






PROJECT : 600 TPD SULPHURIC ACID PLANT

TECHNICAL SPECIFICATION OF VIBRATION SENSOR

0	8-8-2024	FOR ENQUIREY	PC	PC	PC
Rev. No	Date	Description	Prepared	Verified	Approved
PROJECT		600 TPD SULPHURIC ACID PLANT			
OWNER			M/s. GSFC		
EPC CONTRACTOR			M/s. ISGEC HEAVY ENGINEERING LTD		
DOCUMENT TITLE		TECHNICAL SPECIFICATION OF VIBRATION SENSOR			
DOCUMENT NO.		ES0216-83830100-SPC-0015		Rev. No.: 00	
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Prepared by: PC		Verified by: PC		Approved by: PC	

	TECHNICAL SPECIFICATION OF VIBRATION SENSOR	
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Item Code		
Description	VIBRATION SENSOR	Date: 07-08-2024

1.1 **SCOPE OF SUPPLY:**

- 1.1.1 The Scope Of Supply Shall Include Design, Manufacturer, Testing And Inspection At Manufacturer's Works, Packing And Forwarding, Transportation & Delivery Of Vibration sensor.
- 1.1.2 Supply of Looped Power Vibration Sensors (2Wire, 4-20 mA) Transmitter, Mounting Pad (SS-304) with Extension Cables (15 Meter), Metallic Flexible Conduits, SS-304 Junction Box.
- 1.1.3 Junction Box shall be with Double Compressed Brass Nickel Plated Cable Gland of suitable size for all Incoming & Main Out going Cable.

1.2 **BILL OF QUANTITIES**

Bill of Quantities to be supplied:

- Nos. Of Vibration Sensors: 12 No's + 2 Spare (Total- 14 Nos)
- Mounting Pad for Vibration Sensor :12
- Junction Box: 3 No's

2.0 **TERMINAL POINTS:**

Mounting Pad to Sensor, Sensor to JB: **Vendor Scope**

JB to DCS: **ISGEC Scope**

3.0 **TEST AND INSPECTION:**


The supplier shall provide inspection to establish and maintain the quality of workmanship to ensure accuracy and reliability of each component, instruments, used to integrate as VMS System. The supplier shall submit test certificates carried out for meeting the technical requirement for purchase, for review and approval before dispatch/inspection of the panel/instruments.

4.0 **DOCUMENTS TO BE SUBMITTED WITH THE OFFER**

- GA Drawing & Bill of Material
- Typical Scheme for Offered System
- Technical Catalogue - All Items
- Deviation list, if any, on a Separate Deviation Schedule

5.0 **DRAWINGS/DOCUMENTS TO BE SUBMITTED AFTER AWARD OF CONTRACT**

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a.	Technical Data Sheets - For Approval	Within 07 Days from Date of LOI/PO
b.	JB GA/ IA Drawing, Termination Details, Bill of Material with Make & Model Nos. Details - For Approval.	Within 07 Days from Date of LOI/PO
c.	Quality Assurance Plan - For Review	Within 07 Days from Date of LOI/PO
d.	Test Certificates for Review & Approval	15 Days Before Dispatch
e.	Operation & Maintenance manuals: 6 Sets of the System to be submitted to purchaser's work before dispatch of the system and 01 Set along with Dispatch of the Vibration Monitoring System.	15 Days Before Dispatch

8.0 TECHNICAL SPECIFICATION -

2 Wire Looped Power (4-20mA) Vibration Sensors cum Transmitters with Integral Digital Display shall be offered for monitoring the Vibration levels of various Machines (HT Motorss) in BHP. The measurement of vibration levels shall be carried out on the Bearing housings (DE and NDE) of the Machines in both Horizontal & Vertical planes (X &Y planes).

There shall be hardwired data exchange from Vibration JB to DCS for display, trending in HMI (as applicable), alarming and interlocking / protection.

1) Vibration Sensors

Vibration Monitoring Probe (Loop powered,4-20mA)


Vibration limits shall be as per applicable IS / IEC / Manufacturer's guidelines.

2) Low Noise Cable & Cable Conduit

Each sensor shall be furnished with flexible conduit and low noise cable. Conduit fittings shall be furnished for connection to sensor. The other end of the flexible conduit will be connected to a suitable junction box.

The flexible low noise cable shall not be directly terminated to the vibration sensor to avoid any damages due to vibration. A prewired plug-in type connector shall be furnished for connection of the low noise cable to the vibration sensor. Terminals shall be provided for terminating the low noise cable to the JB.

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Flexible Metallic Conduit of Suitable Size & Length to be provided in accordance to accommodate Pre Feb cable.

—3) Mounting Pads

All required mounting pads for mounting the vibration sensor on equipment shall have to be arranged by Supplier. The installation of sensor shall be such that removal of vibration pick-up during overhauling of the bearing will not be necessary. MOC of Mounting Pad shall be SS-304 & dimensions shall be **30x30x15 mm- 4Nos and 50x50x10 mm- 8 Nos**. Sensor Thread provision in Pad shall be as per Sensor Stud thread.

4) Junction Box

Junction Box shall be of SS-304 with Canopy. Complete Body Shall be of 2 mm Thk. & Gland plate (removable) shall be of 3 mm Thk. Protection Class Shall be IP-65 min. JB shall be with Synthetic rubber Gasket , Key Lock, Screw Terminal (2.5 Sq. mm) , Din Rail for TB's, Cable Duct , Brass/Copper Earthing Nut & Bolt, Wall/Structure Mounting arrangement.


JB shall be with Double Compressed Brass Nickel Plate Cable & Black PVS shroud for all In & Out Cables—

5) Cable Glands

All Filed JB shall be with Cable gland & Black PVC shroud. Cable gland shall be as follow:-

- Type : Double compression type conforming to BS 6121
- Entry Thread : NPT
- Material : Brass
- Finish : Cadmium Plated.
- Protection : IP 67 or better
- Size : To suit armored cable diameter
- Accessories : Neoprene gasket, locknuts, reducers etc.


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DATA SHEET FOR VIBRATION SENSOR cum TRANSMITTER

Make	
Model No.	Vendor to Specify
Display Unit	Integral Digital Display
Measuring Range	0-25 MM/SEC
Current Output	
Power	+12 to +35 VDC Input @ Transmitter Terminal
Signal Output	2 Wire, 4 to 20 mA
4 to 20 mA Loop Accuracy	Within $\pm 1.5\%$ Over Specified Full-Scale Range
Type	Smart , HART Protocol
Maximum Loop Resistance	*
Current Limiting	*
Temperature Stability	*
Frequency Response	5 Hz to 6,000 Hz +0, -3 Db
Minimum Target Size	*
Lead-Wire Length	Maximum Cable Distance is 15 Meters
Electrical Classification	*
Environmental Limits Requirements	
Operating Temperature	-35 °C to +85 °C (-31 °F to +185 °F)
Storage Temperature	-51 °C to +100 °C (-60 °F to +212 °F)
Probe Temperature Requirements	

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Operating Temperature	-35 °C to +177 °C (-31 °F to +350 °F)
Storage Temperature	-51 °C to +177 °C (-60 °F to +350 °F)
Relative Humidity	95 % Condensing, Non-Submerged, with Protection of Coaxial Connectors
Mechanical Requirements	
Transducer Tip Material	Polyphenylene Sulfide (PPS)
Transducer Case Material	AISI 303 or 304 Stainless Steel (SST)
Cable Armor	Flexible AISI 302 SST with Optional FEP Outer Jacket
Tensile Strength	222 N (50 lbf) Probe Case to Probe Lead (Maximum)

Note: "*" Information to be furnished by Vendor.

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