

Retrofitting of existing Diode type SAW power source with Thyrisor type SAW power source along with replacement of Wire feed system and Wire feed controller in Auto welding machine in Bldg.I.

Part - A Pre - Qualification criteria

Sl.No	BHEL Specifications	BHEL Comments	Vendor's reply
1	Only the offer of those vendors who have successfully carried out retrofitting (or) Supply, Erection & Commissioning of minimum One SAW welding machine with ADOR / ESAB / LINCOLN make welding power source will be considered. The Vendor has to submit P.O. copies in support of the above.	Vendor to confirm & to submit the P.O. copies	
2	The Vendor shall provide the list of customers to whom such retrofitting has been carried out in the past along with the details of contact person's name, e-mail id & phone no.	Vendor to provide the details	
3	Vendor has to submit copy of 'Performance certificate' from atleast one customer as a proof for satisfactory performance of the retrofitted (or) Erection & commissioned SAW welding machine with ADOR / ESAB / LINCOLN make welding power source. The subject machine shall be retrofitted (or) Erection & commissioned in the last five years (from the date of opening of this tender) and should be working satisfactorily for more than 1 year from the date of retrofitting (or) Erection & Commissioning.	Vendor to confirm & to provide Performance certificate(s)	

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Part - B Technical Specifications

Sl.No	Description	BHEL Comments	Vendor's reply
A	Details of the existing machine:		
1	The existing SAW machine is used for heavy duty circumferential and longitudinal welding of pressure vessel, heat-exchangers and boiler drum shells and also for seam and fillet welding of heavy sections in mild steel, low alloy or stainless steel.	Vendor to note	
B	Technical specifications of the required new system:		
I	Welding Head:		
1	The welding head shall consist of welding torch, wire feed mechanism incorporating a high torque DC geared motor, wire straightening and feed rollers, welding tip vertical and horizontal adjustment mechanism and a flux hopper. The accessories like wire straightening and feed rollers, welding tip, etc., shall be supplied for each wire size mentioned in the enquiry.	Vendor to note & confirm	
2	The welding head has to be adjusted transversely and also vertically to bring the welding tip in correct position and swivel up to 45° for fillet seams in fillet position.	Vendor to note & confirm	
II	Tractor Carriage:		
1	The tractor carriage shall be fabricated from steel sheets and provided with four wheels suitably insulated and for travelling on rails.	Vendor to note & confirm	
2	The trolley is to be driven by a high torque DC geared motor with the help of chain and sprocket arrangement, giving power to the four wheels, thereby avoiding any slippage of the wheels.	Vendor to note & confirm	
3	The trolley has to support the cross/vertical beam fitted with welding head on one side and control box on the opposite side, which can be fixed on the top of the trolley. Capacity of Tractor = 60 Kgs. (max.) without wire roll.	Vendor to note & confirm	
4	A suitable clutch arrangement has to be provided for disengaging the geared motor for manual pushing. And also handles for pushing and pulling the system manually.	Vendor to note & confirm	
5	Rails made out of steel sections with suitable reinforcements, in segments of 2000 mm (in length) with suitable end couplers to build a welding track length of 6,000 mm. (To offer for rails of six segments each of 2000 mm long with couplers).	Vendor to note & confirm	
III	Controls :		
1	The controls shall be thyristorised for traction and wire feed, speed.	Vendor to note & confirm	


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2	The control panel shall be mounted opposite to the welding head and able to be fixed at a convenient angle for easy reading of parameters.	Vendor to note & confirm	
3	The control panel shall incorporate the following : * Meters for reading welding current, voltage and carriage speed. * Potentiometer for wire feed, voltage and carriage speed adjustment. * Push buttons for upward and downward inching of the electrode wire. * Switches for start and stop of welding. * Forward, off and reverse movement of the carriage. * 4W, 24V AC, LED type Spot light for monitoring the welding and indication lamp for welding 'ON'.	Vendor to confirm	
4	For the Control panel operation, 3 Phase, 415V, 50 Hz AC supply will be provided in the existing electrical machine control panel. Distribution / modification of this voltage further to the wire feed control panle and other systems supplied by Vendor like wire feed assembly etc., are in the scope of the Vendor. The cables, hoses, switchgears required for this distribution / modification are under the scope of the Vendor.	Vendor to note & confirm	
IV	Welding Process parameters:		
1	* Welding speed : 120 mm to 1800 mm/min. * Wire feed speed : 2.5 to 10 M/Min. * Wire diameter : 2.4 mm to 6.3 mm * Max. Welding Current : 1000 Amps (At 100% duty cycle) * Capacity of flux container : 5.0 Kg. (min.)	Vendor to note & confirm	
V	Power Source:		
1	* Welding Current Range : 150 to 1200 Amps. * Duty Cycle : Continuous, even for 1200 Amps. * Open Circuit Voltage : 72 Volts (DC) * Welding Voltage : 20 to 46 Volts DC * Characteristics : Full wave constant potential * Input Power Supply : 415 +/- 10% V, 50 Hz, 3-phase AC, 3 - wire system. * Insulation : Class H * Design Feature : Fully thyristorised with six SCRs.	Vendor to note & confirm	

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2	The powersource shall be provided with : a) 100 % copper or superior quality aluminium windings. b) Ammeter and Voltmeter (either analog or digital). c) Provisions for connecting the Hand-held remote control unit to vary the welding current & voltage. d) Two numbers of lifting hook for EOT crane. * The control, welding and earth cables connecting the power source to the welding unit shall have a length of twenty metres.	Vendor to note & confirm	
VI	General:		
1	The Vendor shall visit BHEL - Trichy and study the machine before giving the offer.	Vendor to note	
2	The offer shall meet all the requirements mentioned in the specifications. A point to point confirmation has to be given along with the offer.	Vendor to note	
3	The scope also includes erection, commissioning and trial prove out of the supplied system at BHEL - Trichy.	Vendor to note & confirm	
4	Consumables like contact tip/nozzles for 2.4mm, 3.15mm, 4.0mm and 4.8mm dia. wires shall be quoted separately. Feed and straightening rollers suitable for the above said dia wires also may be quoted.	Vendor to quote	
5	Electrical and Mechanical spares for two years of trouble free operation shall be separately quoted.	Vendor to quote	
6	The equipment shall be offered for inspection and trials before dispatch.	Vendor to confirm	
7	The supplier shall depute his representative for the commissioning of the equipment at BHEL works and for further job trials. The commissioning activity involves conducting successful welding trials on a 400mm dia. Pipe cir seam joint by using the 4.8mm wire. The required 4.8mm wire will be arranged by BHEL.	Vendor to confirm	
8	The guarantee shall be for a minimum period of twelve months from the date of commissioning of the equipment (Or) 18 months from the date of supply of items at BHEL - Trichy whichever is earlier.	Vendor to confirm	
9	Three sets of instruction and maintenance manual containing all the detailed electrical and electronic circuit diagrams shall be given in case of ordering.	Vendor to confirm	
10	The Power source & Welding head (consisting of wire feed assembly & wire feed controller) shall be any one of the following makes: ESAB, LINCOLN, ADOR.	Vendor to note & give Make and Model	
11	Other than the welding cables, power & control cables shall be routed through high quality flexible conduit to provide mechanical protection.	Vendor to confirm	
12	The power & control cables shall be of PVC insulated, flexible multistrand copper cables and they shall be from reputed manufacturers like Havels, etc.	Vendor to confirm	


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13	The Vendor to clearly mention the Make & Model of the SAW power source, Wire feed motor, Wire feed controller and other major components in the offer. Also, should submit the technical catalogue of the offered items along with the offer.	Vendor to confirm	
14	Though the items to be supplied and Scope of work are given, still any other item to be supplied, to be erected & commissioned for successful completion of the work shall be taken care by the Vendor.	Vendor to note & confirm	

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