

 BHARAT HEAVY ELECTRICAL LIMITED <u>UNIT'S ADDRESS:</u> <u>UNIT'S PHONE NOS.</u> <u>CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL</u> <u>(FROM PURCHASE DEP'T.)</u>	Enquiry No. : Due Date : Supplier Qtn. No.: Date :
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SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR PORTABLE THYRISTERISED AIR PLASMA CUTTING MACHINE

NOTE:-

- Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.**
- 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 PORTABLE THYRISTERISED AIR PLASMA CUTTING MACHINE (MANUAL OPERATED)

Sl. No	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED BY	OFFERED	DEVIATIONS	REMARKS
1.0	Purpose / Operation				
1.1	For manual Plasma cutting of Ni-hard casting liners to required shape during assembly with mating components (Separator bodies of Pulverisers).	Vendor to Confirm			
1.2	Should also be suitable for manual plasma cutting of Carbon steels, Stainless steels and non-ferrous materials like Brass, Monel and Cupro-Nickel.	Vendor to Confirm			
1.3	Material details of Ni-Hard Steel (Liners)	Nickle-Crome Steel of Hardness 600-650 BHN			

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2.0	SPECIFICATION OF THE EQUIPMENT / TECHNICAL DATA :				
2.1	Type of equipment / machine : Portable, Thyristorised Air Plasma cutting machine.	Vendor to Confirm			
2.1.1	Recommended Capacity for Clean/smooth cut for Ni-Hard metal mentioned at Cl. No. 1.1	35 mm			
2.1.2	Recommended Capacity for Clean/smooth cut for other metals mentioned at Cl. No. 1.2	Vendor to specify			
2.1.3	Severance cut for Ni-Hard metal mentioned at Cl. No. 1.1	40 mm			
2.1.4	Severance cut for other metals mentioned at Cl. No. 1.2	Vendor to specify			
2.1.5	Minimum Cutting speed for Ni-hard metal for clean cut	Vendor to specify			
2.2	Power Source :				
2.2.1	Make & model of power source	Vendor to specify.			
2.2.2	Power source shall be Microprocessor / Microcontroller based	Vendor to Confirm			
2.2.3	Transformer should be of fully Copper Winded.	Vendor to Confirm			
2.2.4	The equipment should be mounted / inbuilt with trolley and movable easily to any where in the shop floor.	Vendor to Confirm			
2.2.5	Input Voltage: 415 V \pm 10%: 3Ph - 50 Hz	Vendor to Confirm			
2.2.6	Output Voltage	Vendor to specify.			
2.2.7	Duty cycle @60%, 110A	Vendor to Confirm			
2.2.8	Maximum OCV Should be greater than 200 Volts	Vendor to Confirm			
2.2.9	Output Current control Range should not be less than 100 Amps	Vendor to confirm & specify the output current range.			
2.2.10	Power Source Cooling	Forced Air			
2.2.11	Recommended Torch Cooling	Air cooling			
2.2.12	Air pressure for Power Source	5-6 bar			
2.2.13	Max. power (out put / Capacity of the Generator)	Vendor to specify the output power.			
2.3	PLASMA CUTTING TORCH:				
2.3.1	The torch should be capable for cutting 50 mm thick materail and should withstand more than 150 Amps Capacity.	Vendor to confirm & specify the Make, Model of the torch and Ampearage withstanding capacity.			
2.3.2	The torch design should combine with performance, durability, comfort & safety	Vendor to confirm			

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2.3.3	Co-axial -assist technology for longer consumable life and faster cutting should be available	Vendor to confirm			
2.3.4	Post flow cooling facility for the torch to be provided	Vendor to confirm			
2.3.5	The torch shall not get short-circuited even when kept on the work piece.	Vendor to confirm			
2.3.6	The torch should be of robust design while touching the work piece and dragging it with full rated current the torch should not be damaged	Vendor to confirm			
2.3.7	The torch nozzle shield shall be so designed that it will protect the nozzle from molten metal spray and double arcing.	Vendor to confirm			
2.3.8	Torch should have proper male & female connectors & easily detachable.	Vendor to confirm			
2.4	SHIELD GAS				
2.4.1	The machine shall be capable of operation with normal air supply available in industrial atmosphere ie., @ 5 Bar line pressure.	Vendor to confirm			
2.4.2	Torch heat Shall not be more than 40°C after using 1Hr Continuously.	Vendor to confirm			
2.5	FEATURES OF THE EQUIPMENT :				
2.5.1	Continuous cutting current adjustment / preselection (Output control) and display with Digital panel.	Vendor to Confirm			
2.5.2	Air pressure range for all cutting modes	Vendor to Confirm			
2.5.3	Air pressure adjustment knob with display on the equipment	Vendor to Confirm			
2.5.4	Provision for Auto Pilot Restart feature (Pilot arc control mode)	Vendor to Confirm			
2.5.5	Power ON / OFF indicator	Vendor to Confirm			
2.5.6	Cutting possibility with current below 50 amps	Vendor to Confirm			
2.5.7	Cutting parameters stability within $\pm 10\%$ main voltage fluctuations	Vendor to Confirm			
2.5.8	There shall be safety sensor circuit/alarum to turn off power system when air pressure is low.	Vendor to Confirm			
2.6	ACCESSORIES :				
2.6.1	Air cooled air plasma cutting manual torch with minimum 5 meters of cable hose & operating switch - 2 No's.	Vendor to Confirm			
2.6.2	Hose pipe of minimum 10 meters with end couplings.	Vendor to Confirm			
2.6.3	Earthing cable with clamp - 5 M long	Vendor to Confirm			
3.0	Electrical :				
3.1	415V(fluctuation + 10% / -10%), 50HZ (fluctuation+/-3 Hz), 3 Phase AC (3 wire system with out neutral) Power Supply Source will be provided by BHEL.	Vendor to Confirm			

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3.2	Cables / wiring and other electrical material shall meet relevant BIS standards	Vendor to specify & shall be of reputed make			
3.3	Insulation class	Class - H			
3.4	AMBIENT CONDITIONS & THERMAL STABILITY :				
3.4.1	Total machine should work trouble free and efficiently under following operating conditions. Power Supply: Voltage: 415 V \pm 10% Frequency: 50Hz \pm 3% No. of phases = 3 ; Ambient Conditions: Temperature = 5 to 45 degree Celsius Relative Humidity = 95% max. (Confirm that machine is suitable for above and details of provisions on the machine for the same should be furnished)	Vendor to confirm			
3.5	Tropicalisation: All electrical / electronic parts shall be tropicalized	Vendor to Confirm			
4.0	SAFETY ARRANGEMENTS:				
4.1	Equipment should have adequate and reliable safety interlocks / devices to avoid damage to the equipment, work piece and the operator due to the malfunctioning or mistakes by warning indications.	Details to be furnished			
4.2	Any damage in the torch, an error should be indicated on the power source an pilot arc should not occur	Vendor to confirm and in-built the Display error codes in the power source			
4.3	Power source design and construction should be in conformance to International safety norms. Vendor to specify the standard.	Vendor to confirm & specify the standard.			
4.4	If any safety / environmental protection enclosure is required it should be built in the equipment by the vendor.	IP 23/IP23S/Any other Std. (Vendor to confirm & specify)			
4.5	Installation of the plasma shall be According to IEC/CE/Any other Standard	Vendor to submit the Certification.			
5.0	SPARES & Consumables:				
5.1	Vendor should include and offer the spares for both power source & torch (mechanical, electrical and electronic) used on the equipment in sufficient quantity for the Guaranty / warranty period for trouble free operation.	Vendor to Confirm and specify the list of spares			

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5.1.1	The list to "include the following in addition" to recommended spares (Unit price of each item of spare should be offered) 1) 1 Set of all Control Transformers & Contactors. 2) One set of Electronic devices / PCB's of each type used in the equipment. 3) Torch Head - 2 No's 4) Central Connectors - 2 No's. 5) External Nozzles - 5 No's 6) Contact Cutting Nozzles - 10 No's 7) Air Diffusers - 10 No's.	Vendor to confirm			
5.2	Hand tool kit (to open the power source).	Vendor to Confirm			
5.3	Nozzles/Tips in sufficient quantity to meet Cl. No. 2.1.1 fro 2 years trouble free operation. List with Ordering Information to be provided.	100 Nos.			
5.4	Electrodes in sufficient quantity to meet Cl. No. 2.1.1 fro 2 years trouble free operation. List with Ordering Information to be provided.	200 Nos.			
5.5	Vendor to Quote for any other Consumables for cutting materials of length about 4000 meters in two year.	Vendor to Confirm & specify the list of conumables.			
5.6	All types of spares of the equipment should be available for at least ten years after supply of the equipment. If equipment 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 & suppliers to enable BHEL to procure these in advance, if required.	Vendor to Confirm			
6.0	DOCUMENTATION : Five sets of following documents (Hard copies) in English language should be supplied along with the equipment				
6.1	Operating manuals of Equipment	Vendor to Confirm			
6.2	Detailed Maintenance manual of the equipment with all drawings of assemblies/sub-assemblies/parts including Electrical / Electronic circuit diagrams & wiring diagrams.	Vendor to Confirm			
6.3	Exploded sketch of the torch showing all the parts of the torch, identifying each component with part numbers to be provided.	Vendor to Confirm			
6.4	Complete Master List of parts and spares used in the machine (with identifications, make, model, rating , price and name & address of suppliers of all items) shall be submitted by the vendor.	Vendor to Confirm			

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6.5	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.	Vendor to Confirm			
7.0	COMMISSIONING				
7.1	Supplier to take full responsibility for carrying out the start up, testing of the equipment & it's controls etc.	Vendor to Confirm			
7.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at clause 8 (Equipment Acceptance) shall form part of the commissioning activity.	Vendor to Confirm			
7.3	Training is part of Commissioning, training of Operators & Supervisors / Engineers in full operation, Maintenance and Safety of the equipment to be given by the vendor.	Vendor to Confirm			
7.4	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to Confirm			
8.0	Equipment ACCEPTANCE: (Tests/Activities should be Performed by Vendor)				
8.1	Tests/Activities should be carried out at supplier's works on the equipment before dispatch in presence of BHEL Personal:				
8.2	Demonstration of all features of the equipment, control system & accessories for efficient and effective use of the equipment	Vendor to Confirm			
8.3	Prove out / Testing of the equipment as per IS 13263:1992.	Vendor to Confirm			
8.4	Full load test to demonstrate the maximum capacity of the equipment.	Vendor to Confirm and shall give the check list			
8.5	Prove out at Supplier's works to cut Stainless steel / MS of offered capacities. The cutting nozzles to cut 2 meters. Material for trail cutting shall be supplied by the vendor.	Vendor to Confirm			
9.0	Tests/Activities should be carried out at BHEL works while commissioning the equipment :				
9.1	Demonstration of all features of the equipment, control system & accessories to the satisfaction of BHEL for efficient and effective use of the equipment.	Vendor to Confirm			
9.2	Prove out / Testing of the equipment as per IS 13263:1992.	Vendor to Confirm			
9.3	Full load test to demonstrate the maximum capacity of the equipment.	Vendor to Confirm			

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9.4	Supplier's engineer shall demonstrate for 2 to 3 components of Ni-hard liners and Stainless steel of offered capacities to cut 2 meters of each type of material by BHEL operator. BHEL will arrange the active jobs / Material for trail purpose.	Vendor to Confirm			
10.0	Packing				
10.1	Sea worthy & rigid packing for all items of complete machine, all accessories and other supplied items to avoid any damage/loss in transit (Wooden packing is preferred).	Vendor to Confirm			
11.0	GUARANTEE :				
11.1	As per BHEL Standard terms & conditions.	Vendor to Confirm			
11.2	Service beyond guarantee period.	Vendor to specify			
11.3	Supplier shall be responsible for after sales service of the equipment.	Vendor to Confirm			
12.0	GENERAL :				
12.1	Equipment Model No.	Vendor to specify			
12.2	Size of the equipment (Length, Width & Height)	Vendor to specify			
12.4	Total weight of the equipment (should be less than 200 Kg's)	Vendor to specify			
12.5	Detailed catalogues should be submitted with the offer.	Vendor to Confirm			
12.6	Vendors shall submit his latest design on thyrister base. In case of any variance with the present Spec., BHEL reserves the right to study & make minor changes.	Vendor to Confirm			
12.7	Vendor to submit , along with offer, the reference list of customers where similar or higher capacity Portable Thyristered Air Plasma Cutting Machine's have been supplied mentioning broad specifications of the supplied equipment (i.e. Model, Cutting range/capacity etc.).	Vendor to Confirm			
12.8	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to note			

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12.9	Summation of Scope of Supply: 1) Power Source. 2) Air cooled, manual plasma cutting torch with minimum 5 meters of cable hose & operating switches - 2 No's. 3) Hose pipe of minimum 10 meters with end couplings - 1 No's. 4) Earthing cable with clamp - 5 M long 5) 1 Set of all Control Transformers & Contactors. 6) One set of Electronic devices / PCBs of each type used in the equipment. 7) Torch Head - 2 No's. 8) Central Connectors - 2 No's. 9) External Nozzles - 5 No's. 10) Contact Cutting Nozzle - 10 No's. 11) Air Diffusers - 10 No's. 12) Hand tool kit (to open the power source). 13) Nozzles / Tips - 100 No's. 14) Electrodes - 200 No's. 15) Other Consumables for cutting materials (Mentioned at Cl. nos. 1.1 & 1.2) of length about 4000 meters.	Vendor to Note & Confirm			
13.0	Delivery	Vendor to specify			