

	PLANT PURCHASE SPECIFICATION	NO.: BHEL/FP/TS/19 REV NO : 00 REV .DT : Sheet 1 of 4
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	DEPARTMENT: PRODUCTION	

SECTION-IV

TECHNICAL SPECIFICATIONS FOR THYRISTORISED WELDING RECTIFIER [600 AMPS.]

SL. NO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED/TO BE CONFIRMED BY VENDOR	DEVIATIONS, IF ANY
1.0	REQUIREMENT		
1.1	Thyristorised welding rectifier sets are for arc welding of for Radiographic Quality Welds like Butt Joints, Fillet Welds, and Double Groove Welds coming in High Pressure Vessels using f 2.5 mm to f 6.3 mm basic coated stick electrodes. The welding sets are to be suitable for production high quality welds with similar / dissimilar metals & alloys . The welding sets are to be designed to with stand heavy production schedule in industrial environment for operation at rated capacity with least maintenance.	vendor to confirm	
1.2	The welding equipment is to be housed in easily removal sturdy sheet metal cover to form a compact unit of streamlined design with least number of projections. compete equipment is to be mounted on rubber wheels with swiveling base for easy mobility within the shop floor.	vendor to confirm	
1.3	The welding set consisting of fully copper wound transformer, thyristor rectifier unit, protection devices, control system etc. the welding rectifier unit is to be equipped with components of latest design & provide with controls for smooth and steeples/continuous variation of welding current. the welding set is to meet all the requirement of IS:4559:1993.Welding set is to be provided with protection devices against overload, transient surge voltage , inadequate flow of air & failure of cooling fan etc.	vendor to confirm	
1.4	The welding set is to be supplied complete with on /off switch, plug & sockets for outgoing cable, terminal & cable for earthing terminal, welding current regulation device and other standard accessories required for trouble free service. A switch is to be provided for making the set suitable for air/ carbon arc gouging.	vendor to confirm	
1.5	The welding set is also to be suitable for parallel operation for higher welding current	vendor to confirm	
2.0	SPECIFICATION		
2.1	Input supply voltage 415V +/- 10% AC , 3 phase , 50 Hz	vendor to specify	
2.2	Open circuit voltage not less than 60 volts DC	vendor to specify	
2.3	Welding Current Range 10 Amps to 600 Amps	vendor to specify	



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2.4	Maximum continuous welding current 470 Amps at 100 % duty cycle	vendor to specify	
2.5	Maximum continuous welding current 600 Amps at 60 % duty cycle	vendor to specify	
2.6	Insulation Class: H	vendor to confirm	
2.7	Type of cooling: forced air	vendor to confirm	
2.8	Current regulation Type: Stepless (With Fully Thyristorised Features)	vendor to confirm	
2.9	Protection: IP 23	vendor to confirm	
2.10	Factory Installed Ammeter & Voltmeter on the front panel with easy removal and replacement (i.e., without lifting the top cover of the Welding Power source) for periodic instrument calibration		
2.11	Working condition: temp. variation 3 to 50 degree C	vendor of confirm	
2.12	90-95% relative humidity	vendor of confirm	
2.13	Dusty fabrication shop	vendor of confirm	
3.0	The machine should be completed with following accessories so that received in ready to use condition		
3.1	Welding Power source with Transport Trolley and Wheels as per above specification	vendor of confirm	
3.2	Control Unit Integrated with Power source (for Hot Start & Arc Dynamics Control)	vendor of confirm	
3.3	Electrode holder 600 Amps.	vendor of confirm	
3.4	Plug for welding cable	vendor of confirm	
3.5	Earthing copper cable (5 meter) with earth clamp	vendor of confirm	
3.6	Input power cable with plug (10 meter)	vendor of confirm	
3.7	Electrode holder 600 Amps.	vendor of confirm	
3.8	Welding cable (20 meter)	vendor of confirm	
3.9	Welding Helmet	vendor of confirm	
3.10	Chip hammer	vendor of confirm	
3.11	Hand Operated Remote Control Unit for Current Variation	vendor of confirm	
4.0	Details to be furnished by the vendor		
4.1	Relevant technical/ descriptive catalogues	vendor to submit	
4.2	List of standard accessories	vendor to submit	
4.3	List of optional accessories	vendor to submit	



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4.4	Electrical power requirement	vender to submit	
4.5	Primary current at maximum output	vender to specify	
4.6	Primary current at rated output	vender to specify	
4.7	Insulation class	vender to specify	
4.8	Cooling media	vender to specify	
4.9	Range of open circuit voltage	vender to specify	
4.10	Power factor of the equipment should not be less then 0.9.Vendor to arrange all necessary equipment for measurement at this time of inspection	vender to specify	
4.11	Output current at 60% duty cyle	vender to specify	
4.12	Output current at 100% duty cycle	vender to specify	
4.13	KVA rating at 60 % duty cycle	vender to specify	
4.14	KVA rating at 100 % duty cycle	vender to specify	
4.15	Method of setting welding current	vender to specify	
4.16	Details of various protection/safety devices incorporated	vender to specify	
4.17	Recommended cable size for power supply	vender to specify	
4.18	Overall dimension & weight	vender to specify	
4.19	Details of tests carried out	vender to specify	
4.20	Capacitor for factor improvement if applicable	vender to specify	
4.21	Recommended spares for 2 years normal working on three shift basis with item wise break-up of prices	vender to submit	
5.0	GENERAL		
5.1	Three sets of operation maintainance manuals should be provided with supply consisting of the following	vendor of confirm	
a	Operation and maintainance instruction and do's/don'ts	vendor of confirm	
b	Electrode and electric circuit diagram	vendor of confirm	
c	PCB circuit diagram upto component label	vendor of confirm	
d	Trouble shooting and diognostic system	vendor of confirm	
e	list of spare with identification no.	vendor of confirm	
5.2	Price of the each major items must be furnished in the offer	vendor of confirm	
5.3	The entire equipment must be complete inspected & tested at supplier works in full capacity by the representative of BHEL. Welding Trials are to be taken on 20 mm thick Plate Butt Joints with □ 2.5, 3.15, 4.0 and 5.0 mm SMAW Electrodes of Class E 7018-1 and E-9018-B3.	vendor of confirm	



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5.4	The equipment should be commissioned by the supplier at BHEL works Free of cost. The Supplier shall give training in the Operation and Maintenance (mainly on electric/electronic troubleshooting) of the Machine for BHEL Staff, after the successful commissioning of the Welding Machines	vendor of confirm	
6.0	GUARANTEE		
6.1	The equipment is to be guaranteed in respect of material , construction & operation & against any manufacturing defect for a period of 24 months from the date of commissioning. Any parts of units found defective have to be replaced free of cost.	vendor of confirm	
7.0	QUALIFYING CONDITION		
7.1	A. Only those vendors , who have supplied & commissioned at least 10 numbers Thyristorised welding machine of same or higher capacity for similar applications in past 5 years to any PSU or Govt. organization and such machine is presently working satisfactorily (as on date of opening of tender) should quote. Vendor to submit performance certificates from the customer whom said machine is supplied for the satisfactory performance of the machines after 1 year of commissioning of the machine & the machine is presently working satisfactorily. B. Manufacturer should have min. 10 year exp. in the same field. Relevant proof is to be submitted	vender to submit	
7.2	Name of the customer/company where similar machine is installed	vender to submit	
7.3	Complete postal add. Of the customer	vender to submit	
7.4	Month & year of commissioning	vender to submit	
7.5	Name & designation of the contact person of the customer	vender to submit	
7.6	Phone , fax no. & email add. Of the contact person of the customer	vender to submit	
8.0	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.	vendor to confirm	