

<b><u>BHARAT HEAVY ELECTRICAL LIMITED RAMACHANDRAPURAM</u></b>			<b>Enquiry No. :</b>	
<b>UNIT'S ADDRESS: HYDERABAD</b>			<b>Due Date :</b>	
<b>UNIT'S PHONE NOS.:+91 040 23182250, 23020173</b>			<b>Supplier Qtn. No.:</b>	
<b>CONTACT PERSON'S DESIGN :SR. MANAGER/ PUR-CG e-e-mail : burre@bhelhyd.co.in</b>			<b>Date :</b>	
<b><u>SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR CNC FLAME AND PLASMA CUTTING MACHINE</u></b> <b><u>(ONE NUMBER)</u></b>				
<b>NOTE:-</b>				
<b>1. Vendor must submit complete information against clause no. 19 . The offer meeting this clause would only be processed.</b>				
<b>2. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.</b>				
<b>3. The offer and all documents enclosed with offer should be in English language only.</b>				
<b>ADDRESS OF THE SUPPLIER :</b>			<b>ADDRESS OF THE INDIAN AGENTS :</b>	
<b>TELEPHONE NOS.:</b>			<b>TELEPHONE NOS.:</b>	
<b>FAX NOS.:</b>			<b>FAX NOS.:</b>	
<b>E-MAIL ADDRESS :</b>			<b>E-MAIL ADDRESS :</b>	
<b>SCOPE: SUPPLY &amp; COMMISSIONING OF CNC FLAME AND PLASMA CUTTING MACHINE .</b>				

SI. NO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED	OFFERED	DEVIATIONS	REMARKS
1.0	<b>TYPE OF MACHINE : GANTRY TYPE CNC OXY-FUEL FLAME AND PLASMA CUTTING.</b>	vendor to confirm			
1.1	<b>No. of Gantries (Work stations) with torch carriages: one</b>	vendor to confirm			
1.2	<b>Total No. of motorised Torch carriages including plasma : Three</b>	vendor to confirm			
1.3	No.of Carriages mounted with oxy-Fuel (acetylene / LPG) torches :TWO Ignition operation: Manual and Auto Maximum torch vertical travaverse:350mm	vendor to confirm			
1.4	Ignition type and method :	vendor to specify.			
1.5	Drive mechanism for vertical traverse of carriages	vendor to specify.			
1.6	No.of torch carriages to be supplied with initial height sensing, auto height sensing mechanism (arc voltage) & anti collision device for mounting plasma torch: <b>ONE</b>	vendor to specify			
1.7	Plasma cutting Torch to be placed to one side of Oxy Fuel gas cutting torches.	Vendor to offer / confirm			
1.8	Drag chain OR catterpillar - hose / cable carrier assembly.	vendor to specify			
1.9	Robust rail construction to withstand operation of cutting feeds / rapid traverse modes. Positional accuracy, cutting tolerance and repeatability shall be maintained.	vendor to specify			
1.10	<b>powder marking / arc writing function.</b>	vendor to specify			
2.0	<b>MACHINE CAPACITY</b>				

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2.1	Machine transverse working width : To facilitate cutting width of 3000 mm	vendor to confirm			
2.2	Effective cutting width of any one torch: 3000 mm	vendor to confirm			
2.3	Longitudinal axis working track length: for cutting effectively 20000 mm	vendor to confirm and specify track length			
2.4	Material thickness to be cut CS : 12mm to 300 mm. Stainless Steel and Non Ferrous : 3 - 80 mm	vendor to confirm			
2.5	Profile cutting speed : 25 - 5000 mm / min.	vendor to confirm and specify speed			
2.6	Rapid feed rate : 0 - 10000 mm / min.	vendor to confirm and specify speed			
<b>3.0</b>	<b>CNC Control</b>				
3.1	Windows based latest CNC with Ethernet facility dedicated proven system with complete hardware and software for <b>flame and plasma</b> cutting application. Software shall include NC system software, System recovery software etc. MAKE : FANUC/SIEMENS/BURNBY/ PILOT/HYPERTHERME/ESAB	vendor to specify			
3.2	Language of communication : <b>English</b>	vendor to confirm			
3.3	Memory : 256MB RAM or higher	vendor to specify			
3.4	USB Port and ethernet connectivity	vendor to specify			
3.5	10.4" TFT Color LCD Display or higher.	vendor to specify			
3.6	Hard disc : Min 5 GB.	vendor to confirm			

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3.7	Real time/online Diagnostics (input / output Status of PLC)	vendor to confirm			
3.8	Real Time Graphics facility to preview and to follow cutting Path	vendor to confirm			
3.9	Axes Feed over ride 0 - 120%	vendor to specify			
3.10	Processor:166 MHz Pentium processor OR Higher	vendor to specify			
3.11	Consumable ( oxy fuel / plasma ) life monitoring system	vendor to specify			
3.12	<b>Auto Nesting function with part generation</b>	vendor to specify			
3.13	<b>Move to pierce position</b>	vendor to specify			
3.14	Input & output monitoring of PLC	vendor to specify			
3.15	Industrial grade enclosure and key pad designed to avoid RFI / EMI interface (TENV)	vendor to specify			
3.16	Two axis optically isolated +/- 10V, DC drive outputs and incremental encoder inputs	vendor to specify			
3.17	DNC facility	vendor to specify			
3.18	a)JOG b) MDI d)AUTO e)TEACH IN f)AXES PRESET	vendor to specify			
3.19	Retrace facility	vendor to specify			
3.20	<b>Kerf compensation.</b>	vendor to specify			
3.21	Program rotation / auto plate orientation.	vendor to specify			

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3.22.	Plate piercing timer with manual over ride.	vendor to specify			
3.23	Height retract of torches	vendor to specify			
3.24	Scaling function	vendor to specify			
3.25	powder marking / arc writing function.	vendor to specify			
3.26	Break away torch mounts to prevent damage to torch / torch Mountings due to impact with upturned parts.	vendor to specify			
3.27	Interface with cad packages Modular architecture for future up grades	vendor to specify			
3.28	System input power supply : ONE phase, 230V, AC +/- 10% 50 /60 Hz.	vendor to specify			
3.29	Optically isolated serial port with programmable band rates to 230 K band	vendor to specify			
3.30	<b>Operating environment</b> 5 to50 degree C , relative humidity max: 95%	vendor to specify			
3.31	System has to support Plasma cutting.	vendor to confirm			
3.32	System should be equipped with software, which will support all the three 3 torches.	vendor to confirm			
3.33	<b>System and machine alarms should be in English only.</b>	vendor to confirm			
3.34	standard shapes : shapes shall be displayed graphically with dimension lines to assist the numeric entry process.	vendor to specify			
3.35	Stitch cutting provision	vendor to specify			
3.36	Automatic program rotation to suit plate orientation.	vendor to confirm			
4.0	<b>CONTROL PANELS</b>				

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4.1	<b>ELECTRICAL PANEL</b> : Air conditioned panel for mounting CNC system, drives switchgear with IP 54 degree of protection .The controlled temperature should be between 15 to 20 degree C.(centigrade)	vendor to specify			
4.2	<b>OPERATOR PANEL</b> :Operator control panel should display all control features & should have all Push Buttons, Signals Lamps, Gauges, Knobs etc., for easy and comfortable operations.It should be ergonomically positioned.	vendor to confirm			
4.3	All details of operator panel to be provided.	vendor to specify			
5.0	<b>PART PROGRAMMING</b>				
5.1	<b>Programming Station(Hardware)</b> : For generation and transmission of part programs using DNC.	vendor to specify			
5.2	Programming Software for part creation, auto nesting, CNC Code generation, Plate Utilization /scrap reporting Facility, AUTOCAD.DXF reading facilities. Software shall be installable in PCs with Windows XP platform. This should be transferrable to the machine through USB and Ethernet.	vendor to specify			
6.0	<b>MOTOR- DRIVE SYSTEM</b>				
6.1	Motors and drives for longitudinal and transverse movement : AC servo motors with digital AC servo drives. MAKE : SIEMENS / FANUC / BALDOR / INDRAMAT / ABB / Yashkawa	vendor to specify			
6.2	Drive mechanism for axes movements.	vendor to specify			

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7.0	<b>PLASMA CUTTING STATION</b>				
7.1	POWER SOURCE FOR PLASMA CUTTING able to cut 80 mm thickness of stainless steel plates	Vendor to offer / confirm			
7.2	Plasma power source capacity make and model : ( should be of a reputed make)	vendor to specify			
7.3	plasma gas : Nitrogen / Argon	vendor to specify			
7.4	<b>Plasma type : water injection type</b>	vendor to specify			
7.5	Plasma torch make : ( REPUTED MAKE)	vendor to specify.			
7.6	Plasma torch cooling type :	vendor to specify.			
7.7	Auto height sensing system	vendor to specify			
8.0	<b>DOCUMENTATION</b>				
8.1	5 Sets of below mentioned manuals in English shall be furnished along with the equipment.	vendor to confirm			
8.2	CNC Installation / commissioning manual along with copy of system software.	vendor to confirm			
8.3	CNC system maintenance manuals which include all the system related errors with possible solutions both related to system software as well as hardware.	vendor to confirm			
8.4	CNC system interface manual with wiring details and color codes.	vendor to confirm			
8.5	CNC system hardware manual which include description, installation and calibration of all the PCBs.	vendor to confirm			
8.6	Detailed electrical & Electronics drawings of CNC system, drives , height sensing equipment and other peripherals.(feed back system, DNC etc.)	vendor to confirm			

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8.7	Detailed fuel circuits drawings.	vendor to confirm			
8.8	Operator / user manuals with error codes and remedies.	vendor to confirm			
8.9	Programming manual with error codes and remedies	vendor to confirm			
8.10	A soft copy (CD) of the above (ie. Slno 8.0 to 8.9) information also to be furnished	vendor to confirm			
8.11	Spare parts catalogue with specifications etc., shall be furnished for further ordering of spares.	vendor to confirm			
8.12	Technical leaflets / catalogues of the offered machine shall be furnished along with quotation and detailed write ups for all functional aspects and construction details. The design of the machine shall be of world class proven one.	Vedor to confirm			
9.0	<b>GENERAL</b>				
9.1	The equipment shall be designed and manufactured for continuous three shift operation at an ambient temp.50 degrees C Max. 5 deg.C Min. and humidity 95% Max	vendor to confirm			
9.2	Supplier shall indicate volumetric flows with required pressures at machine terminal for various fluids. Power requirement shall also be indicated in the offer.	Vedor to specify			
9.3	Materials , heat treatment condition and hardness values for all major components to be indicated in the offer.	Vedor to specify			
9.4	The equipment shall be supplied in duly painted condition and rust preventive coatings where necessary.	Vedor to specify			
9.5	Drawings for fabrication of bed for loading plates (full range) shall be furnished along with offer.	Vendor to offer / confirm			
9.6	Drawings for fabrication of water bed for plasma cutting shall be furnished along with the offer.	Vendor to offer / confirm			
9.7	bed grounding / earthing details	vendor to specify			

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9.8	The supplier shall furnish 5 sets of general arrangement drawings, civil foundation plan, electric source and wiring requirements, piping requirement for fluids for BHEL approval within 2 weeks of placement of LOI / PO.	vendor to confirm			
9.9	The fuel lines and electrical cabling for the machine through out the track length to be supplied with suitable festoon folding arrangement. Necessary posts, rollers, clamps etc to be supplied.	vendor to confirm			
9.10	the fuel lines and electrical cables for cutting torch carriages to be supplied with suitable festoon folding arrangement	vendor to confirm			
9.11	High / low preheat regulation system	vendor to specify			
9.12	Gas regulators with necessary solenoid valves and pressure gauges	vendor to specify			
9.13	Supplier shall indicate the items / features provided with the machine as optionals.	Vedor to specify			
10.0	<b>SAFETY :</b>				
10.1	Flash back arrester to be provided wherever necessary.	Vedor to specify			
10.2	Protective covers to be provided wherever necessary.	Vedor to specify			
10.3	Sound level shall be less than 70dB	Vedor to specify			
10.4	Fume extractor to be quoted as optional and furnish details of fume extractor with location w.r.t. the main machine.	Vedor to specify			
10.5	Anti collision device between carriages to be provided.	Vedor to specify			
11.0	<b>SPARES</b>				

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11.1	Spare parts required for 2 years normal operation shall be furnished along with quotation separately with item-wise break-up price including cutting torches and torch consumables. Electronics spares include 1.Operatorpanel 2.Keyboard 3.Mother board 4.CPU board 5.Input/Ootput board 6.Servomotor for each axis 7.Servodrive for each axis	vendor to specify			
11.2	Spare hard disk with complete data ready to replace in case of memory crash and a memory stick of capacity 1GB.	vendor to specify			
12.0	<b>INSPECTION:</b> BHEL engineers will inspect the machine at supplier's works. Supplier shall demonstrate the machine for proper functioning in all respects before dispatch	vendor to confirm			
13.0	Supplier shall carryout erection & commissioning and job prove out of the equipment at BHEL Works and shall demonstrate the equipment for proper functioning in all respects.	vendor to confirm			
14.0	<b>TRAINING :</b> Supplier should train BHEL operators, to operate the machine after successful commissioning of the machine at BHEL works.The supplier shall arrange proper training programe for Programmer( <b>including nesting software</b> ), Mech. Maintenance, Electronic maintenance and operations for BHEL engineers at BHEL works.	vendor to confirm			
15.0	Machine acceptance shall be as per ISO 8206 / DIN EN 28206 and Oxy-Fuel test cuts acceptance as per DIN 2310 cl 1 / WES 280/Gr.I..	vendor to confirm			
16.0	<b>Guarantee :</b> The equipment shall be guaranteed for satisfactory performance for 18 months from the date of commissioning.	vendor to confirm			

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17.0	<b>Power input</b> supply : 415 V +/-10%,50 Hz+/-5%,3Ph. AC	vendor to confirm			
18.0	<b>Tropicalization:</b> All electrical / electronic equipment shall be tropicalized .	vendor to confirm			
19.0	Only those vendors, who have supplied and commissioned atleast one of same or higher sizes for similar applications in the past ten years and such machine is working satisfactorily for more than one year, after commissioning should quote. However, if such machine(s) has/had been supplied to BHEL, then such machine should be presently working satisfactory for more than six months after its commissioning and acceptance in BHEL, should quote. The following information should be submitted by the vendor about the companies where similar machines have been supplied. This is required from all the vendors for qualification of their offer.	vendor to confirm			
19.1	Name of the customer / company where similar machine is installed.	vendor to furnish			
19.2	Complete postal address of the customer.	vendor to furnish			
19.3	Year of commissioning.	vendor to furnish			
19.4	Broad specification.	vendor to furnish			
19.5	Application for which the machine is supplied with details of accuracies achieved on the job.	vendor to furnish			
19.6	Name and designation of the contact person of the customer.	vendor to furnish			
19.7	Phone, FAX no. and email address of the contact person of the customer.	vendor to furnish			
19.8	Performance certificate from the customers in original mentioning the accuracies achieved.	vendor to furnish			