

									
BHARAT HEAVY ELECTRICAL LIMITED									
UNIT'S ADDRESS:									
CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEPTT.)									
Supplier Qtn. No.:									
Date:									
SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR TABLE TYPE CNC HORIZONTAL BORING MACHINE HAVING BORING SPINDLE DIAMETER 130MM									
NOTE:-									
1. Vendor must submit complete information against Clause No. 23 (QUALIFYING CONDITIONS). The offer meeting this clause would only be processed.									
2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.									
3. The offer and all documents enclosed with offer should be in English language only.									
NAME & ADDRESS OF THE SUPPLIER :					NAME & ADDRESS OF THE INDIAN AGENT :				
TELEPHONE NOS.:					TELEPHONE NOS.:				
FAX NOS.:					FAX NOS.:				
E-MAIL ADDRESS :					E-MAIL ADDRESS :				
SCOPE: SUPPLY, ERECTION & COMMISSIONING OF TABLE TYPE CNC HORIZONTAL BORING MACHINE HAVING BORING SPINDLE DIAMETER 130MM, COMPLYING WITH SPECIFICATIONS AS BELOW:									
S.NO	DESCRIPTION FOR BHEL REQUIREMENT				REQUIRED	Offered	Deviation	Remark	
1	MACHINE REQUIREMENTS AND WORK PIECE MATERIAL								
1.1	Purpose: The table type CNC Horizontal Boring Machine, having Boring Spindle diameter 130 mm, is required for heavy duty machining such as milling, boring, drilling, threading, tapping etc. with high degree of finish & accuracy.				Vendor to confirm				

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
1.2	<u>Work piece material:</u> The components to be machined will be mainly of Alloy Steel / Cast Steel.	Vendor to confirm			
1.3	<u>Capacity Test:</u> To be demonstrated as per the parameters mentioned below: (Clauses 1.3.1 to 1.3.5)	Vendor to confirm			
1.3.1	Cutting Speed: 175 m/min (Approx.)	Vendor to confirm			
1.3.2	Depth of Cut: 5 mm	Vendor to confirm			
1.3.3	Feed: 500 mm/min	Vendor to confirm			
1.3.4	Indexable Face milling Cutter (Dia 125 mm, Sandvik/Tungaloy/Equivalent make) with 100 % engagement	Vendor to confirm			
1.3.5	Job Material: Alloy Steel / Cast Steel.	Vendor to confirm			
2	SPECIFICATIONS: (Minimum Requirements)				
2.1	MACHINE CONFIGURATION: The Machine shall be table type CNC Horizontal Boring Machine with a Rotary Table. The Z and W Axes travel can be achieved by any combination of movements of column/table and boring spindle.	Vendor to confirm			
2.2	HEAD STOCK				
2.2.1	Boring spindle diameter: 130 mm	Vendor to confirm			
2.2.2	Spindle power (AC Continuous Rating - S1): ≥ 37 KW, at 100% duty cycle.	Vendor to confirm			
2.2.3	Spindle speed (Infinitely variable): 3000 rpm	Vendor to confirm			
2.2.4	No. of speed ranges	Vendor to specify			
2.2.5	Spindle taper : ISO 50 (DIN69871)	Vendor to confirm			
2.2.6	Spindle Motor & Drive Make: FANUC or SIEMENS AC spindle motor with matching spindle drive (Details to be given)	Vendor to confirm			
2.2.7	Spindle Encoder: FANUC/SIEMENS/HEIDENHAIN rotary encoders for direct reading of actual spindle rpm (Details to be given).	Vendor to confirm			
2.2.8	Torque-Power-Speed characteristics of the spindle system to be submitted by the vendor along with the offer (Details to be enclosed)	Vendor to submit			
2.2.9	Oriented Spindle Stop (Any position)	Vendor to confirm			
2.2.10	Coolant through spindle as well as external coolant for cooling of cutting tool / machining zone.	Vendor to confirm			
2.2.11	Spindle lubrication system (Details to be enclosed)	Vendor to submit			

B/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT		REQUIRED	Offered	Deviation	Remark
2.3	TABLE LONGITUDINAL TRAVERSE (X Axis):					
2.3.1	Table longitudinal travel (X-Axis): 2000 mm		Vendor to confirm			
2.3.2	X-axis jog feed rate (Infinitely variable) : 5000 mm/min		Vendor to confirm			
2.3.3	X-axis rapid traverse rate: 10000 mm/min		Vendor to confirm			
2.3.4	Axis Resolution: 0.001mm		Vendor to confirm			
2.4	HEADSTOCK VERTICAL TRAVERSE ON COLUMN (Y Axis):					
2.4.1	Headstock vertical travel (Y-Axis): 1800 mm		Vendor to confirm			
2.4.2	Y-axis jog feed rate (Infinitely variable):5000 mm/min		Vendor to confirm			
2.4.3	Y-axis rapid traverse rate: 10000 mm/min		Vendor to confirm			
2.4.4	Axis resolution: 0.001 mm		Vendor to confirm			
2.5	COLUMN/TABLE (W axis) & BORING SPINDLE (Z Axis) AXIAL TRAVERSE:					
2.5.1	Column/Table axial travel (W-Axis): 1000 mm		Vendor to confirm			
2.5.2	Boring spindle axial travel (Z-Axis): 700 mm		Vendor to confirm			
2.5.3	Total travel of Column/Table + Boring Spindle travel (W+Z): 1700 mm		Vendor to confirm			
2.5.4	W-Axis jog feed rate (Infinitely variable): 5000mm/min		Vendor to confirm			
2.5.5	W-Axis rapid traverse rate: 10000 mm/min		Vendor to confirm			
2.5.6	Boring Spindle axis (Z-Axis) jog feed rate (Infinitely variable): 3000 mm/min		Vendor to confirm			
2.5.7	Boring Spindle axis (Z-Axis) rapid traverse rate: 5000 mm/min		Vendor to confirm			
2.5.8	W & Z Axis Resolution: 0.001mm		Vendor to confirm			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT			REQUIRED	Offered	Deviation	Remark
2.6	ROTARY TABLE (B Axis): 360 Degree rotation						
2.6.1	Table size (LxB): 1250 mm x 1250 mm			Vendor to confirm			
2.6.2	Load carrying capacity: ≥ 5 Tons			Vendor to confirm			
2.6.3	Rotation: 360° continuous about vertical axis			Vendor to confirm			
2.6.4	Maximum torque on B-axis (N-m)			Vendor to specify			
2.6.5	Rapid Traverse Rate for Rotary Axis: 2 rpm			Vendor to confirm			
2.6.6	Size of T-slots: Suitable for 28 mm H12 as per DIN 650, finish to DIN 876 III			Vendor to confirm			
2.6.7	T-slots pitch: 140 mm as per DIN 650, finish to DIN 876 III. (Details to be given)			Vendor to confirm			
2.6.8	Central slot tolerance: H7			Vendor to confirm			
2.6.9	Perpendicular Lateral slot size and tolerance, if provided.			Vendor to specify			
2.6.10	Size and accuracy of bore at the center.			Vendor to specify			
2.6.11	Minimum distance between boring spindle face and table face along Z Axis.			Vendor to specify.			
2.6.12	Minimum distance between boring spindle axis and table face along Y Axis.			Vendor to specify.			
2.6.13	B-Axes lubrication system. (Details to be submitted)			Vendor to confirm.			
2.6.14	B Axis Resolution: 0.001 degrees			Vendor to confirm.			
2.7	FEED AND DRIVE SYSTEMS:						
2.7.1	Feed motors & drives: FANUC or SIEMENS AC servo motors with matching AC servo drives (Details to be given).			Vendor to confirm			
2.7.2	Feed back system for X, Y, Z & W Axes: Heidenhain sealed linear scales (Details to be submitted)			Vendor to confirm			
2.7.3	Feed back system for B Axis: Heidenhain rotary/angle encoder directly mounted on the table.			Vendor to confirm			
2.7.4	Type of power transmission : Backlash free re-circulating ball screw with Pre-loaded double nut for X, Y, Z & W Axes and Pre-loaded backlash free rack with double pinion drive (in case of external motor) for B Axis. (Details to be submitted)			Vendor to confirm			
2.7.5	Mechanism for locking X, Y, Z, W & B axes. Servo Lock + Motor Brake/Clamping device			Vendor to specify			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
2.8	MACHINE GUIDEWAYS:				
2.8.1	Guideways for X-axis, Y-axis, Z-axis & W-axis : Hydrostatic/Aerostatic/LM Guideways (Hydraulic/Pneumatic circuit to be given along with details).	Vendor to confirm and specify			
2.8.2	Guideways should be hardened with finely ground and milled surface.	Vendor to confirm			
2.8.3	Metallic Telescopic covers of rust resistant material to be provided with wipers for X, Y, Z and W axes guide ways. Joints of telescopic covers should be properly sealed in order to prevent ingress of chips, coolants & hydrostatic oils. Additionally, bellow covers should be provided under telescopic covers for additional protection of the guideways. (Details to be submitted)	Vendor to confirm & specify			
2.9	CONSTRUCTION:				
2.9.1	Main structural components like machine bed, column saddle, column, headstock, table bed, table saddle and table plate must be of Cast Iron . The spindle should be of Alloy Steel Forging.	Vendor to confirm and specify			
2.9.2	Head Stock Counterbalancing System, if applicable. Details of the system to be submitted with the offer.	Vendor to confirm			
2.9.3	Vendor to furnish details of material, hardness & constructional details, including explanatory drawings of various Components/ Assemblies like Column, various guideways/slides, Head Stock, Spindle, drives, transmission, brakes etc. of the machine. (Design details not required.)	Vendor to confirm			
2.10	OPERATOR'S PLATFORM:				
2.10.1	Suitable Operator's platform with adequate load carrying capacity to be provided to suit the operation in the entire capacity of the machine. A 15 Amp. Plug Point with ON/ OFF switch is also to be provided on the Platform.	Vendor to specify			
2.10.2	Weight carrying Capacity of the Platform should be ≥ 300 Kg.	Vendor to confirm			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT				REQUIRED	Offered	Deviation	Remark
2.11	OPERATION AND CONTROL SYSTEM:							
2.11.1	OPERATOR'S PANEL:							
2.11.1.1	Air conditioned Operator's Pendant of Rittal/Schneider make, incorporating the CNC Operator Panel (OP) and Machine Control Panel (MCP) of required configuration shall be provided on the operators platform. All switches on the Operator's Pendant, including that for table rotation, should be within reach of operator of average height of 170 cm for convenient, efficient & safe operation. All displays/indications should also be conveniently placed accordingly. Layout showing complete details of the panel with photographs should be submitted.				Vendor to confirm			
2.11.2	CNC SYSTEM & FEATURES :							
2.11.2.1	Make: FANUC / SIEMENS				Vendor to confirm			
2.11.2.2	The system should have an Operator Panel(OP) with full alphanumeric keyboard, colour display (15" or larger), Machine Control Panel (MCP), RS232C serial interface/USB port for data input/output, network ready, graphic simulation and on-screen PLC Ladder display . All PLC input/output modules should be of FANUC/SIEMENS make matching with CNC system. Latest hardware & firmware versions, as available at the time of delivery, should be supplied. (Details to be submitted)				Vendor to confirm			
2.11.2.3	Details of the standard features. List to be submitted.				Vendor to confirm			
2.11.2.4	Details of optional features recommended by vendor.				Vendor to specify			
2.11.2.5	Details of other features:							
2.11.2.5.1	Axes Interpolation: Linear, Circular, Cylindrical, Helical				Vendor to confirm			
2.11.2.5.2	Max Number of simultaneous interpolation: 3				Vendor to confirm			
2.11.2.5.3	Part Program Storage: ≥ 3 MB				Vendor to confirm			
2.11.2.5.4	Technology Cycles: Standard Drilling, Tapping, Milling				Vendor to confirm			
2.11.2.5.5	Graphics simulation of Part Programs				Vendor to confirm			
2.11.2.5.6	Co-ordinate Transformation: Datum shift, rotation, mirror image, scaling factor.				Vendor to confirm			
2.11.2.6	Provision for safe shut down of CNC Control, in case of Power Failure.				Vendor to confirm			
2.11.2.7	The CNC system should be OPC-UA/FOCAS compliant for Industry 4.0				Vendor to confirm			

20/7/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
2.12	MANUAL CONTROL:	Vendor to confirm			
2.12.1	Complete manual operation of machine should be possible through Machine Control Panel (MCP). The MCP should have Spindle & Feed override switches, +/- Jog keys for individual axis, Start/Stop keys for Cycle, Spindle & Feed and additional keys/switches for auxiliary functions. Diagram of complete operator pendant with layout and full details of all the switches/keys to be submitted.	Vendor to confirm.			
2.13	HAND HELD UNIT:				
2.13.1	Hand Held unit, alongwith sufficient length of interfacing cable is to be offered for handwheel (MPG) operation of individual axis in jog & increment mode and provision for spindle inch in c.w & c.c.w directions. Details to be submitted.	Vendor to confirm.			
2.14	UPS FOR CNC SYSTEM: (Only in case of PC based CNC systems)				
2.14.1	UPS of 15 minutes backup for CNC system with inbuilt cooling and charge status display is to be supplied only in case of PC based CNC systems.	Vendor to confirm.			
2.15	MACHINE LIGHTS:				
2.15.1	Machine Lights for sufficient illumination of complete working area, on both sides of operator's platform, should be provided for clear visibility.	Vendor to confirm.			
2.15.2	A magnetic base portable spot light with sufficiently long cable should also be provided.	Vendor to confirm.			
2.15.3	Any lights required in the foundation/ pit area shall also be foreseen and supplied by the vendor.	Vendor to confirm			
2.15.4	All light fittings, consumables, adapters/receptacles should have compatibility with Indian equivalents.	Vendor to confirm			
2.15.5	Flashing / rotary type End of Cutting and Program Stop Light.	Vendor to confirm			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT				REMARK
2.16	REFRIGERATION UNITS / AIR CONDITIONERS				
2.16.1	<p>Door mounted Air Conditioners with Dehumidifiers for all Electrical/ Electronic Panels/ Cabinets including Operator's Panel (One no.of sufficient capacity for each cabinet/ panel considering continuous operation at ambient temperature and relative Humidity at Bhopal as follows - Ambient temperature: 5°C to 45°C and Relative Humidity: Upto 90% Following are to be confirmed & Details to be given by the vendor:</p> <ul style="list-style-type: none">a) Make & rating alongwith detailed technical catlaogb) Panel AC must have Condensation free feature.c) The blow of cool air from the air conditioners shall not fall directly on the electrical & electronic circuits/ modules.d) ACs must be incorporated with electrical/refrigeration interlocks and there should be provision of Interlock with Machine PLC system.e) Energy-efficient HFC-based Hermetically-sealed Compressorsf) OEM of the Supplied panel ACs must have established Company Service Centre and should ensure spares availability in India. Details for the same is to be provided alongwith contact details.				Vendor to Confirm & submit details
2.16.2	AC unit mounted on the movable pendent must be well-supported. The electrical connection of the AC unit must be such that it can be easily disconnected from the AC unit side. A MCB must be provided to isolate the AC unit from the electrical panel.				Vendor to confirm.

9/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
2.16.3	<p>For the offered Oil Chiller system Following are to be confirmed & Details to be given by the vendor:</p> <p>a) Make & rating alongwith detailed tech. catlaog</p> <p>b) Oil chiller system should have energy-efficient HFC-based Hermetically-sealed Compressors with independent refrigeration circuits having SS-brazed Plate-type Heat Exchanger, Air-cooled Condenser, Thermostatic Expansion Valve, HP/ LP Switch, Oil Flow/ Anti Freeze Cut-out, etc.</p> <p>c) The units must have In-line Multistage Pumps (with 100% standby), Valves, NRVs, Filters, Automatic Microprocessor-based Controller with LCD Display, Safety Interlocks, etc. in one complete package. The unit must operate continuously with equal-run-time of Compressors.</p> <p>d) Oil chiller system shall have features like independant HP & LP Cut outs, Oil sight glass, EXP Valve, Filter Drier, Shut off valve , Charging Port, Antifreeze Thermostat, Solenoid valve, Required guages, etc.</p> <p>e) Oil chillers should be progammable and there should Provision of Interlock with Machine PLC controls</p> <p>f) OEM of the Supplied panel ACs must have established Company Service Centre and should ensure spares availability in India. Details for the same is to be provided. The Vendor has to ensure maintenance of the AC units in working condition through-out its guarantee period.</p>	Vendor to Confirm & submit details			
2.16.4	Vendor to furnish the cooling capacity (KW or Kcal per Hour) of each Air Conditioners and Chiller Unit (s) used in the machine.	Vendor to submit			
2.16.5	O&M manual of the Panel A.C. / Chiller system including electrical circuit diagrams, item parts list are to be provided.	Vendor to confirm			

10/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
2.17	HYDRAULIC SYSTEM : (For Hydrostatic Machines)				
2.17.1	The System should be centralised Hydraulic Oil Tank, preferably be located at Floor level.	Vendor to confirm			
2.17.2	Make Rexroth/ Vickers Sperry/ Hawe or equivalent from a reputed manufacturer with spare and service support in India. (Details to be submitted)	Vendor to confirm			
2.17.3	Filtration System: Sufficient number of filters (with electric clogging indicator and alarm on PLC) should be used to avoid frequent clogging and other maintenance related problems. Filter elements should be of Make: EPE / Hydac or equivalent. Details to be given.	Vendor to confirm			
2.17.4	Failure indication	Vendor to confirm			
2.17.5	Automatic shut off provision, Details should be submitted.	Vendor to confirm			
2.17.6	Hydraulic pump capacity (flow/ pressure) to be intimated.	Vendor to specify			
2.17.7	Each pump should have an independent motor. No Tandem pumps should be used.	Vendor to confirm			
2.17.8	First filling of all required Oils & Grease etc. to be supplied by vendor. Indigenous (Indian) source or Indian equivalent and specifications of oils / greases are also to be provided by the vendor.	Vendor to confirm			
2.17.9	Suitable lubrication system wherever required to be provided (details of Pump, Valves, nozzles, circuit, lay out etc. to be submitted)	Vendor to confirm			

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2.18	COOLANT SYSTEM:				
2.18.1	Coolant System with all accessories for following variants shall be provided. Selection of all the variants shall be through program and push buttons as well, provided on the Operator's panel.	Vendor to confirm			
2.18.2	a) Recirculating Type Flood Coolant System with nozzles around spindle.	Vendor to confirm			
2.18.3	b) High Pressure Coolant through Spindle	Vendor to confirm			
2.18.4	All offered attachments, tool holders, boring bars, cassettes, adapters etc. shall have the provision so that coolant is available directly at the tool-cutting tip.	Vendor to confirm			
2.18.5	Coolant collection and recirculation system should be leakproof & perfect to avoid any spillage on shop floor, trenches for cables & foundation pit of the machine etc.	Vendor to confirm			
2.18.6	Coolant Filtration System: Paper filter based Recirculating type coolant system.	Vendor to confirm			
2.18.7	Coolant Flow Diagram showing filters, pumps, valves, tanks etc. to be submitted with the offer.	Vendor to specify			
2.18.8	Pressure & rate of flow of coolant for different variants should be furnished in the offer. The Pressure should be sufficient for the coolant to reach the tool tip at full pressure.	Vendor to confirm			
2.18.9	Coolant Tank Capacity to be specified. Coolant Tank is to be placed on the Floor Level. Coolant collection tank may be kept at a lower level. The details of the system, including requisite sump, pump etc., should be clearly indicated.	Vendor to specify			
2.18.10	Provision for Coolant On-Off Push Buttons shall be provided on the Operator's Panel.	Vendor to confirm			
2.18.11	Coolant pump & motor details for all variants of coolant system are to be submitted with the offer.	Vendor to specify			
2.18.12	The coolant tank should be fitted with skimmer for regular cleaning of coolant from contamination with tramp oil.	Vendor to confirm			
2.18.13	Provision for prevention of mixing of coolant and hydraulic oil. (Details to be submitted).	Vendor to confirm			

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2.19	ELECTRICAL SYSTEM:				
2.19.1	415V ($\pm 10\%$), 50Hz ($\pm 3\%$), 3 Phase AC (3 wire system without neutral) Power Supply Source will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/ control cabinets, etc., shall be the responsibility of vendor. Requirement of grounding/ earthing with required material details is to be informed by vendor well in advance so that same could be incorporated during construction of foundation. The vendor can take earthing connection from the nearest column of the production shop.	Vendor to confirm			
2.19.2	Tropicalisation: All electrical/ electronic equipment shall be tropicalized.	Vendor to confirm			
2.19.3	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to confirm			
2.19.4	All electrical and electronic cabinets and panels including operator's panel should be of Rittal / Schneider make, air conditioned, dust and vermin proof and hermetically sealed from rodents and ingress of coolants, moisture & chips. They must have sufficient illumination and power point receptacles of 220 VAC, 5 Amp. All adapters/receptacles should have compatibility with International standards.	Vendor to confirm			
2.19.5	Motors shall conform to IEC or Indian Standards	Vendor to confirm			
2.19.6	All cables moving with the axes should be installed in Caterpillar/ Drag chains. Additionally, all the cable trays required for laying of cables should be supplied by the vendor.	Vendor to confirm			
2.19.7	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to confirm			
2.19.8	In-cycle hour counter with reset facility is to be included in the offer.	Vendor to confirm			
2.20	SAFETY ARRANGEMENTS:				
2.20.1	Machine should have adequate and reliable safety interlocks/devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes. Machine functions should be continuously monitored and alarm/warning indications through lights/alarm number with messages (on CNC display and panels) should be available.	Vendor to confirm			
2.20.2	A detailed list of all alarms/indications provided on machine along with cause and remedy details should be submitted by the supplier.	Vendor to confirm			

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2.20.3	All pipes, cables etc. on the machine should be well supported and protected. These should not create any hindrance to machine operator's movement for effective use of machine.	Vendor to confirm			
2.20.4	All the rotating parts used on machine should be statically & dynamically balanced for avoiding undue vibrations.	Vendor to confirm			
2.20.5	Emergency Switches at suitable locations as per International Norms are to be provided.	Vendor to confirm			
2.20.6	Oil & water pipe lines should not run with electrical cable in the same tray/trench.	Vendor to confirm			
2.20.7	Suitable machine enclosure shall be provided to prevent spillage of chips and coolant.	Vendor to confirm			
2.20.8	If required, Splash/Chip guards should provided for protection of operator, operator's panel and to avoid spillage of coolant & chips on operator's platform.	Vendor to confirm			
2.21	ENVIRONMENTAL PERFORMANCE OF THE MACHINE:	Vendor to confirm			
2.21.1	Maximum noise level shall be 85 dB(A) at normal load condition, 1 Meter away from the machine with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16. Supplier to demonstrate compliance to noise level, if so required.	Vendor to confirm			
2.21.2	There shall not be any emissions from the machine except fumes of cutting fluid during machining.	Vendor to confirm			
2.21.3	There should not be any effluent from the machine. In case there are effluents from the machine, requisite effluent treatment plant or pollution control device should be built into the machine by the supplier.	Vendor to confirm			
2.21.4	No hazardous chemicals shall be used in the machine.	Vendor to confirm			
2.21.5	If any safety/environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to confirm			
2.21.6	Paint of the machine should be oil/coolant resistant and should not peel off and mix up with coolant.	Vendor to confirm			
2.21.7	The machine and its accessories should be tropicalised for efficient operation in the ambient temperature range of +5°C to +45°C.	Vendor to confirm			

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3	CHIP MANAGEMENT SYSTEM:						
3.1	A chip extraction system to carry both short and curly chips to the chip bin to be provided on one end of the machine.			Vendor to confirm			
3.2	Two Chips bins of appropriate size with wheels & handle for movement, should be supplied.			Vendor to confirm			
3.3	Type of chip conveyor (Hinged Slat Type)			Vendor to confirm			
3.4	Material of chip conveyor to be rust resistant .			Vendor to confirm			
3.5	Provision for smooth flow of chips to the conveyor.			Vendor to confirm			
3.6	Operation of chip conveyor (forward & reverse) through push buttons on operator's panel.			Vendor to confirm			
3.7	Layout showing location of chip conveyor to be submitted.			Vendor to confirm			
4	ULTRA ISOLATION TRANSFORMER						
4.1	Ultra Isolation Transformer suitable for complete machine, its drives, controls, PLC etc. shall be offered with complete details.			Vendor to confirm			
4.2	Make:			Vendor to specify			
4.3	Model and Rating:			Vendor to specify			
4.4	Catalogue of the Isolation Transformer shall be submitted with the offer.			Vendor to confirm			
5	PNEUMATIC SYSTEM: (For Aerostatic Machines)						
5.1	AIR COMPRESSOR:						
5.1.1	Independent Air Compressor (of reputed makes as: Elgi, Chicago Pneumatic, Atlas Copco or Ingersoll Rand) Screw type with refrigerated type Dryer & Filter of suitable capacity for the total compressed air requirements of the machine & accessories and to suit required air quality should be supplied. The compressor unit should be suitable for continuous duty operation. Full details to be given.			Vendor to confirm			
5.1.2	Make & Model of Air Compressor and Refrigerator type Dryer.			Vendor to specify			
5.1.3	Capacity (Flow, Pressure & KW)			Vendor to specify			
5.1.4	The system should have additional provision and required accessories so that BHEL centralised compressed air supply having pressure 4 bar with high moisture could be used before the Refrigerated Air Dryer, as and when required (In case of compressor failure).			Vendor to confirm			

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5.2	COMPRESSED AIR POINTS:					
5.2.1	Compressed Air Point with manual ON/OFF Valve and flexible pipe of suitable length for work piece cleaning.		Vendor to confirm			
6	TOOLINGS:					
6.1	Tooling for the machining : All cutting tools, adapters, tool holders, boring bars, clamping elements etc., required for machining of proveout component (Stator machining Drawing Number: 04453164051), shall be supplied by the vendor. Detailed list of tooling to be provided by the vendor.		Vendor to confirm			
6.2	Two sets of consumables for offered Tools, like inserts, screws etc., should be supplied.		Vendor to confirm			
7	FIXTURE:					
7.1	Fixture for job holding : The necessary fixture/job holding arrangements for allround/complete machining of the components mentioned in the Clause 6.1 are to be provided by the supplier.		Vendor to confirm			
7.2	Preliminary Drawings/Sketches of the offered tools/tool holders are to be submitted with the offer. Vendor to confirm that final Drawings/Sketches for offered items shall be submitted to BHEL on receipt of P.O.		Vendor to confirm			
8	FAULT DIAGNOSTIC SYSTEM:					
8.1	Individual faults & Messegas should appear on the operator screen with device ID Numbers.		Vendor to confirm			
8.2	Help guide should be provided for fault diagnostics.		Vendor to confirm			
9	LEVELING & ANCHORING SYSTEM					
9.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc for the machine shall be supplied by the vendor. Details to be submitted.		Vendor to confirm			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
10	TOOLS FOR OPERATION & MAINTENANCE :				
10.1	Special tools and equipment required for operation and maintenance of the machine like Torque Wrench, Spanners, Keys, grease guns etc. should be supplied by the vendor.	Vendor to confirm			
10.2	Test mandrel for checking spindle run-out & alignment should be supplied.	Vendor to confirm			
11	SPARES & AMC: (Optional : To be quoted separately)				
11.1	Itemised breakup with unit prices of all mechanical, hydraulic, electrical and electronic components are to be offered. The spares will be ordered as per requirement. Note: The price of the spares will not be considered for the evaluation of the machine cost (L1 criteria).	Vendor to confirm			
11.2	All types of spares for the total machine and accessories should be available for at least ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL in advance and provide drawings of parts/details of spares & suppliers to enable BHEL to procure them in advance, if required	Vendor to confirm			
11.3	Vendor to confirm that complete list of spares for machine and accessories, along with specification/type/model etc shall be furnished along with documentation to be supplied with the machine.	Vendor to confirm			
11.4	Vendor to provide details and quote for (A) Annual Maintenance Contract (AMC) for the complete machine for 3 years after warranty (B) Comprehensive AMC (with spares) for 3 years after warranty Note: The value of the AMC will not be considered for evaluation of the machine cost (L1 criterion)	Vendor to confirm			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
12	DOCUMENTATION : Five sets of following documents (Hard copies with Soft Copies wherever specified) in English language should be supplied along with the machine. All the items mentioned below are to be offered.				
12.1	Operating manuals of Machine & CNC system	Vendor to confirm			
12.2	Programming Manuals of Machine & CNC system	Vendor to confirm			
12.3	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical/Mechanical/Pneumatic/Coolant/Hydraulic circuit diagrams. All Assembly/Sub Assembly Drawings shall be supplied with the part list also.	Vendor to confirm			
12.4	Maintenance, Interface & commissioning manuals for CNC system, spindle & feed drives.	Vendor to confirm			
12.5	Sketch/Layout/Drawing/Catalogue for all supplied clamping elements, cutting tools, tool holders, arbors, boring bars, coolant connections, adapters, sleeves, fixtures etc. are to be provided.	Vendor to confirm			
12.6	Catalogues, Operation & Maintenance Manuals of all bought out items including drawings, wherever applicable.	Vendor to confirm			
12.7	Detailed specification of all rubber items and hydraulic/lube fittings	Vendor to confirm			
12.8	Operating Manuals, Maintenance Manuals & Catalogues for supplied, Accessories viz. Isolation Transformer, Air-Compressor and all supplied Accessories.	Vendor to confirm			
12.9	Hard copy of PLC program with comments in English alongwith cross reference and operand (Input/Output/Marker/Timer/Counter etc) list .	Vendor to confirm			
12.10	Complete PLC program with comments in English , Machine data & PLC data on CD.	Vendor to confirm			
12.11	Complete Ghost back-up of HDD in case of PC based CNC controller and clearly written Instructions to take back-up and reloading on a new hard disk.	Vendor to confirm			
12.12	Complete list of parts/items (Bill of materials) used in the machine in English language.	Vendor to confirm			
12.13	Electrical Schematic Diagrams, Wiring Diagrams, Junction Box Layouts, Connector Diagrams and Cable Layouts of the machine in English. (3 Hard + 2 Soft copies)	Vendor to confirm			
12.14	Drawings of machine assemblies/sub-assemblies/parts including Pneumatic/Coolant/Hydraulic circuit diagrams. All Assembly/Sub Assembly Drawings shall be supplied with the part list marked on it in English.	Vendor to confirm			

17/28

18/28

S.NO	TRAINING:	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
13						
13.1	Training should be arranged at vendor's works for each of the areas mentioned below: (a) CNC Part Programming/application of all CNC Features/Cycles for the machine & other supplied accessories - 1 person for 10 working days (b) Electrical, Electronic & CNC maintenance for machine & other supplied equipments - 1 person for 10 working days (c) Mechanical & Hydraulic maintenance of the machine & other supplied equipments - 1 person for 10 working days (d) Operation of the machine & other supplied accessories / equipments - 1 person for 10 working days	Vendor to confirm				
13.2	Air-fare, boarding & lodging charges for BHEL personnel, shall be borne by BHEL.	Vendor to confirm				
13.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to confirm				
13.4	Vendor to quote for training on per man week basis.	Vendor to confirm				
13.5	Vendor should organize training of one electronic maintenance Engineer and one Programmer at the CNC System Manufacturer's works (in India) for 1 week advanced training on the CNC system.	Vendor to confirm				
14						
	CIVIL FOUNDATION WORK:					
14.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI)/P.O. Soil condition data will be furnished by BHEL alongwith the approval. Complete Foundation Design including details such as (a) Excavation details (b) Reinforcement details (Rod diameter & distances etc) (c) Concrete details (d) Foundation bolt details are to be provided with drawings and final Layout Drawings by the supplier within three months after getting BHEL's approval. The Layout should consist of all requirements pertaining to complete machine and all accessories, including space requirement for Isolation Transformer, Air Compressor, Chip conveyor & any other accessory. BHEL shall construct complete foundation for the machine as per details supplied above and under supervision of supplier's representative (if deputed by vendor). Vendor should arrange for the equipment required for testing of the foundation, if required by the vendor. The vendor shall also indicate detailed specifications of grouting compound and grouting procedure etc. for foundation bolts of the machine.	Vendor to confirm				

S.NO	DESCRIPTION FOR BHEL REQUIREMENT		REQUIRED	Offered	Deviation	Remark
15	ERECTION & COMMISSIONING					
15.1	Supplier to take full responsibility for carrying out erection, start up, testing of the machine and all types of supplied equipment's, machining of test pieces etc. The machine is to be erected at the site by the supplier with their own manpower, tools & tackles etc. Other erection equipment's like mobile crane, measuring instruments & devices for testing & commissioning of machines should be brought by the supplier on returnable basis. However, EOT Crane will be provided by BHEL depends on the availability. Service requirement like air, water, electricity will be provided by BHEL at one point to be indicated by the supplier in advance. Completed commissioning & demonstration of all the features of machine/equipment's to the entire satisfaction of BHEL is the sole responsibility of vendors at BHEL Bhopal work. Complete commissioning, testing including all the test is in the scope of supplier.		Vendor to confirm			
15.2	Erection & Commissioning of Isolation Transformer, Air Compressor & its dryer shall also be responsibility of the vendor.		Vendor to confirm			
15.3	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at Clause 19 (Machine Acceptance) shall form part of the commissioning activity.		Vendor to confirm			
15.4	Tools, Tackles, Test Mandrels, instruments and other necessary equipment including Laser equipment required to carry out all above activities should be brought by the supplier. Special tools and equipment required for erection of the machine shall be brought by the vendor on returnable basis.		Vendor to confirm			
15.5	All fixators, foundation bolts, shims, wedges etc. required for erection, anchoring and levelling of the machine and allied equipment shall be supplied by the vendor.		Vendor to confirm			
15.6	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis.		Vendor to confirm			
15.7	All Cover Plates required for the machine and its peripherals shall be supplied by the vendor.		Vendor to confirm			
15.8	Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection, should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.		Vendor to confirm			

S.NO	DESCRIPTION FOR BHEL REQUIREMENT		REQUIRED	Offered	Deviation	Remark
16	ACCURACY TESTS:					
16.1	GEOMETRICAL ACCURACIES:					
16.1.1	Geometrical Accuracy Tests shall be in accordance with ISO 3070 standard or equivalent applicable standard. Detailed Test Charts for the same, clearly showing the accuracies to be achieved on the machine, shall also be submitted with the offer.	Vendor to confirm				
16.1.2	All the accuracies are to be demonstrated to BHEL personnel during pre-acceptance tests at Suppliers works and during Erection & Commissioning at BHEL Works.	Vendor to confirm				
16.2	MACHINE POSITIONING ACCURACIES & REPEATABILITY: Should be measured as per VDI/DGQ3441/ ISO 230-2 (Latest Revision) using LASER INTERFEROMETER.	Vendor to confirm				
16.2.1	Positional uncertainty (P) in X, Y, Z axes: 0.015 mm per 1000 mm	Vendor to confirm				
16.2.2	Positional uncertainty (P) in W axis: 0.030 mm per 1000 mm	Vendor to confirm				
16.2.3	Positional uncertainty (P) in B axis: 10 secs	Vendor to confirm				
16.2.4	Positional scatter (Ps) in X, Y & Z axes: 0.008 mm	Vendor to confirm				
16.2.5	Positional scatter (Ps) in W axis: 0.010 mm	Vendor to confirm				
16.2.6	Positional scatter (Ps) in B axis: 8 secs	Vendor to confirm				
16.2.7	Positional deviation (Pa) per 1000 mm for X, Y & Z axes: 0.015 mm	Vendor to confirm				
16.2.8	Positional deviation (Pa) per 1000 mm for W axis: 0.020 mm	Vendor to confirm				
16.2.9	Positional deviation (Pa) for entire travel for B axis: 8 secs	Vendor to confirm				
16.2.10	Reversal error (U) in X, Y, Z & W axes: 0.006 mm	Vendor to confirm				
16.2.11	Reversal error (U) in B axis: 6 secs	Vendor to confirm				
16.2.12	All the above accuracies to be demonstrated to BHEL personnel during pre-acceptance at Suppliers works and during Erection & Commissioning at BHEL Works.	Vendor to confirm				
16.2.13	Note 1: Least Count of scale and transmission should be selected to achieve above accuracies	Vendor to confirm				

S.NO	DESCRIPTION FOR BHEL REQUIREMENT			REQUIRED	Offered	Deviation	Remark
17	AMBIENT CONDITIONS & THERMAL STABILITY :						
17.1	Ambient Operating Conditions: Temperature 5°C to 45°C ; Relative Humidity upto 90%.			Vendor to confirm			
17.2	Thermal Stability of the complete machine should be suitable for trouble free operation of the machine in the specified Ambient Conditions and accuracy requirements as specified in proveout components are guaranteed. Details of provisions made on the machine to achieve the same, are to be furnished to BHEL.			Vendor to confirm			
17.3	The machine should be suitable for continuous operation to its full capacity for 24 hour a day and 7 days a week. Vendor to ensure and confirm the same.			Vendor to confirm			
18	PROVEOUT OF BHEL COMPONENTS :						
18.1	After completion of erection & commissioning, geometrical tests & test piece machining, vendor to perform job prove-out of Component 6FRA6068 Stator Assembly (Drawing No. 04453164051) for complete machining to the specified design accuracy and surface finish. Job setting plan, Machining process plan and requirement of Tools (with list & description) for machining of proveout components shall be furnished by the vendor along with the offer. Considering 5 mm as machining allowance all over the job, vendor to furnish the total machining time required for the mentioned job along with the offer. The CNC programs shall be provided by the vendor. The material for the proveout components shall be provided by BHEL. Clarifications, if any required by vendor, regarding accuracy requirements of the proveout components, whether specified or not, should be discussed and cleared by vendor during initial technical discussions. Note : Final proveout component drawing no. may change, however, the machining features of the changed components shall be in line with the original component drawing.			Vendor to confirm			
18.2	Vendor shall be responsible for any deviation/rejection in proveout component due to wrong machining or malfunctioning of the machine during proveout machining and also for the delay in machining due to improper recommended tooling etc. The cost of such deviation / rejection, if any, shall be refunded by the vendor to BHEL.			Vendor to confirm			

22/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
18.3	Accuracies required in Job Prove out on BHEL Job				
18.3.1	Concentricity: 0.02 mm	Vendor to confirm			
18.3.2	Tolerance: 0.02 mm	Vendor to confirm			
18.3.3	Surface Finish: 1.2 micron	Vendor to confirm			
18.3.4	Note: Minimum accuracies requirement as mentioned above should be reflected in Performance Certificate which forms a part of Qualifying Criteria.	Vendor to note & confirm			
19	MACHINE ACCEPTANCE:				
19.1	Tests/Activities to be Performed by Vendor at Vendor's work on the machine before dispatch :	Vendor to confirm			
19.1.1	Geometrical Accuracy Tests as per Clause 16.1	Vendor to confirm			
19.1.2	Positioning Accuracy & Repeatability Tests as per VDI-DGQ/3441 using Laser interferometer in line with Clause 16.2	Vendor to confirm			
19.1.3	The machine should be tested for continuous running of 8 hrs. If any breakdown occurs during this test, the test should be repeated for 8 hrs from that time.	Vendor to confirm			
19.1.4	Checking & demonstration of the features, ratings, make, material hardness of main assembly, guideways etc of the machine, CNC system and all Accessories included in the scope of supply.	Vendor to confirm			
19.1.5	Machining of NAS Test Piece. Vendor to supply test piece, tooling for it's machining and measurements thereafter to check the machining accuracies.	Vendor to confirm			
19.1.6	Load test of the table to the specified capacity (5 Tons).	Vendor to confirm			
19.1.7	Load test to demonstrate the power & cutting capacity of the machine.	Vendor to confirm			

23/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
19.2	Tests/Activities to be Performed by Vendor on the machine at BHEL:				
19.2.1	Geometrical Accuracy Tests as per Clause 16.1	Vendor to confirm			
19.2.2	Positioning Accuracy & Repeatability Tests as per VDI-DGQ/3441 using Laser interferometer in line with Clause 16.2				
19.2.3	Load test to demonstrate the power & cutting capacity of the machine as per Clause 1.3	Vendor to confirm			
19.2.4	The machine should be tested for continuous running of 24 hrs. If any breakdown occurs during this test, the test should be repeated for 24 hrs from that time.	Vendor to confirm			
19.2.5	Demonstration of all features of the machine, CNC system & all accessories for their efficient and effective use.	Vendor to confirm			
19.2.6	Machining of NAS Test Piece. BHEL to supply test piece. The tooling for machining of NAS test piece shall be supplied by the vendor.	Vendor to confirm			
19.2.7	Prove out of BHEL component as per Clause no. 18	Vendor to confirm			
19.2.8	Two weeks of independent operation of machine by BHEL (after job proveout) under the supervision of the supplier.	Vendor to confirm			
19.2.9	Training of BHEL machine operators for one week in operation of complete machine & accessories etc. (after successful proving of job) by the supplier's experts / engineers during their stay at BHEL works.	Vendor to confirm			
20	PACKING:				
20.1	Sea worthy & rigid packing for all items of complete machine, CNC System, all accessories and other supplied items to avoid any damage/loss in transit. When machine is despatched in containers, all small loose items shall be suitably packed in boxes.	Vendor to confirm			
21	GUARANTEE:				
21.1	24 months from the date of commissioning of the machine at BHEL works.	Vendor to comply			

24/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT				REQUIRED	Offered	Deviation	Remark
22	GENERAL : The vendor should submit the following information:							
22.1	Machine Model				Vendor to specify			
22.2	Total connected load (KVA)				Vendor to specify			
22.3	Floor area required (Length, Width, Height) for complete machine & accessories.				Vendor to specify			
22.4	Painting of Machine/ Electrical Panels: RAL 6011 Raseda Green (Polyurethane Paint)				Vendor to confirm			
22.5	Total weight of the machine				Vendor to specify			
22.6	Weight of the heaviest component / part of the machine				Vendor to specify			
22.7	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, CNC System, Year of Supply etc.				Vendor to specify			
22.8	Detailed catalogues, sketch/ photographs of the m/c and accessories/ attachments and Layout of the machine should be submitted with the offer.				Vendor to specify			
22.9	Hydraulic, Pneumatic & oil pipings should be preferably metallic except places where flexible pipings are essential. The pipes required for the same shall be included in the standard scope of the machine.				Vendor to specify			
22.10	Ladder, at suitable location, is to be provided to access the machine elements located at the top of the column.				Vendor to confirm			

25/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT				REQUIRED	Offered	Deviation	Remark
23	QUALIFYING CONDITIONS:							
23.1	The vendor must be an Original Equipment Manufacturer (OEM)				Vendor to confirm			
23.2	The vendor must have supplied and commissioned at least two (2) numbers CNC HORIZONTAL BORING MACHINE of same or higher sizes (Spindle Diameter 130 mm , (Z+W) Axis travel: 1700 mm) Accuracies as required in Prove out component (Clause 18) in the past 10 years (on the date of opening of Tender). Vendor should submit proof of the same.				Vendor to confirm			
23.3	The machine referred to in Clause 23.2 must be working satisfactorily for more than one year (on the date of opening of Tender). Vendor should submit proof of the same.				Vendor to confirm			
23.4	Out of two supplied machines as referred to in Clause 23.2 , at least one should have been supplied in the country other than country of origin or supplied in India. Vendor should submit proof of the same.				Vendor to confirm			
23.5	<p>NOTES:</p> <p>1. Indian Machine Tool manufacturers who do not meet the qualifying criteria as mentioned in sub clauses 23.2 to 23.4, can be considered, if</p> <p>a) They have running Collaboration/ Joint Venture/ Joint Working Arrangement with a foreign partner who meets all of the qualifying criteria as mentioned in sub clauses 23.1 to 23.4.</p> <p>b) The Collaboration/ Joint Venture/ Joint Working Arrangement of the Indian Machine Tool manufacturer with its foreign partner should be of at least 2 years old (on the date of opening of tender).</p> <p>c) The Indian Machine Tool manufacturer should have supplied and commissioned at least two such machines (As specified in Clause 23.2) after Collaboration/ Joint Venture/ Joint Working Arrangement.</p> <p>d) If Indian Machine Tool Manufacturer has supplied only one such machine (Mentioned in Clause 23.2), proof of another such machine supplied & commissioned by its foreign partner should be submitted.</p> <p>e) The Indian Machine Tool manufacturer shall submit from their foreign partner a back to back guarantee for performance of the machine.</p> <p>2. BHEL reserves the right to assess the OEM with respect to their technical and financial capability. In respect of Indian Machine Tool manufacturers as noted above, BHEL reserves the right to assess the Indian Vendor & their foreign Partner with respect to their technical and financial capability.</p>				Vendor to note & confirm			

26/28

S.NO	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	Offered	Deviation	Remark
23.6	The following information should be submitted by the vendor about the companies where same or higher sizes machine(s) have been supplied. This is required from all the vendors for qualification of their offer.				
23.6.1	Name of the customer(s)/company(s) where referred machine is installed.	Vendor to specify			
23.6.2	Complete postal address of the customer(s).	Vendor to specify			
23.6.3	Month & Year of commissioning	Vendor to specify			
23.6.4	Model of the machine	Vendor to specify			
23.6.5	Parameters of machine(s) supplied (as specified in Clause 23.2) & application for which the machine is supplied.	Vendor to specify			
23.6.6	Name and designation of the contact person of the customer/s.	Vendor to specify			
23.6.7	Phone, Mobile no. and email address of the contact person of the customer/s.	Vendor to inform			
23.6.8	Performance certificates from two (2) customers as per clause No. 23, (Original Certificate or through email directly from the customer). The original certificate may be returned after verification by BHEL, if required.	Vendor to confirm			
23.6.9	BHEL reserves the right to verify the information provided by vendor at their referred customer's works including machining accuracies. It shall be the responsibility of the vendor to facilitate the visit of BHEL's team at their referred customer's works. In case the information provided by vendor is found to be false / incorrect, the offer shall be rejected.	Vendor to confirm			
23.7	The average annual financial turnover of the vendor (OEM) should be at least Rs 3,50,00,000/- for three consecutive completed financial years preceding the date of tender opening. Annual report of Balance Sheet and Profit & Loss account to be submitted along with the offer.	Vendor to confirm			
	In case of foreign bidders, Business Information Report issued by D&B / Experian etc to be submitted.				

27/28

BH130TXM R02

Dt 03-03-2020

S.NO	DESCRIPTION FOR BHEL REQUIREMENT		REQUIRED	Offered	Deviation	Remark
24	OTHER FEATURES:					
24.1	NETWORKING:					
24.1.1	Machine control should have necessary hardware and software for interfacing with gigabit Ethernet Local Area Network with 100 MB/sec through UTP cables for NC program and other related data transfer. This network to be connected to wide area network/Internet. The networking should have following capabilities.		Vendor to confirm			
24.1.1.1	The machine shall appear as a node in the Entire Network. (Network Neighborhood)		Vendor to confirm			
24.1.1.2	The program transfer shall be by simple copy and paste method provided sharing access is allowed between any PC and the machine across the network.		Vendor to confirm			
24.1.1.3	Transfer of NC & PLC data between CNC system and network should also be possible.		Vendor to confirm			
25	TERMS & CONDITION					
25.1	Approximate time of Delivery (From the date of issue of P.O/LOI): 52 Weeks or earlier <i>(Approved)</i>		Vendor to confirm			
25.2	Approximate time of Erection and Commissioning (From the date of receipt of material at BHEL and call for commissioning by BHEL): 12 Weeks <i>(Approved)</i> 12 Weeks <i>(Approved)</i>		Vendor to confirm			
25.3	Schedule of Erection and Commissioning shall be submitted with the offer.		Vendor to confirm			
25.4	Charges, duration, terms & conditions for E&C should be furnished in details separately by vendor along with offer.		Vendor to confirm			

