Indian Institute of Technology Kanpur
Dept. of Mechanical Engineering

CORRIGENDUM

Tender Ref. No. IITK/ME/AM/2022/03   **Date: 16th September 2022**

Bid Opening Date: 09/09/2022
Bid Submission Closing Date: 22/09/2022

This is for the information of all the bidders that the following corrigendum is being made for the tender Ref. No. IITK/ME/AM/2022/03 published on 09-09-2022

Sealed quotations (**technical and financial separately**) from prospective vendors are invited by the Department of Mechanical Engineering, IIT Kanpur for **"Make AC Drive"** with the following technical specification. If any bidder has already submitted his/her bid, then he/she should resubmit his/her bid by considering the above modification in the technical specification. All the quotations and tender-related documents should be sent by Speed Post/Courier to the inviting officer at the below-mentioned address.

Update in Specifications and Date Extension

1	Product type	Dedicated Drive for Industrial application in a compact Energy Saving Package. General purpose products are not acceptable
2	Manufacturer	Shall have minimum 30 years' experience in design and manufacturing VFDs. Brand labeled drives not accepted.
3	Certification	CE
4	VFD Design requirements:	
4.1	Rating	75KW/100HP
4.2	Ampere	147A
4.3	Voltage variations	380-480 V $\pm$ 10%
4.4	Nominal supply frequency	50 / 60 Hz $\pm$ 5%
4.4	True Power Factor (λ)	$\geq$ 0.9 at nominal rated load
4.6	Displacement P.F. (cos φ)	> 0.98
4.7	Harmonic current control	Non-saturating dual reactors on both rails of DC bus. Swinging chokes which do not provide full harmonic filtering throughout the entire load range are not

		acceptable.
4.8	EMC Compliance (for emission and immunity)	a) For powers ≤90 kW : Shall comply with requirements of IEC 61800-3 : 2004, Category C3 with 25m motor cable.
4.9	VFD rated continuous output current	Meet or exceed the normal rated currents of standard IEC induction motors
4.10.	Torque mode	Variable torque. Not programmable in constant torque mode for variable torque fan and pump applications
4.11	Torque ratings	a) Starting torque : Maximum 110% for 1 minute b) Overload torque : Maximum 110% for 1 minute
4.12	Cable lengths	Upto 100 m for Un shielded cable.
4.13	Cable type	To allow for SWA (Single Wire Armour) cable & MICS (Mineral Insulated Copper Sheath) cable in the motor circuit.
4.14	V/f ratio	Dynamically varying; fixed V/f curves not acceptable. The factory default programming for this function shall be dynamic V/f.
4.15	Output power switching	Without any interlocks and damage to VFD
4.16	Motor tuning function	Automatic, without having to decouple the load and motor.
4.17	Signal Isolation	Galvanic Isolation between power and control circuitry
4.18	Motor noise reduction	Adjustable carrier frequency modulation. VFDs with fixed switching frequency not acceptable
4.19	Ramp time	Programmable from 1 to 3,600 seconds
5	**Service Conditions:**	
5.1	Ambient temperature with full VFD rated output current:	For powers ≤90 kW : 50 ^{0}C without derating
5.2	Relative Humidity	5 to 95%. non condensing
5.3	Max. altitude above sea level	Upto 1000m without derating
5.4	AC line voltage variation	$\pm$ 10% of nominal with full output
5.5	VFD enclosure protection	Minimum IP 20.
5.6	Aggressive environment	To offer circuit boards as per Class 3C3
5.7	Vibration	1.0 g
6	**Protective features:**	
6.1	Motor overload protection	Class 20 I^2t electronic motor overload protection with automatic compensation for changes in motor speed.
6.2	Protective functions	Against input transients, loss of AC line phase, output short circuit, output ground fault, over current, over voltage, under voltage, VFD over temperature and motor over temperature.

6.3	Function at input phase loss	Auto derate and warning. Should cause no damage to VFD
6.4	Function at over temperature	Automatically reduce carrier frequency or auto derate.
6.5	Function at over load	Automatically reduce output current to a pre-programmed value
6.6	Alarm log	Record last 10 alarms with description of alarm, date & time.
7	**Inputs and Outputs**	
7.1	Minimum I/Os required	7 DI (2 DIs can be programmed as DO)
		2 relay outputs - of min 240V AC, 2 A;
		2 AI programmable for both 0-10V & 4-20 mA inputs;
		2 AO of 0 / 4-20 mA.
7.2	Display of analog signal	The Local Control Panel to display each analog signal in its engg. units for trouble shooting & setup.
7.3	Serial com interface for AI/DI	Capable of reading the status of all analog and digital inputs of the VFD through serial bus communications
7.4	Serial com interface for AO/DO	Capable to command all digital and analog outputs (including options) through the serial communication bus
8	**Serial Communications**	
8.1	Serial Com Port	EIA-485 (RS 485)
8.2	Standard serial com protocols	Modbus RTU,
8.3	Protocol options required	Profibus & Profinet

Specification of Electrical Panel

VFD Electrical Panel for 75.0kw

Sr. No	Description	Qty
	INCOMER	
1	**Enclosure (1800 X 800 X 400) WITH 75mm BASE**	1
2	320A TP 36KA MCCB WITH TMD BASED	1
3	SPREDER LINK	2
4	EXTENDED ROTARY HANDLE	1
5	DIGITAL VAF METER CL-1.0	1
6	CT 400/5A CL-1.0	3
7	GLASS RELAY WITH BASE FOR CONTROLLING	2
8	Indicating Lamps, Red, R Phase	1
9	Indicating Lamps, Yellow, Y Phase	1
10	Indicating Lamps, Blue, B Phase	1
11	6A SP 10KA MCB	4
12	INDICATING LAMP RED MOTOR ON	1

13	INDICATING LAMP GREEN MOTOR OFF	1
14	PUSH BUTTON GREEN START WITH NO ELEMENT	1
15	PUSH BUTTON RED STOP WITH NC ELEMENT	1
16	AUTO/MANUAL SELECTOR SWITCH	1
17	75.0KW VFD	1
	BUSBAR	
18	400A AL. BUSBAR	1
	ACCESSORIES	
19	PANEL COOLING FAN 8"	2
20	AIR FILTER/FINGER GUARD	4
21	METER GLASS	1
22	Busbar TERMINAL BLOCKS	7
23	CONTROL TERMINAL BLOCKS 2.5SQMM	15
24	Terminal PVC Stopper	10
25	Insulator	6
26	Panel Legends	20
27	PVC Channel	10
28	DIN Rail Trinity	10
29	POWER CABLE 50.0SQMM	30
30	Control Cable 1.5sqmm	100
31	Lugs/Thimble, Fasteners, Cable Tie, Ferrules, Spiral, PVC Tape	1

Specification of Remote Monitoring and Control

Cloud Based Monitoring & Control Applications for VFD to communicate on Modbus, RS485 & Server Connectivity will be through 2.4 GHz Wi-Fi or 2G/4G Network, Platform Enable to Provide the User Interface to Access the data in real time & controlling the Process Parameters on MQTT/HTTP protocol with Cloud Application.

Terms and Conditions:

1. The delivery period should be within **6 – 8 Weeks** after receipt of PO.

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