



BHARAT HEAVY ELECTRICALS LIMITED
RAMACHANDRAPURAM: HYDERABAD - 502 032

SPECIFICATIONS OF MOTOR-DRIVE SYSTEM FOR SK12 (07-1067) VERTICAL
TURNING MACHINE

Ref: M&S/ELS/KVS/SPECS/SK12/10RS/083
Dt:19.03.2014
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REPLACEMENT OF MOTOR-DRIVE SYSTEM, CONTROL PANEL WITH SWITCHGEAR AND INTERFACING WITH EXISTING PANEL FOR
DOUBLE COLUMN VERTICAL TURNING MACHINE.

- 1 **OBJECTIVE:** The objective is to replace the existing motor with latest AC motor with Variable Frequency Drive (VFD) system with control panel, interfacing with existing panel and prove-out.

DETAILS OF EXISTING MOTOR : SCHRAGE MOTOR- SKODA MAKE

ROTOR	400 V	50 Hz	Stat	91 V
	37	37		12 KW
	2300	1800		580 rpm
ROTOR	70	67		55 A
STATOR	75	75		95 A

Qualifying conditions and references

1. Only those vendors who have Retrofitted and Commissioned at least one Horizontal borer of spindle dia 100 mm or Vertical lathe with table dia 1200 mm with **ABB / Siemens** make Motor Drive System for similar applications in the past five years (on the date of opening the tender) and such machine is working satisfactorily for more than one year should quote.
2. The vendor should have at least 5 years continuous experience in this field.
3. Performance certificate from the customers regarding satisfactory performance of retrofit to be enclosed along with technical offer.
4. The Bidder/Vendor to furnish reference list of customer, with full address, details of contract person, where similar system or higher version has been supplied in the past.
5. 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.

Signature

Signature

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Specifications

	Supplier's confirmation	Deviations if any /Remarks
<p>2 SCOPE OF MATERIAL SUPPLY</p> <p>2.1 THE MOTOR: 3- Phase AC maintenance free Induction motor, 415 V, 50Hz, 37 kW, 1500 RPM(rated) and 3000RPM(maximum). External fan for air cooling.</p> <p>Type: Flange mounted, shaft vertical down words (IMV35) Protection: IP55 ,Insulation class F, Duty Cycle S1 * Technical data sheet which contain Type and other details to be provided with offer.</p> <p>Application : Rotary table MAKE: Siemens 1PH7167 -2HF03 - OCA3 or ABB HX+225SMB4</p>		
<p>2.2 THE DRIVE for table rotation: AC 3phase Variable Frequency Drive (VFD), 4-Quadrant, regenerative braking system for dynamic control of above the motor.</p> <p>Application : Rotary table</p> <p>The drive shall have following features</p> <ul style="list-style-type: none">• Facility to input analog reference voltage of (0 to ±10 V) DC through external potentiometer as well as digital reference (by speed increase/decrease digital inputs)• Digital inputs for Direction, Inching, Speed increase/decrease and Start/Stop• Potential free digital outputs for Zero speed, Drive trip, drive status etc.		

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SCOPE OF MECHANICAL WORK:

- 3.3 Mounting of motor on the machine
- 3.4 Design, manufacture and mounting of brackets and fixtures to mount and align the motor.

INSTALLATION AND COMMISSIONING

- 3.5 Installation & Commissioning and testing of motor-drive system on the machine

4 DOCUMENTATION

- 4.1 The supplier shall supply 3 sets of the following documents for MOTOR-DRIVE system
 - ii. Installation/commissioning/Parameter manuals
 - ii. Electrical drawings of the control panel and pendent panel.
- 4.2 One set of the above documents and Drive Data shall be furnished in a 16GB Pen drive.

5 GENERAL POINTS

- 5.1 All equipment must be suitable to run with input voltage 3 wire, 3 phase, 415 volts + 10% 50 Hz + 2 Hz
- 5.2 All equipment shall be tropicalized and suitable for operation in shop floor conditions, where temperature variation is between 10° to 45°C
- 5.3 Panels shall be free standing floor mounting type.
- 5.4 Supplier should arrange for training on maintenance of Drive- free of cost for two **personnel** at Manufacturer's training facility.
- 5.5 Supplier to quote separately for the material and for installation and commissioning charges.

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		<ul style="list-style-type: none"> • Overvoltage / over current protection • Inch and continuous operation • Local/Remote operation • The drive control panel shall have indication lamps for <ul style="list-style-type: none"> • Drive fault • Drive in operation etc . <p>Make: SIEMENS SINAMICS S 120, 55 KW</p> <p style="text-align: center;">OR</p> <p>ABB ACS 850 - 04 -094A -5</p> <p>Control panel (details): a standard control Panel with</p>	
2.3		<ul style="list-style-type: none"> • THE VARIABLE FREQUENCY DRIVE (VFD) • LINE FILTER/ CHOKE • Complete SWITCHGEAR • INDICATION METERS FOR MOTOR POWER AND CURRENT etc • 24V DC POWER SUPPLY • RPM METER ON THE PENDENT.. <p>Dimention Min (mm): Height:1800mm, Width: 1200mm (two door) Depth: 600mm</p> <p>Cables: Necessary power/signal/interface cables of MAKE: Lapp/ equivalent.</p>	
2.4			
3		SCOPE OF WORK	
ELECTRICAL AND ELECTRONICS			
3.1		Dismantling of existing motor, cables etc.	
3.2		Installation of new motor-drive system, electrical panel and interfacing to existing panel etc.	

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5.18	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.		
5.19	The machine will be available for modifications for duration of 1 week.		

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5.6	Supplier to send his offers for commercial and technical bids in a separate sealed cover and for price bid in a separate sealed cover.		
5.7	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.		
5.8	Material removed from the machine shall be handed over to BHEL.		
5.9	Cleaning of the machine before taking up the machine for work is in suppliers' scope of work.		
5.10	Planning and lying of all necessary cables is in suppliers' scope of work.		
5.11	Control panel of reputed make with IP54 degree of protection and Control Panel with LT switchgear and drive. All incoming cables to the panel should be from bottom of the panel. Control Panel Should be provided with proper glands at the incoming and outgoing points of the cable (Rats / Foreign particles should not enter in the panel)		
5.12	Flexible PVC Conduits for the power and control cables. Make: LAPP, Germany/Equivalent		
5.13	All the switch gear items like contactors, relays, switches, OLRs etc. should be reputed make.		
5.14	Before commencing manufacture of the panels, electrical and general arrangement drawings should be submitted to BHEL for approval.		
5.15	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		
5.16	Supplier has to prove out all the functions of drive and demonstrate working of the machine to the satisfaction of BHEL.		
5.17	Indication lamps wherever required to be provided.		