

		Boiler Auxiliares Plant	
		Bharat Heavy Electricals Limited	
		Ranipet - 632 406, Tamilnadu, INDIA	
SUPPLY, INSTALLATION AND COMMISSIONING of LT Motor & VFD drive in HAD Test rig			
Ref.:HAD-TEST RIG:001-Rev01, dt.20-08-2019			
Enquiry No.: 2790587E / 29.07.2019			
1. New Motor Specification			Supplier acceptance
1.1	Type	3 Ph AC Squirrel cage Induction Motor	Yes/No
1.2	Operating Voltage	415V + 10% / -10%, 50HZ +/-3 HZ, 3 Phase AC (3 wire system with out neutral)	Yes/No
1.3	Power	54 to 60 KW	Vendor to specify
1.4	Protection	T.E.F.C with IP55	Yes/No
1.5	Number of poles	4	Yes/No
1.6	frame size	The overall height of motor shall be 600mm or less	Yes/No
1.7	Mounting	B3 (IM1001) Foot Mount	Yes/No
1.8	Speed	Max of 1500 RPM with VVVF Drive	Yes/No
1.9	Speed Range	0 to 1500RPM using VVVF Drive with required torque	Yes/No
1.10	Starter	Linear Variable Speed by VVVF Drive with required torque	Yes/No
1.11	Insulation	Class F (Class B is not acceptable)	Yes/No
1.12	Motor Foot	Motor Feet are to be cast as an integral part of the frame. The material shall provide for maximum strength and rigidity.	Yes/No
1.13	Terminals & Connections	Motor Leads are to be protected by high temperature glass braided insulation, and are to be extended out of the motor to the starter. connection terminals, without the use of an intermediate terminal box. Terminal box must be of cast iron. Also, Terminal box should be located on the right side of the motor looking from shaft end and NOT on TOP, to suit the existing frame arrangement.	Yes/No
1.14	End Shields	Must be cast iron (Aluminum end shields are not acceptable).	Yes/No
1.15	Fans	Fans must be cast iron/ Steel fans with low noise level	Yes/No
1.16	Shafts	Motor shaft is to be manufactured from one piece Steel. Shafts must be supplied with key and have the shaft end drilled and tapped. The shaft has to take our heavy initial full load torque.	Yes/No
1.17	Standard for Testing and requirements	Motor shall meet all the testing requirements and other requirements as per standard IS325.	Yes/No
1.18	Harmonics	Motor harmonics should be minimum as per international standards	Yes/No
1.19	Vibration and Noise	The vibration and noise of motor should be with in the limits as per international standards.	Yes/No

1.20	MAKE	ABB/ Siemens/ Kirloshkar Only		VENDOR TO SPECIFY
2. New VVVF Drive Specification				
2.1	VVVF Drive	Variable Voltage, Variable Frequency Drive		Yes/No
2.2	Torque and Power	The output Torque and power of VVVF Drives must drive the above specified main motor with linear variable speed control and the temperature must be with in the limits. The torque that can be continuously taken from the motor, must not exceed the full load torque.		Yes/No
2.3	De-rating Factor	To ensures that the temperature will not rise above the original drive specification. Contractor has to specify.		Yes/No
2.4	Speed Control	Linear Speed Control shall be using key board control with resolution of 5RPM.		Yes/No
2.5	Output Protection	The VVVF Drive should have Current limiting when the motor is over loaded		Yes/No
2.6	Thermal Limiting	Motor Temperature is to be limited by VVVF drive to protect the motor from over heating		Yes/No
2.7	Equipment Protection	The VVVF Drive Must have internal protections against Over Voltage, under Voltage , Surge, etc.		Yes/No
2.8	Indications	The VVVF drive should Indicate the output parameters like Freq, Voltage, current, speed, etc		Yes/No
2.9	Alarms	The Drive Should Give Proper Alarms in case of failures		Yes/No
2.10	Make	ABB / Siemens / Kirloshkar / AMTECH make only		Yes/No
2.11	Dynamic Braking resistor (DBR)	Suitable braking resistor shall be supplied for supplied motor		Vendor to specify the details
3 REQUIRED AUXILIARIES				
3.1	New control panel with a reputed make panel AC shall be supplied			Yes/No
3.2	Suitable MPCB's & Contactors for two lube oil system motors (rating 3 phase,415v,12.5hp) need to be supplied by supplier.			Yes/No
3.3	All supplied necessary Contactors, control elements and all other switch gears shall be of reputed make and conforming to IS standards.			Yes/No
3.4	The Panel shall be wired neatly and the positioning should be proper with DIN rails and easy maintainability.			Yes/No
3.5	Adequate lighting shall be provided in electrical panel preferably LED.			Yes/No
4 INTERFACE				
4.1	All wirings from / to the accessories, motors, drives and panels are the suppliers scope			Yes/No

4.2	Reputed make (conforming to IS standards) wires/cables/conduits shall be used with proper rating to interface the drive, motor etc. If BHEL finds that the wires/cables/conduits are not a reputed make and under rated the same shall be disqualified by BHEL.	Yes/No
4.3	Blank	Blank
5. General Conditions		Any Deviations may be indicated by supplier
5.1	All the components and equipment shall be of reputed make and shall be duly approved by BHEL.	Yes/No
5.2	Drawings and manuals shall be supplied in hardcopy (5 Sets) and softcopy (CD format)	Yes/No
5.3	Necessary Software's to restore the drive (in case failure) and modify the drive parameters shall be supplied with drive	Yes/No
5.4	Minor Helps like drilling, machining, welding, gascutting, material handling etc., shall be provided by BHEL on request by vendor. The requested helps shall be extended based on availability in BHEL.	Yes/No
5.5	Inspection of all supply materials at full load conditions by BHEL at vendor works after Work Completion. For this vendor to furnish a detailed test plan for factory acceptance trails and site (BHEL) acceptance trails.	Yes/No
5.6	The Guarantee period will be one year from the date of acceptance by BHEL.	Yes/No

Revision details		Rev-01	dt.20-08-2019
01	Following revision in specification done based on feedback from vendor and internal review. In sl.no.:1.6, the frame size description altered. In sl.no.1.13, Motor terminal box details revised. In Sl.no.:2.4, "Closed loop control" scope removed. And in sl.no.:3.2, lube oil motor ratings changed from 3.7KW to 12.5hp. Also, In sl.no.:4.1, "encoders" scope removed. Further, sl.no.:4.3, "Motor encoder" scope removed.		



Ref.:EDC-Fans:HAD Test Rig:003, Rev-01

20/8/2019

PRE-QUALIFICATION CRITERIA for SUPPLY, INSTALLATION AND COMMISSIONING of LT Motor & VFD drive in HAD Test rig at BHEL / Ranipet

1. The vendor shall be an Original Equipment Manufacturer (OEM). Only the OEM or their authorized dealers in India along with an authorization letter can submit offers. An authorized Representative/Dealer in India, cannot quote for the same equipment from more than one OEM.
2. The vendor should have already supplied and installed minimum 3 nos. of similar rating 415V VFD Drive Panels during the past 5 years and these must be operating satisfactorily for at least past one year. Detailed reference list including installations with details of rating, application, supply and commissioning dates, customer contact details where these VFD's have been supplied shall be provided along with offer.
3. The offer shall be only for Standard Catalogued Type No. from the manufacturer for the VFD Panels and not custom made one. All the specifications should be supported by Standard Catalogues and Data Sheets of the manufacturer for the Type No.
4. Offer shall be for a new equipment and not for any refurbished / used equipment. All the parts used in the equipment shall also be new and not used / refurbished ones. A declaration to the above effect to be furnished.
5. Foreign OEM shall have Authorized Indian dealer(s) / representative(s) for After- sales service and support. The authorization letter for the dealer/ representative shall be provided with confirmation that after sales service support shall be provided by them.
6. The vendor or their authorized service representatives shall have trained engineers in India for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for our installations.
7. The vendor shall be in a position to undertake AMC or provide service support for the equipment supplied, after the expiry of the warranty/ guarantee period either directly or through a service representative.
8. If required by BHEL, the vendor shall arrange for a demonstration of the equipment or similar equipment operating in India.
9. The vendor shall furnish a comprehensive warranty for at least 12 months from the date of commissioning.

NOTE:

- The qualifying criteria response data should be submitted separately, but along with technical bid, as an integral part of the technical bid documents.

- Revision details. Rev-01. Dt.20/8/2019.** Following revision in specification done based on feedback from vendor and internal review.

1. In sl.no.:2, the scope altered by removing the description "with Active Front End".



Ref.:EDC-Fans:HAD Test Rig:004

Scope of Erection & Commissioning of LT Motor & VFD drive in HAD Test rig at BHEL / Ranipet

1. The contractor shall undertake erection of LT Motor and its VFD Panel in accordance with good engineering practices in conformity with statutory regulations and Code of Practice and to the entire satisfaction of BHEL-Ranipet.
2. The erection agent can make visit to the location of the HAD Test Rig arrangement at Production shop to understand the present layout arrangement, method of coupling the motor to be supplied with existing pulley drive and plan for requirement of cables and other accessories.
3. Indicative erection drawings shall be submitted by erection agent to BHEL indicating the requirement for civil work for panel erection, cable routing, 3 phase 415 V power supply point etc.
4. The erection agent shall also arrange all the necessary erection tools, tackles, testing and measuring instruments and shall supply erection materials and consumables.
5. The erection agent shall deploy competent testing agent at site for testing and commissioning of the supplied electrical system.
6. The erection agent shall clear the site after commissioning of the equipment / system and obtain the Site Clearance Certificate from BHEL.



Item Annexure for Enquiry no 2790587E/29.07.2019

Sl no	Material Code	Item Description	Quantity (No)	Quoted/ Not Quoted
1	IM8640200000	Supply of LT motor with VFD for HAD test rig as per Technical Specification	1	
2	-----	Erection & Commissioning of LT motor with VFD for HAD test rig as per E&C scope.	1	

Special Note:-- Sl no 01 to 02 will be procured as a set. Summation cost of all above sl nos. will be deciding factor for L1 (sl no. 01 to sl no. 02).

Signature and Office Seal of Vendor



Price Bid Format for Enquiry no 2790587E/29.07.2019

Sl no	Material Code	Item Description	Quantity (No)	<u>Unit Price in INR</u>
1	IM8640200000	Supply of LT motor with VFD for HAD test rig as per Technical Specification	1	
2	-----	Charges for Erection & Commissioning of LT motor with VFD for HAD test rig as per E&C scope.	1	
3	GST on sl no. 01 (Supply) in percentage			
4	GST on sl no. 02 (Commissioning) in percentage			

Special Note:-- Sl no 01 to 02 will be procured as a set. Summation cost of all above sl nos. will be deciding factor for L1 (sl no. 01 to sl no. 02).

Signature and Office Seal of Vendor