



BHARAT HEAVY ELECTRICALS LIMITED
RAMACHANDRAPURAM: HYDERABAD – 502 032

SPECIFICATIONS OF MILLING HEAD MOTORS-DRIVES FOR
HELLER ROTOR SLOT CUTTING MACHINE IN 02 BLOCK
(ASSET NO. 202-1041)

Ref:
M&S/ELS/SPECS/
HELLER-02/
MTRS-DRIVES
Dt: 18.10.2014
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REPLACEMENT OF DC MOTORS & DRIVES WITH AC MOTORS & DRIVES OF FS320 AND FS 60/160 MILLING HEADS OF HELLER ROTOR SLOT CUTTING MACHINE IN ELECTRICAL MACHINES BLOCK (Asset No: 202-1041)

Note : Vendor shall quote separately for Material and for Installation & Commissioning charges.

OBJECTIVE: To replace the existing DC motors & Drives of FS 320 & FS 60/160 milling heads of Heller make rotor slot cutting machine with latest AC motors and AC Drive systems, control panel, and interfacing with existing panel and Installation & Commissioning.

QUALIFYING CONDITIONS & REFERENCES: (Documentary proofs are to be enclosed by the vendor along with the technical bid satisfying all the following conditions without which the offer is liable for rejection.)

Note : The Original Equipment Manufacturer of the Motor and Drive being offered is exempted from the Qualifying Conditions & References.

(a)	Only those vendors should quote who have commissioned new Spindle/Chuck Motor of 100kW (S1 rating) or more & drive in at least one imported heavy machine, in the past ten years (as on the date of opening the tender) and such machine is working satisfactorily for more than one year after commissioning.
(b)	The vendor should have experience and past performance in the field of commissioning of motor-drive systems for last 2 years (as on the date of opening the tender).
(c)	Performance certificate from the customer regarding satisfactory performance of commissioning of motor & drive as per clause (a) above, in the format as below should be enclosed.
(d)	Average Annual financial turnover during the last 3 years, ending 31st March 2014 should be at least Rs. 50 Lakhs.
(e)	The Bidder/Vendor should furnish reference list of customers, with full address, details of contact person, where Motor-drive systems have been supplied and commissioned in the past.
(f)	BHEL reserves the right to verify the information provided by Bidder/vendor. In case the information provided by Bidder/Vendor is found to be false/incorrect, the offer shall be rejected.

The Performance certificate should be produced on Customer's Letter Head.

PERFORMANCE CERTIFICATE format for clause (c)

1	Name of the customer/company where motor-drive system as per clause (a) is commissioned	
2	Complete postal address of the customer/company and contact phone numbers	
3	Details of machine (OEM, Make, Model etc)	
4	Month & Year of Commissioning of Spindle/Chuck motor-drive system	
5	Application for which M/C is used	
6	Spindle/Chuck Motor details (Make, Power S1 Rating etc.,)	
7	Spindle/Chuck Drive details (Make, Rating etc.)	
8	Performance of the Spindle/Chuck motor-drive system (Satisfactory/Un-satisfactory)	
9	Any Other remarks	
	Date:	Signature & Seal of the Authority Issuing the performance Certificate

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Brief Description of the Machine:

Heller Machine is CNC Rotor Slot Milling machine with Siemens make 840D CNC system.

The machine comprises Machine bed with Longitudinal feed of cross slide & Cross feed of Milling Head (FS320) both driven by Siemens make AC servo motors & drives, FS 60/160 Special milling head with column through Hydro mechanical feed drive, Indexing attachment with optical indexing arrangement, Left Hand clamping head and right-hand clamping head, Support Head-I and Support Head-II.

The Milling head FS 320 and FS 60/160 are driven by variable speed DC motors controlled by Siemens make Simoreg 6RA22 DC drives.

DETAILS OF EXISTING DC MOTORS

- FS 320 MILLING HEAD MOTOR:

Make : BROWN BOVERI

Motor Type: GDa 346C

A603484

V:140-500 Ve:110V Amps:265-265

P 30-120 KW continuous speed: 375/1500 rpm

- FS 60/160 MILLING HEAD MOTOR:

Make : BROWN BOVERI

V: 190-410 Amps: 99A 16.2-36.5 KW

800-1800rpm

DETAILS OF EXISTING DC DRIVES FOR ABOVE MOTORS

Make : Siemens

Type: Simoreg 6RA22 DC with Analog set point from operator panel.

Specifications		Vendor's confirmation & Remarks
1.0 SCOPE OF MATERIAL SUPPLY		
1.1	AC MOTOR FOR FS 320 MILLING HEAD : (Technical data sheets containing Type No. and other details should be furnished with the offer.) SIEMENS make 1PH7/1PH8 or latest Asynchronous motor with rated power of 120KW suitable to replace the above DC motor. Type: Foot mounted Protection: IP55 (minimum) Application : Main Spindle for CNC application	
1.2	AC MOTOR FOR FS 60/160 MILLING HEAD : (Technical data sheets containing Type No. and other details should be furnished with the offer.) SIEMENS make 1PH7/1PH8 or latest Asynchronous motor with rated power of 36.5 KW suitable to replace the above DC motor. Type: Flange mounted Protection: IP55 Application : Main Spindle for CNC application	

2014

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1.3	<p>AC DRIVES: (for the above 2 motors) (Technical data sheets containing Type No. and other details should be furnished with the offer.)</p> <p>Siemens make AC Digital drives suitable for the above AC Spindle motors along with necessary hardware, power & Feedback cables, interface cables and accessories.</p> <p>The distance between the motors and the control panel is 60m. Vendor to supply cables accordingly.</p>	
1.4	Reactors, line Filters, chokes etc as per Siemens standards, along with cables & accessories required for the above drives & motors shall be in vendor's scope.	
1.5	DC Power supply units, if relevant, shall also be included in the scope.	
1.6	<p>CONTROL PANEL : Fully wired, Stand-alone, Floor mounting type Control Panel with minimum IP54 degree of protection</p> <p>Make of control panel: Rittal Make of Air conditioner: Rittal/Advance/Werner-finley/Sunbeam. Make of Panel wiring cables: Lapp.</p> <p>The panel shall comprise</p> <ul style="list-style-type: none">• Above drives and drive accessories• Line filter, Reactors, Transformers etc• Complete switchgear• 220V AC 5/15A service socket with on/off switch	
1.7	Mechanical Interface : Design, Manufacture, Supply and Mounting of Flanges, Brackets, Fittings, Couplings, Pulleys and Accessories required for Assembly & Alignment of new Motors on the machine.	
1.8	PC software tools (along with necessary connecting cables and accessories) for Commissioning, Start-up, Data backup & restore, Maintenance and Troubleshooting for the table drive should be handed over to BHEL.	
2.0 INSTALLATION AND COMMISSIONING		
2.1	Dismantling of existing motors, drive panels, cables etc.	
2.2	Installation of new motor-drive systems, electrical panel, supplied equipment & accessories and interfacing to existing panel.	
2.3	Mounting of motors on the machine, Assembly and Alignment.	
2.4	The existing Electrical Interlocks & Controls for the motor-drive systems shall be maintained in the new setup.	
2.5	Adequate & reliable safety interlocks & devices should be ensured by the vendor to avoid damage to the machine, work piece and operator.	
2.6	Installation & Commissioning and testing of motor-drive systems on the machine	
3.0 DOCUMENTATION		
3.1	The supplier shall supply following documents for MOTOR-DRIVE systems.	
	i) Electrical drawings - 3 sets of hard copies	
	ii) Drawings of mechanical modifications - 3 sets of hard copies	
	iii) Data backup of Drives/motors	
	iv) Soft copies of all the above documentation shall be furnished on an	

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	external portable Western Digital make 1TB Hard disk.	
4.0	GENERAL POINTS	
4.1	The supplier is required to study the machine, the scope of supply and certify the completeness of the scope in order to execute the work. In case of any discrepancies, the supplier is required to highlight the same to BHEL before acceptance of the order.	
4.2	The machine will be available for modifications for duration of 4 weeks .	
4.3	Before commencing manufacture of the panels, electrical and general arrangement drawings should be submitted to BHEL for approval.	
4.4	Before dispatch of material the supplier should arrange for inspection /working of the motor-drive system for BHEL personnel at his works. BHEL shall be intimated ten days in advance before calling for inspection. Material shall be dispatched only after written clearance from BHEL.	
4.5	All electrical & electronic cabinets/panels shall be dust & vermin proof . Vendor should implement necessary measures (like concealing the vents) to prevent entry of RATS & VERMINS into the panels/pendants/cabinets.	
4.6	All equipment must be suitable to run with input voltage 3 wire, 3 phase AC, 415 volts + 10%, 50 Hz + 3% Hz	
4.7	All equipment shall be tropicalised and suitable for operation in shop floor conditions.	
4.8	Material removed from the machine shall be handed over to BHEL.	
4.9	Planning and laying of all necessary cables are in suppliers' scope of work.	
4.10	All incoming cables to the panel should be from bottom of the panel.	
4.11	Flexible PVC Conduits shall be used for the power and control cables. Make: LAPP/Equivalent	
4.12	All the switch gear items like contactors, relays, switches, OLRs etc. should be of reputed make like Siemens/Telemecanique/Fuji/Merlin-gerin/ Mitsubishi/ABB/GE/Teknic.	
4.13	Supplier has to prove out all the functions of drives & motors and demonstrate working of the machine to the satisfaction of BHEL.	
4.14	Earthing: All non-current carrying metallic parts shall be Earthed. All doors and movable parts shall be connected to the earth bus with flexible copper connections.	
4.15	Tools & Instruments required for Dismounting works, wiring works, Installation & Commissioning activities at BHEL works shall be brought by the vendor himself.	

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S.S.V.N.V.H. Swamy