at power project sites and to apply GMAW automation to the welding of water wall panels with the help of self guided machine that can transverse on panel and performa requisite vertical welding.				
S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
1.0	PURPOSE			
1.1	The system can be established for welding of vertical water wall panels at project sites of Thermal Power Plants, which are conventionally fabricated using MMAW. Aim is to improve productivity of the process/operation.			
1.2	Job Description: Each panel of approximately 1.8m width will be placed in rows to form a rectangular section of 16 m × 18 m (approx.). The total height of the stacked panels will be about 60 m. The welding machine operator and the welding system can be lifted or lowered through sky climbers (will be provided by the BHEL) across these heights to weld at required point of joints. Input power supply could take through manhole doors available in different elevations. The fin thickness is 8mm. The intended joint will be between the fin to fin of the panels with square butt joints at its corners. The joint after welding should be free from any weld discontinuities to provide			
2.0	SPECIFICATION:			
2.1	SYSTEM CONFIGURATION:			
2.1.1	The carriage system shall have the following features:			
a)	Compact Oscillator Head	Vendor to Confirm		
b)	Controls	Vendor to Confirm		
c)	Mounting brackets	Vendor to Confirm		
d)	Connecting cables	Vendor to Confirm		
e)	Bracketary for horizontal and vertical adjustment	Vendor to Confirm		
f)	Standard Systemised GMAW Torch holder	Vendor to Confirm		
g)	Flexible or Rigid Tracks	Vendor to Confirm		

S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
	h) Self aligning wheel assemblies	Vendor to Confirm		
	i) Horizontal and Vertical Slide bars	Vendor to Confirm		
	2.2 System Specifications:			
2.2.1	Scope of Supply: The portable light weight carriage comprising of the compact oscillator head, controls, mounting brackets, connecting cables, railings for horizontal and vertical movement of carriages, bracketary for horizontal and vertical adjustment and standard GMAW gun holder, suitable for moving on the rigid track or flexible track having	Vendor to Confirm and Furnish Details		
2.2.2	Carriage complete with heavy-duty self-aligning wheel assemblies. The self-guided welding system will be considered for implementation in vertical position only. Welding of spiral panels (in-situ) will also be tested using this system. The diameter and the pitch sizes for the tubes to be considered for implementation are as per 2.2.3	Vendor to Confirm and Furnish Details		
2.2.3	Tube diameter Front pass (vertical & spiral panels) 38.1 mm with pitch size 51.0 mm Back pass (vertical panels): 50.8 x 10 (front) with pitch of 101.6 mm, 57.2 x 9.4 (LHS/RHS) with pitch of 125.0 mm, 44.5 x 8 (rear) with pitch of 101.6 mm. The tolerance of the clamping mechanism is to be indicated.	Vendor to Confirm and Furnish Details		
2.2.4	The dimensions are to be considered for holding on the system to the panels. The implementation plan remains the same.	Vendor to Confirm and Furnish Details		
2.2.5	Carriage should be controlled by a microprocessor based controller with low voltage (24 volt) D.C. programmable control and with closed loop track feedback for accurate speed control when running in any plane, regardless of load. The carriage should be capable of running on tempered, flexible, spring steel tracks or rigid aluminum tracks which are secured to the panel by means of suitable non detaching clamping system. Carriage should be provided with interchangeable wheel base to ensure the use on rigid as well as flexible tracks.	Vendor to Confirm and Furnish Details		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
2.2.6	The carriage should have forward/ stop/ reverse movement functions. The carriage is controlled by low voltage motor control interfacing with the forward/stop/reverse switch, high speed return and infinitely variable speed potentiometer.	Vendor to Confirm and Furnish Details		
2.2.7	Linear Speed range of carriage is in the range of 2.5 -83 cm/min. Oscillation width 2.5 to 50mm and oscillation speed is to be 50 to 1000mm/min	Vendor to Confirm and Furnish Details		
2.2.8	The carriage should incorporate the oscillator electronic controls providing independent dwells at each end and the center of stroke. Electronic Oscillator head control should provide motorized Oscillation width potentiometer. Controls to be provided include Oscillation centre line adjustment toggle switch and program memory button, Automatic wire feed start, adjustable carriage delay start, adjustable 0 to 3 seconds, dwell on/off switch, auto start switch, toggle switch to change oscillator mode from standard angular oscillation pattern to step square wave oscillation pattern. It should have program memory of at least 10 oscillation programs. The panels will be preheated to a temperature of 220 degree celcius. The system will not in direct contact with the panel surface but will be under the influence of the temperature.	Vendor to Confirm and Furnish Details		
2.2.9	The sub systems include gas mixer, cable tray handling, mounting and locking arrangement for the welding head. Provision for holding a gas torch to pre heat the panel may be provided on the carriage.	Vendor to Confirm and Furnish Details		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
2.3	Welding Power Source			
2.3.1	Inverter based programmable MIG power source of minimum rating of 300 A @ 100% duty cycle	Vendor to Confirm and Furnish Details		
2.3.2	Power source should have provisions to weld at different welding modes like synergic, Pulse, standard etc.	Vendor to Confirm and Furnish Details		
2.3.3	Accessories include heavy duty water cooled torch and cabling for connecting the power source to the system. It should also include all contact tips, isolation bush, interconnection assemblies etc required for the working of the system.No accessory for the power source will be available and all required accessories are left in the scope of the vendor	Vendor to Confirm and Furnish Details		
2.3.4	Wire feeders to handle wires of 1.2 mm and 1.6 mm standard wire spools to be made available. Wire feeders are to be made capable of being mounted on the power source during operation.	Vendor to Confirm and Furnish Details		
2.3.5	The Welding power source should be made compatible with all system accessories for operating range of values and should be integrated with all functions.	Vendor to Confirm and Furnish Details		
2.4	SPECIAL FEATURES			
2.4.1	In the carriage, Horizontal rack arm for horizontal adjustment of 305 mm and vertical rack arm for vertical adjustment of 457 mm together with torch holder for standard GMAW gun, rack box riser bracket and cable support assembly to prevent cable drag on the GMAW gun.	Vendor to Specify/confirm		
2.4.2	The root gap between the fins to be welded will be typically 3.2 mm and maximum 8 mm. The fin thickness is 8 mm. Full penetration is the requirement for the welds.	Vendor to Specify/confirm		
2.4.3	An arrangement (provision) for holding the gas torch for pre heating the panel tubes is to be made on the welding system. This distance between the tip of the torch holder and the carriage is to be at least 500 mm. The tubes in the panels will be subjected to a pre heat of around 200 degree Celsius.	Vendor to Specify/confirm		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
2.4.4	Horizontal movement (slide bars) of the track mechanism is expected to be in the range of 10 – 20 meters. Adequate number of tracks to take care of the requirements is to be provided.	Vendor to Specify/confirm		
2.4.5	When the system is used for welding on the external surface of the furnace walls, the maximum available seam for welding is in the range of 600 mm to 2500 mm. Minimum track length or modification of standard length of track length needs to be noted in this context.	Vendor to Specify/confirm		
2.4.6	Necessary cross sliders (X-Y-Z slider) for approachability of the welding torch must be provided with the system, to cover up at least 150 mm of weld seam over and above the length of the carriage track at both ends	Vendor to Specify/confirm		
2.4.7	Welding Power source is made available at locations of approximately 10 m and 90 m elevations. Hence, sufficient cabling length (at least 50 m) is to be provided for connecting the welding system to the power sources.	Vendor to Specify/confirm		
2.4.8	Gas connections will be provided to the system from the nearest platform. This will require a hose length of at least 25 m to be provided with the proposed system.	Vendor to Specify/confirm		
2.4.9	Wire feeder will be either positioned on the buck stays/platforms (for external welding) or on the sky climbers (for internal welding). Therefore wire feeding cable length is suggested to be for a length of 10 m.	Vendor to Specify/confirm		
2.4.10	Weld Quality requirements are full penetration for joints confirmed through visual and 10% DP.	Vendor to Specify/confirm		
2.4.11	Profiling of the magnets used for clamping is recommended for the specified diameter of the tube, it should not be as a flat connection. The diameter of the tubes and the pitch between the tubes in Table 1 can be taken as criteria for design of clamps.	Vendor to Specify/confirm		
2.4.12	System supplied should satisfactorily demonstrate its capability of panel welding as per BHEL acceptance norms at project site available at the time of implementation.	Vendor to Specify/confirm		
2.50	CONSTRUCTION:			
2.5.1	Vendor to furnish broad constructional details of the machine including explanatory drawings / sketches, etc.	Vendor to Furnish		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
2.5.2	Images on CD / Photographs / Literature explaining the technical features should be enclosed with the offer	Vendor to Furnish		
2.5.3	It is preferred to have individual water cooled welding machine power cables from the source of power supply till the end of the welding	Vendor to Furnish details		
2.60	OPERATOR'S PLATFORM :			
2.6.1	The system is to be operated on vertical wall panels and along with the welders will be lifted up or down using sky climbers/scaffolding arrangements provided by BHEL. The operating height of the panel is upto 60 m. Any additional requirements for provisioning the system at site at these operating conditions is to be made clear by the vendor.	Vendor to Confirm		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
2.70	OPERATION AND CONTROL SYSTEM:			
2.7.1	OPERATOR'S PANEL:			
2.7.1.1	HMI for data input and display shall be provided on the machine platform/or the machine interface at a suitable location. The location should provide the operator with an unhindered view of the sub systems and its locations. All switches on the operator's panel should be within reach of operator for convenient, efficient & safe operation. All displays/indications should also be conveniently placed accordingly. Layout showing complete details of controls should be submitted.	Vendor to confirm		
2.7.1.2	An Auxiliary Pendant Control Unit should be provided, if required, for efficient operation	Vendor to confirm		
2.7.1.3	Suitable provision should be made to protect the operator and control desk from heat radiation emanating from the pipe heating zone during bending with air quenching.	Vendor to Furnish details		
2.7.2	CONTROL SYSTEM & FEATURES :			
2.7.2.1	Integrated programmable controller and welding parameter entry and control is to be provided. It should be possible for the controller to communicate with an external programming device like PLC, Computer or an equivalent. A remote pendant operation for the operator to stand on the scaffolding so that the system can move during its operation on the panel is to be provided.	Vendor to Specify & furnish complete details		
2.7.2.2	Make and Model	Vendor to Specify		
2.7.2.3	It should be possible to program, edit different programs and store the same for retrieval	Vendor to Confirm		
2.7.2.4	Number of Programs that can be stored	Vendor to Specify		
2.7.2.5	Other parameters available on auto-control to be listed	Vendor to Specify		
2.7.2.6	Measurement & Display of the process parameters including welding voltage, current, wire speed, gas flow etc.	Vendor to Confirm and Furnish Details		
2.7.2.7	Details of other Standard features of the Control System	Vendor to Specify		
2.7.2.8	Details of other Optional Features, if any	Vendor to Specify		
2.80	ELECTRICAL SYSTEM :			

Signature

S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
2.8.1	415V (max likely fluctuation in Voltage is + 10% to -10%), 50Hz (max likely fluctuation +/-3 %) . 3 Phase AC (3 wire system with out neutral) . All cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor. Requirement of grounding/earthing with required material details is to be informed by vendor well in advance.	Vendor to Confirm		
2.8.2	Tropicalisation: All electrical / electronic equipment shall be	Vendor to Confirm		
2.8.3	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to Confirm		
2.8.4	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to Confirm		
2.8.5	All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents.	Vendor to Confirm		
2.8.6	Motors shall conform to IEC or Indian Standards	Vendor to Confirm		
2.8.7	All cables moving with traversing axes should be installed in Caterpillar/ Drag chain. Additionally, all the cable trays required for laying of cables should be included in the OFFER.	Vendor to Confirm		
2.8.8	Vendor shall ensure the proper earthing for the machine and its	Vendor to Confirm		
2.90	SAFETY FEATURES OF THE MACHINE : The Machine shall conform to following factors related to its operation : The system shall have standard in-built audio visual safety features such as warning lamps with siren, Interlocks to be provided are: The system should trip in the event off, Stoppage of shielding gas flow., Stoppage of cooling water flow, Stoppage of wire feeding, Arc start failure, Emergency Stop button.	Vendor to Confirm		
3.0	TOOLINGS : [IMPORTANT SUPPLY]			
3.1	All tooling for safe mounting, operation, troubleshooting and maintenance of the system need to be clearly indicated and supplied.	Vendor to furnish details.		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
	4.0 LEVELING & ANCHORING SYSTEM			
4.1	The vendor will be offered BHEL site on "as is where is" condition. Any specific anchoring or mounting requirements of the systems and its accessories to execute the job is to be specified by the vendor. All bolts, Slew Rings, Rails / Traversing Bases, Leveling Shoes, etc. shall be QUOTED / OFFERED, as these items are to be supplied for the Machine and Accessories	Vendor to Confirm		
	5.0 TOOLS FOR COMMISSIONING, OPERATION &			
5.1	Special Tools and Equipment required for commissioning of the machine shall be brought by the Vendor. Necessary/Common Tools like Torque Wrench, Spanners, Keys, Grease Guns, etc. for Operation and Maintenance of the machine shall be supplied, with the MAIN MACHINE & ACCESSORIES. List of such tools shall be submitted with	Vendor to furnish		
	6.0 SPARES:			
6.1	Itemized break-up of Mechanical, Hydraulic, Electrical and Electronic Spares used on the machine in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on three shifts continuous running basis, shall be OFFERED by the BIDDER. The list to include following, in addition to other recommended spares: (Unit Price of each item of spare shall be offered)	Vendor to Furnish		
	a) Mechanical & Hydraulic Spares:	Vendor to Furnish		
	b) Electrical / Electronic / CNC Spares: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Special Fuses, Operator's Panel with Display Unit, Control Card & I/O Cards for PLC, Servo Motors for Feed Drives, Power Module & Control Cards for Main Drive, as well as Feed Drives etc.	Vendor to Furnish		
6.2	Spares for Machine and Accessories should be available for atleast TEN years after supply of the machine. If the above item(s) is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required.	Vendor to Confirm		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
6.3	In case, any system or drives shall become obsolete within TEN years, the Vendor should give guidance to BHEL for the installation of the up-graded version and machine re-commissioning through tele-diagnostic system or by deputing a service engineer (at free of cost) to BHEL Works. The required upgraded version of spares will be procured by BHEL.	Vendor to Confirm		
6.4	Vendor to confirm that complete list of spares for machine and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine	Vendor to Confirm		
7.0	DOCUMENTATION :	Vendor to confirm		
7.1	Operation & Maintenance Manuals of System and its parts.			
7.2	Programming Manuals of Systems and sub systems as applicable.			
7.3	Detailed Maintenance Manual of Machine with all Drawings of Machine Assemblies / Sub-assemblies / Parts including Electrical / Pneumatic/ Hydraulic Circuit Diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also.			
7.4	Interface & Commissioning Manuals for System			
7.5	Catalogues, O&M Manuals of all Bought-Out Items including Drawings, wherever applicable.			
7.6	Complete Master List of parts used in the machine shall be submitted by the Vendor.			
7.7	Complete data with clear written Instructions (3 copies) for taking back-up and reloading of a new hard disk.			
8.0	TRAINING:			
8.1	BHEL personnel should be trained at Supplier's Works for a period of 5 Working Days in the following areas: a) Operation of the Machine and Programming b) Electrical, Electronic & Control system maintenance for Machine & other supplied equipment like Induction Heater (c) Mechanical & Hydraulic Maintenance of the Machine & other Supplied Equipment/Accessories	Vendor to confirm		

Sample

S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDERS OFFER	DEVIATIONS
8.2	Air-fare, boarding & lodging for the BHEL Staff shall be borne by BHEL.	Vendor to note		
8.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to confirm		
8.4	Vendor to quote for Training on man-day basis	Vendor to furnish		

for BHEL

S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
9.0	Site Requirements for commissioning.			
9.1	Vendor shall submit the requirements pertaining to all machine and accessories, including space requirement for input Transformer, chiller, hydraulic system & any other accessory for commissioning at BHEL site. Details, like Static/ Dynamic load, and final Layout Drawings shall be submitted by the supplier within three months after getting BHEL's approval of the preliminary layout drawing. The vendor shall also indicate detailed specifications of grounding compound and grounding procedure etc. for foundation bolts of the machine.	Vendor to Confirm		
10.0	INSTALLATION & COMMISSIONING			
10.1	Supplier shall supervise the Testing of Machine & it's Control System, Commissioning and Job Prove-Out is the responsibility of the Vendor. Service requirement like Electric Power, Air & Water shall be provided by BHEL site. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance. Vendor should note that all required arrangements cannot be had at convenient locations as site conditions are to be considered suitably for prove out.	Vendor to confirm		
10.2	Successful prove-out at BHEL site by the supplier shall be considered as part of commissioning. All tests, as mentioned under specification Clause S.No. 14 (Machine Acceptance) shall form part of the commissioning activity.	Vendor to confirm		
10.3	Spares required during commissioning should be supplied free of cost	Vendor to confirm		
10.4	Approximate duration for Commissioning should be indicated in the OFFER. Schedule of Commissioning shall be submitted after placement of BHEL Purchase Order	Vendor to confirm		
10.5	Charges, duration, terms & conditions for Erection & Commissioning should be furnished in detail separately by vendor along with OFFER. (Installation & Commissioning charges shall be furnished only in the sealed price bid)	Vendor to furnish		
11.0	OPERATING CONDITIONS:			

Signature

S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
11.1	The Machine, Induction Heating System and other Accessories and Control Systems should work trouble free and efficiently under following operating conditions : Voltage : 415 V (likely fluctuation: - 10%, +10%) Frequency : 50 Hz (likely fluctuation: +3%, - 3%) No. of Phases : 3 (3 Wire and Protective Earthing, No Neutral) Ambient Temperature : 5 to 45 degree Celsius Relative Humidity : 95 % maximum.	Vendor to Confirm		
11.2	Weather conditions are Tropical. Atmosphere is dust laden during most part of the year. Machine shall be kept in the site conditions with no external protection possible on dust and humidity. Maximum temperature variation is up to 25 deg Celsius in 24 hours. (Vendor to confirm that machine is suitable for above) .	Vendor to Confirm		
11.3	The Machine, including Attachments and Accessories, should be suitable for continuous operation to its full capacity for 24 hour a day and 7 days a week throughout. Vendor to ensure and confirm the same.	Vendor to Confirm		
12.0	PROVE-OUT OF BHEL COMPONENTS :			
12.1	For prove-out of system at BHEL site, Vendor shall carry-out a maximum of EIGHT numbers of panel to panel welding. The length of the panel (to be welded) is approximately 16 m. The exact location of the required welds may vary between a height of 14 m to 60 m and can be decided only at site location. Material for the prove-out components shall be provided by BHEL. Clarifications, if any required by Vendor, regarding accuracy requirements of the prove-out components, whether specified or not, should be discussed and cleared by Vendor during initial technical discussions. The acceptance of the system is based purely on the satisfactory performance of the system at site conditions.	Vendor to Confirm		
13.0	MACHINE ACCEPTANCE:			
13.1	Tests/Activities to be carried out at supplier's works on the machine in the presence of BHEL engineers before dispatch :			
13.1.1	Welding trials on a mock-up job at vendors works before dispatch	Vendor to Confirm		

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S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
13.1.2	All machine movements and functions will be checked.	Vendor to Confirm		
13.1.3	Travel fare, boarding & lodging for the BHEL Staff will be borne by BHEL.	Vendor to note		
13.2	Test / Activities to be carried out by BHEL / Trichy / INDIA, while commissioning the machine :			
13.2.1	Visual Inspection of the weld	Vendor to Confirm		
13.2.2	Demonstration of all Features of the Machine, Controls, & Accessories to the satisfaction of BHEL for their efficient and effective use.	Vendor to Confirm		
13.2.3	10% Dye penetrant test on welds	Vendor to Confirm		
13.2.4	Training of BHEL Machine Operators in Operation of Complete Machine & Accessories, etc. by the Supplier's Experts / Engineers during pre despatch inspection.	Vendor to Confirm		
13.2.5	Once accepted, the vendor will be directed to carry out prove out trials at site conditions. The site location will be anywhere in India where BHEL is operating its orders. The exact location will be identified as per the availability at the time of execution.	Vendor to Confirm		
14.0 PACKING:				
14.1	Sea-worthy & Rigid Packing for all items of Complete Machine, CNC / PLC System, all Accessories and other supplied items to avoid any damage/loss in transit. When machine is dispatched in containers, all small loose items shall be suitably packed in boxes	Vendor to Confirm		
15.0 GUARANTEE :				
15.1	a. TWELVE months from the date of acceptance of the machine at BHEL Works, after machine performance prove-out. b. Additional Cost, if the Guarantee is to be for TWENTY-FOUR Months, after machine performance prove-out at BHEL Works.	Vendor to confirm		

S. No.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFICATION	BIDDER'S OFFER	DEVIATIONS
16.0	GENERAL : The vendor should submit the following information:			
16.1	Machine Model	Vendor to Furnish		
16.2	Total Connected Load (in kVA):	Vendor to Furnish		
16.3	Total Weight of the Machine	Vendor to Furnish		
16.4	Weight of Heaviest Part of Machine	Vendor to Furnish		
16.5	Weight of the Heaviest Assembly/ Sub-assembly of the Machine	Vendor to Furnish		
16.6	Dimensions of Largest Part/ Sub-assembly/ Assembly of the Machine	Vendor to Furnish		
16.7	Vendor to submit, along with offer, the reference list of customers where similar machines have been supplied mentioning the customer, Machine Model, major specifications of the supplied machine, Control System, Year of Supply, etc.	Vendor to Furnish		
16.8	Detailed Catalogues , Sketch / Photographs of the Main Machine and Accessories / Attachments should be submitted with the OFFER.	Vendor to Furnish		
16.9	Hydraulic, Pneumatic & Oil - Pippings should be preferably of metallic except places where flexible pippings are essential. All the pipes required for the same shall be included in the standard scope of the machine.	Vendor to Confirm		

Ambedkar