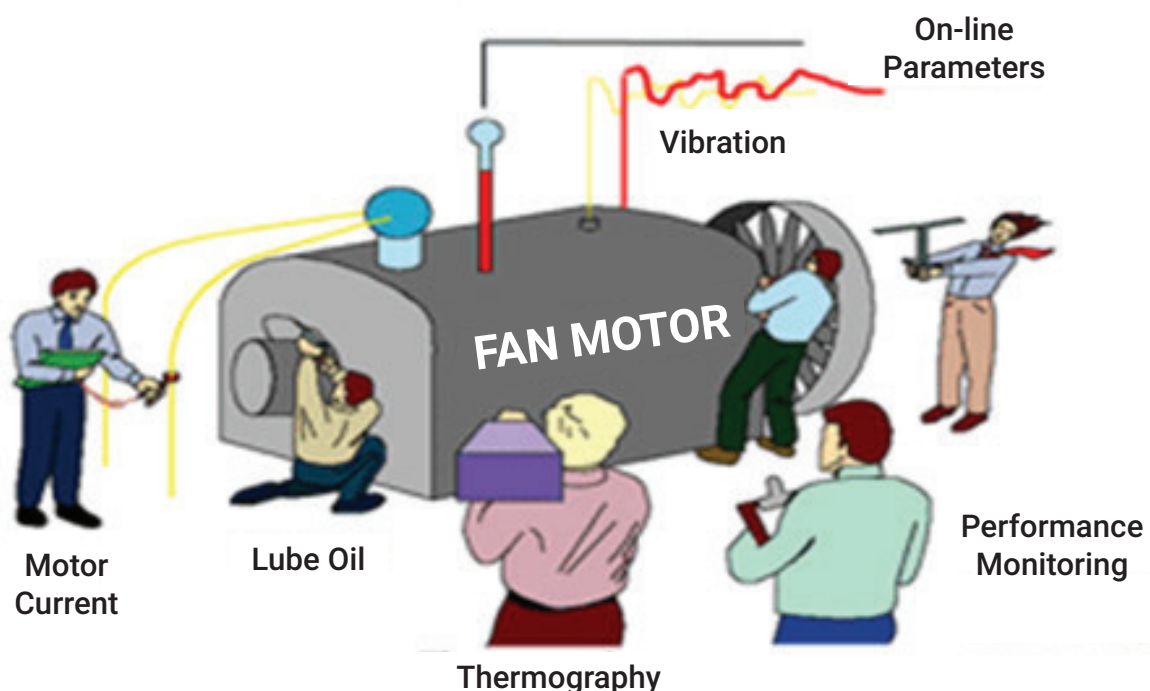


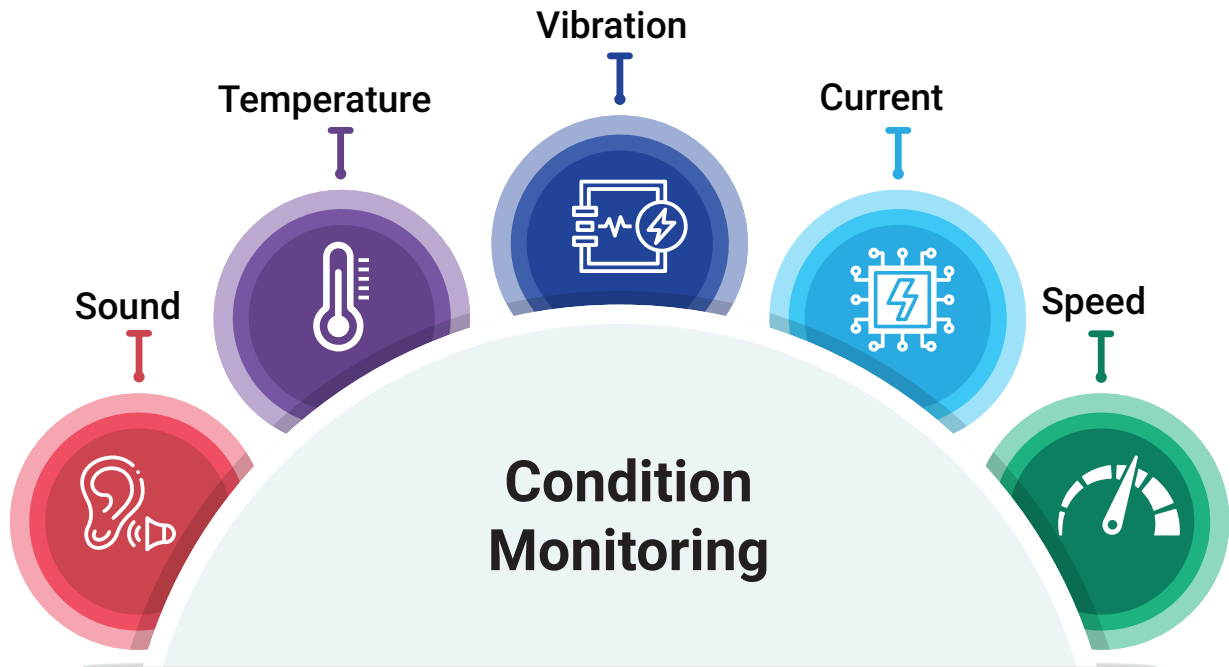
Condition & Vibration Monitoring

- Complete Range of Offerings - Sensors to Software
- Capable to Handle Different Types of Signals in One Product
- Most COST COMPETITIVE - Lowest per Channel Cost
- IIOT Ready - Supports Multiple Communication Protocols



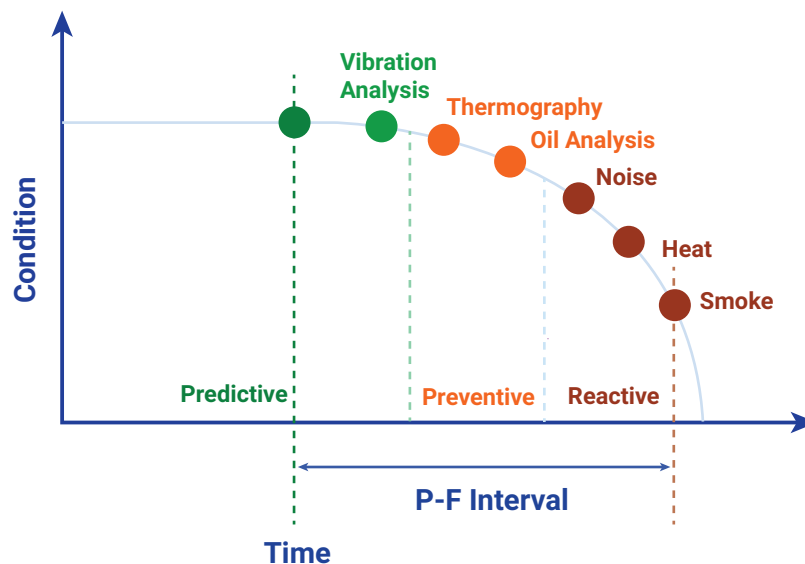
What is Condition Monitoring ?

Condition monitoring is a process of measuring below parameters of machine/equipment.



Maintenance Examples & Importance of CM

- Breakdown Maintenance - High Cost
- Preventive Maintenance (Periodic) - Moderate Cost
- Predictive Maintenance (Based on Condition of Machine) - Low Cost
- P - Point at which you can Recognize a Potential Failure
- F - Point at which the Failure Occurs





BENEFITS OF CONDITION MONITORING



Increases Machine Uptime



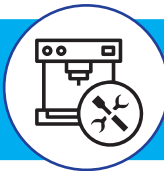
Decreases the Risk of Machine Failure



Allows Predictive Maintenance



Reduces Capital Costs by Extending Machine Service Life



Decreases Machine Repair Costs



Accelerometer

Features

- Uniaxial Accelerometer output 10mV/g, 50mV/g, 100mV/g, 500mV/g
- Electrical connection: M12 Connector, MIL grade connector and integral cable
- Annular shear technology
- Temperature output also available
- ATEX certified
- Hermetic glass sealing

Features

- MEM's based Loop powered sensor
- Velocity output in form of 4-20mA
- Electrical connection: M12 connector, MIL grade connector and integral cable
- Suitable for frequency 10Hz- 1KHz
- DA/DV/Temperature output also available



Loop Powered Sensor



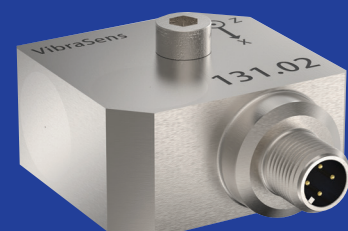
Loop Powered Sensor

Features

- Piezo electric loop powered sensor
- Accelerometer, velocity output in form of 4-20mA
- Electrical connection: M12 connector, MIL grade connector and integral cable
- Suitable for frequency 3Hz- 1KHz
- DA/DV/Temperature output also available

Features

- Triaxial accelerometer output 10mV/g, 50mV/g, 100mV/g, 250mV/g, 500mV/g, 1000mV/g
- Electrical connection: M12 connector and integral cable
- Annular shear technology



Triaxial Piezo

Vibration Basics

- **Type of Vibration Measurement**

- **Relative Vibration Measurement**

Shaft vibration measurement relative to machine body (Non-Contact type sensors will be used)

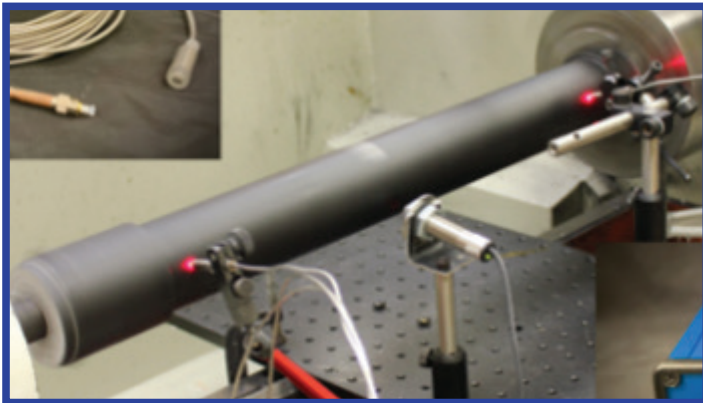
- **Absolute Vibration Measurement**

Casing vibration is the measurement of the case motion relative to free space or absolute motion (Contact type sensor will be used)

- **Vibration can be Measured in Three Parameters**

- Displacement : When RPM is less than 600
 - Velocity : When RPM is > 600 and < 60000
 - Acceleration: When RPM is > 60000

Relative Vibration

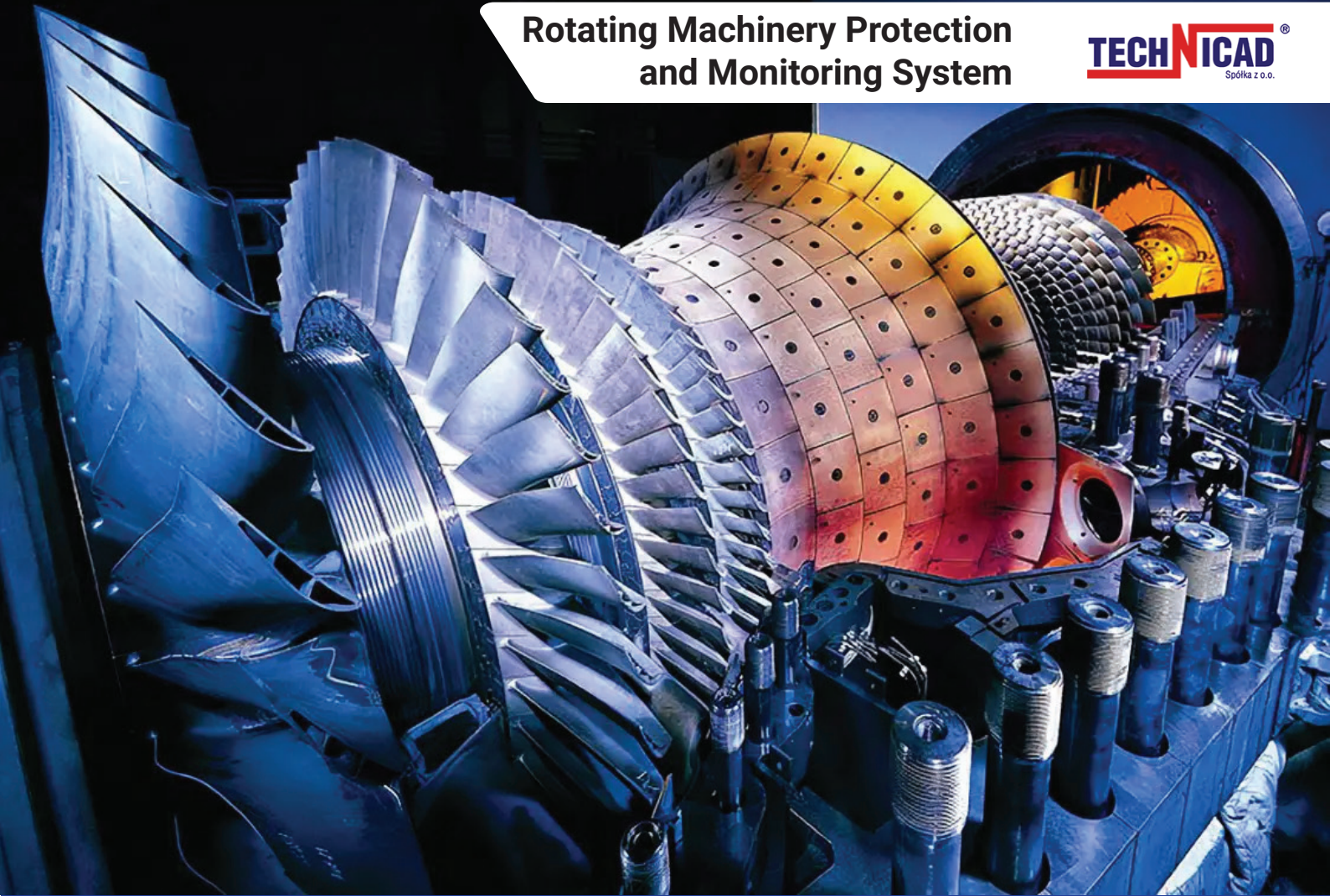


Absolute Vibration



Sensor Installation Photos





Vibration Sensors Non-Contact Type

- Eddy-current principle based probes/transducers for displacement measurements
- Measuring range from 2mm to 16mm
- Recommended for axial displacement, relative vibration, differential expansion, rotating speed, phase marker measurements



Eddy Current Sensor

Features

- Meets API 670 specification
- Measures frequency response from 0 to 10 KHz
- Gives DC voltage O/P
- Also available with ATEX approval
- Driver comes with IP65

VSW-160 - Vibration Switch

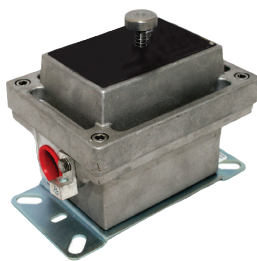


VSW-160

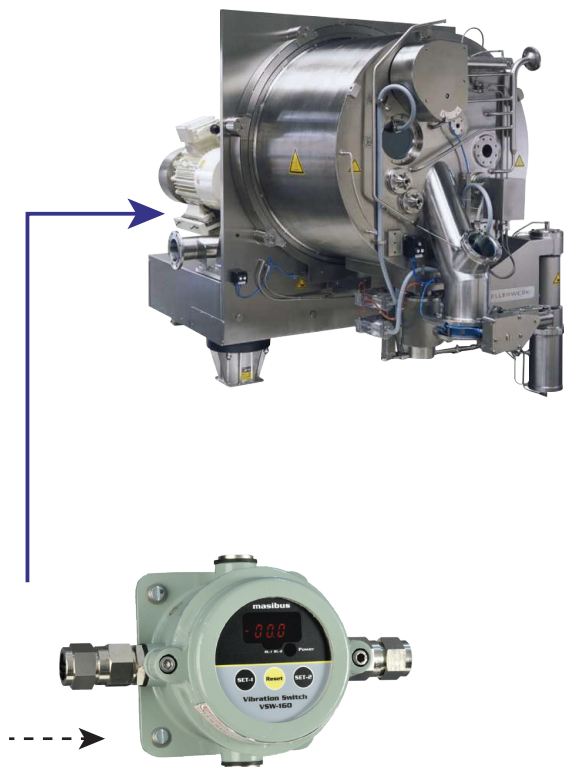
Features

- 3 in 1 - Switch/ indicator/ transmitter
- Capacitive touch screen operation - Ease of maintenance
- Built-in/ Remote sensor option
- Type of protections: Flameproof (Explosion proof) EX-d
- Area classification: Zone 1 & 2, Gas groups: IIA/ IIB & IIC
- Trim port for vibration set-point adjustment

Vibration Monitoring of Centrifuges



Old
Mechanical
Vibration
Switch



New
Electronic
Vibration
Switch

VT7S12E - Dual Channel Vibration Transmitter

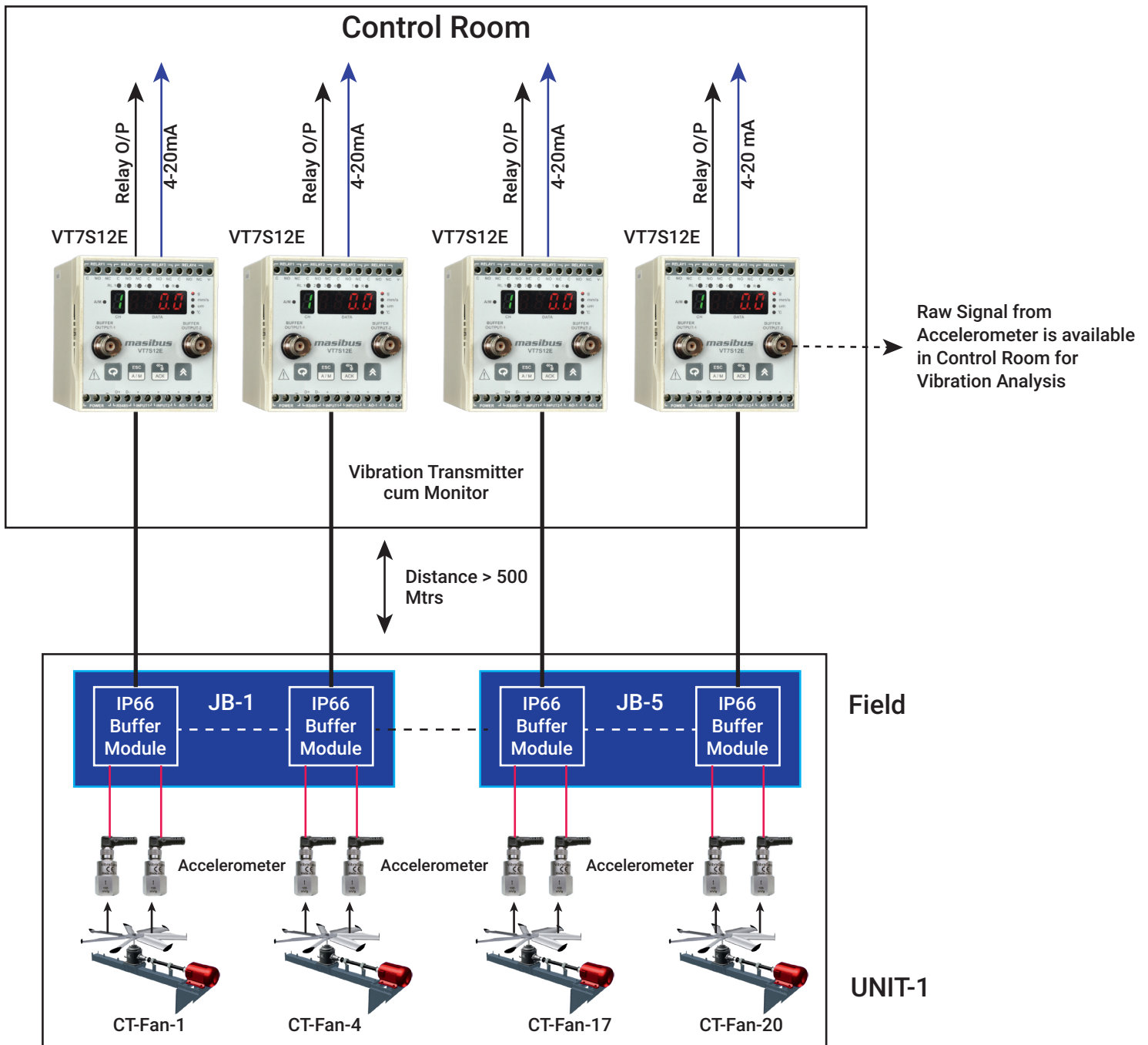


VT7S12E

Features

- Dual channel vibration transmitters, switch, indicator
- Field selectable parameter (Displacement, Velocity, Acceleration)
- Field selectable range
- Buffered O/P for vibration analysis

Cooling Tower Fan Monitoring



VM908 - Vibration Meter



VM908

Features

- Essential for good maintenance
- Necessary instrument for tool box
- Cost effective basic vibration measurement
- 3½ LCD digital display
- Measurement of overall vibration level in rotating machines
- Parameter: Displacement, Velocity, Acceleration
- Frequency range: 10 Hz to 5 KHz

Masibus Value Proposition

Complete offerings to address various condition monitoring requirements (Contact / Non Contact / Product / Systems) Can handle multiple parameters



Strong expertise & experience on vibration parameters

Backed by vast application knowledge installation base in variety of applications



IIOT Compatible offerings

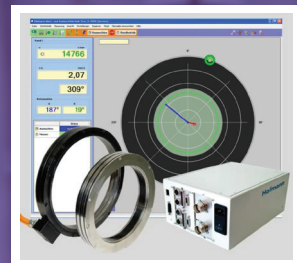
Automatic Balancing System for Process FAN - AB 9000

Hofmann.
Intelligent Balancing Solutions

- The system balances a FAN in running condition without any stoppage or shutdown
- Can be used with a new FAN or in existing FAN with a retrofit

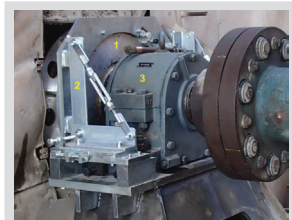
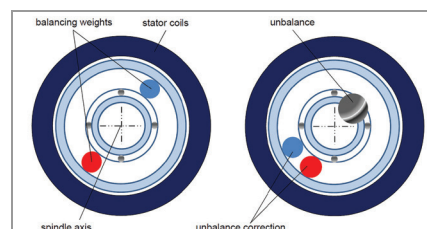
BENEFITS

- It eliminates any unwanted shutdown & decrease frequent shutdown of plant for coating removal
- The shutdown can be planned for maintenance purpose
- The return on investment in short time



WHERE IT CAN BE USED

- Kiln ID / Preheater / Raw Mill FAN in Cement Plant
- BOF / SMS ID FAN in Steel Plant
- Preheater & Exhaust Gas FAN in Steel Plant
- Incinerator ID FAN in Utilities
- In any Big FAN which requires uninterrupted operation



VMS4SE - Multi-Channel Vibration Monitor

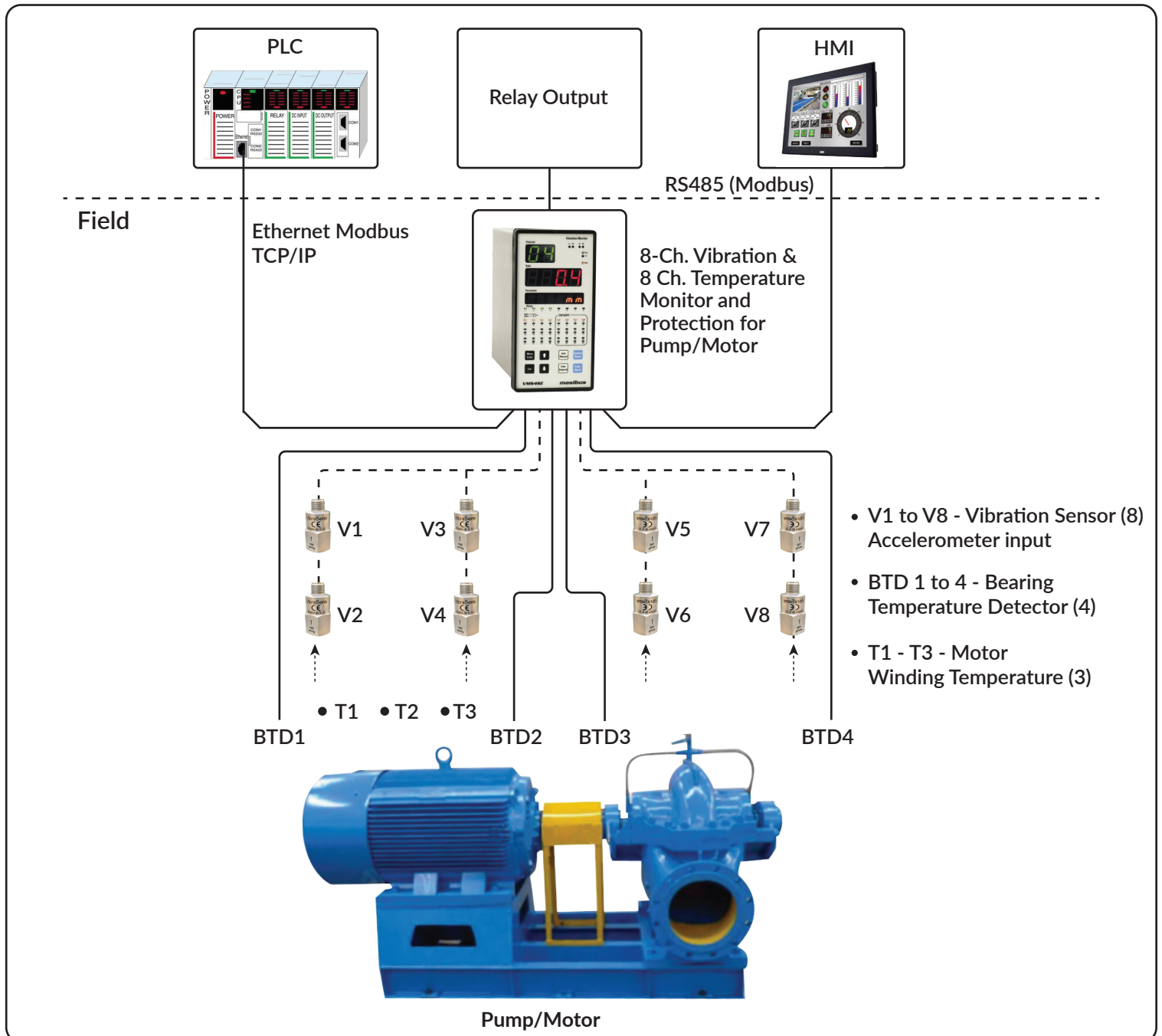


VMS4SE

Features

- 4/8 Channel vibration monitor
- Capable to handle 8 nos. universal inputs
- Field selectable parameter (Displacement, Velocity, Acceleration)
- Serial/ Ethernet communication
- Field selectable range
- Buffered O/P for vibration analysis

Pump/Motor Vibration & Temperature Monitoring System



85XX+ - 24 - Channel Scanner/DAQ Module

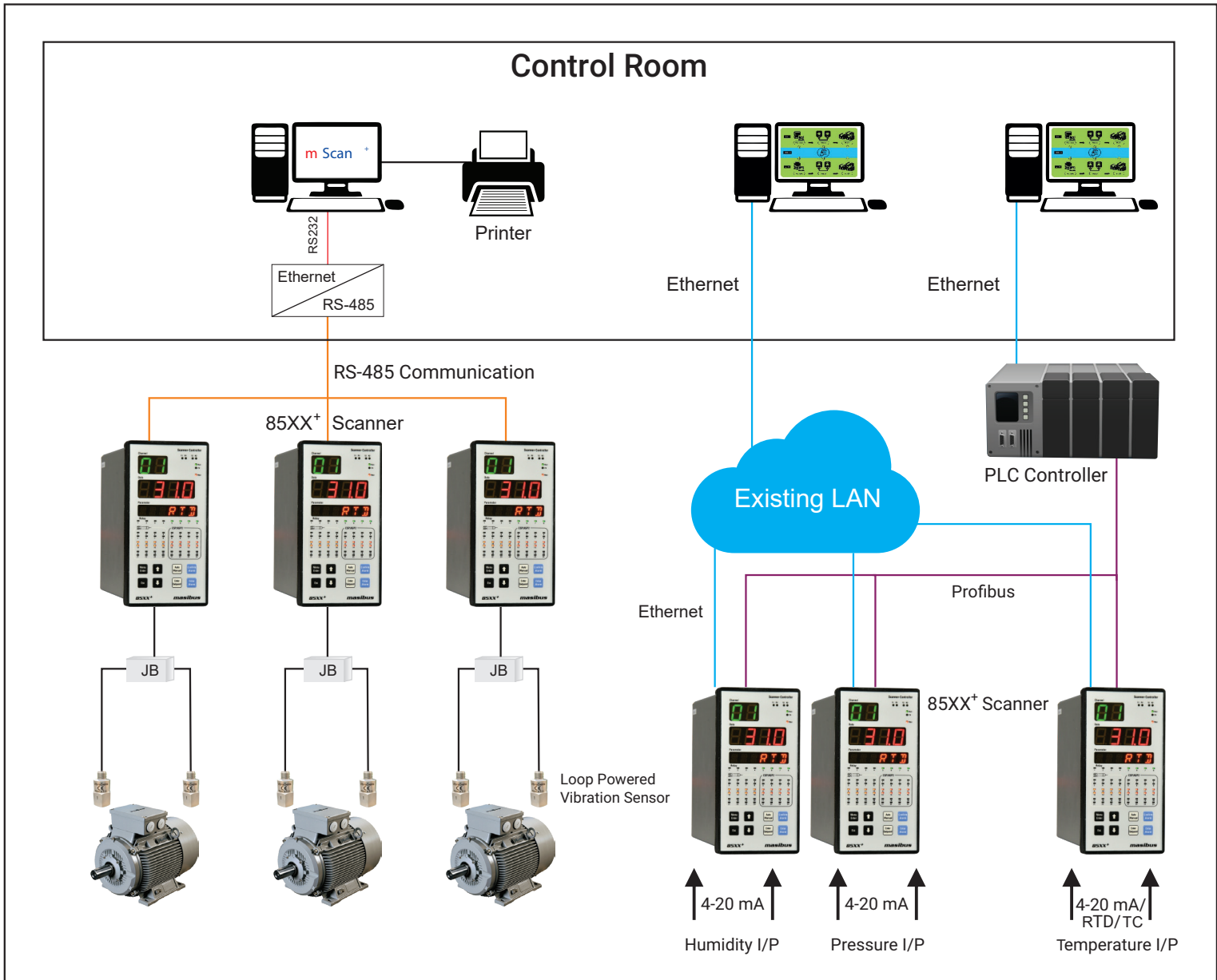


85XX+

Features

- 24 Channel universal analog input module
- 16 Channel digital input module (Optional)
- 8/16 Relay output module (Optional)
- EMI/EMC type test qualified & CE marked
- 32 MB memory for event & periodic data logging

Condition Monitoring with Loop Powered Sensor



VMS-R - Rack Based Vibration Monitoring System



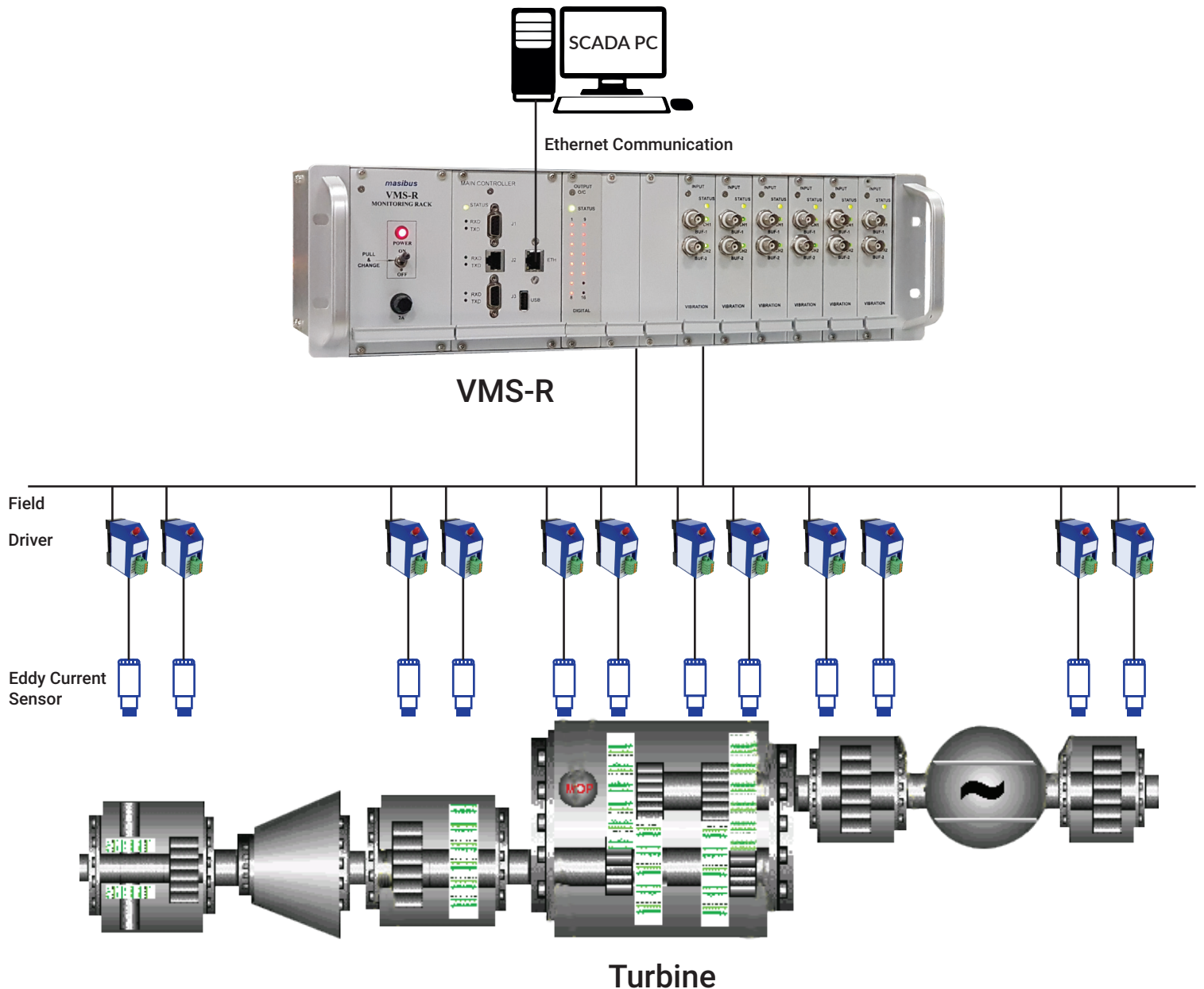
Features

- Suitable for both contact and non-contact type sensors
- Upto 16 vibration channel monitoring
- 4-20mA re-transmission
- Serial and Ethernet communication
- 25MB memory for data logging



VMS-R

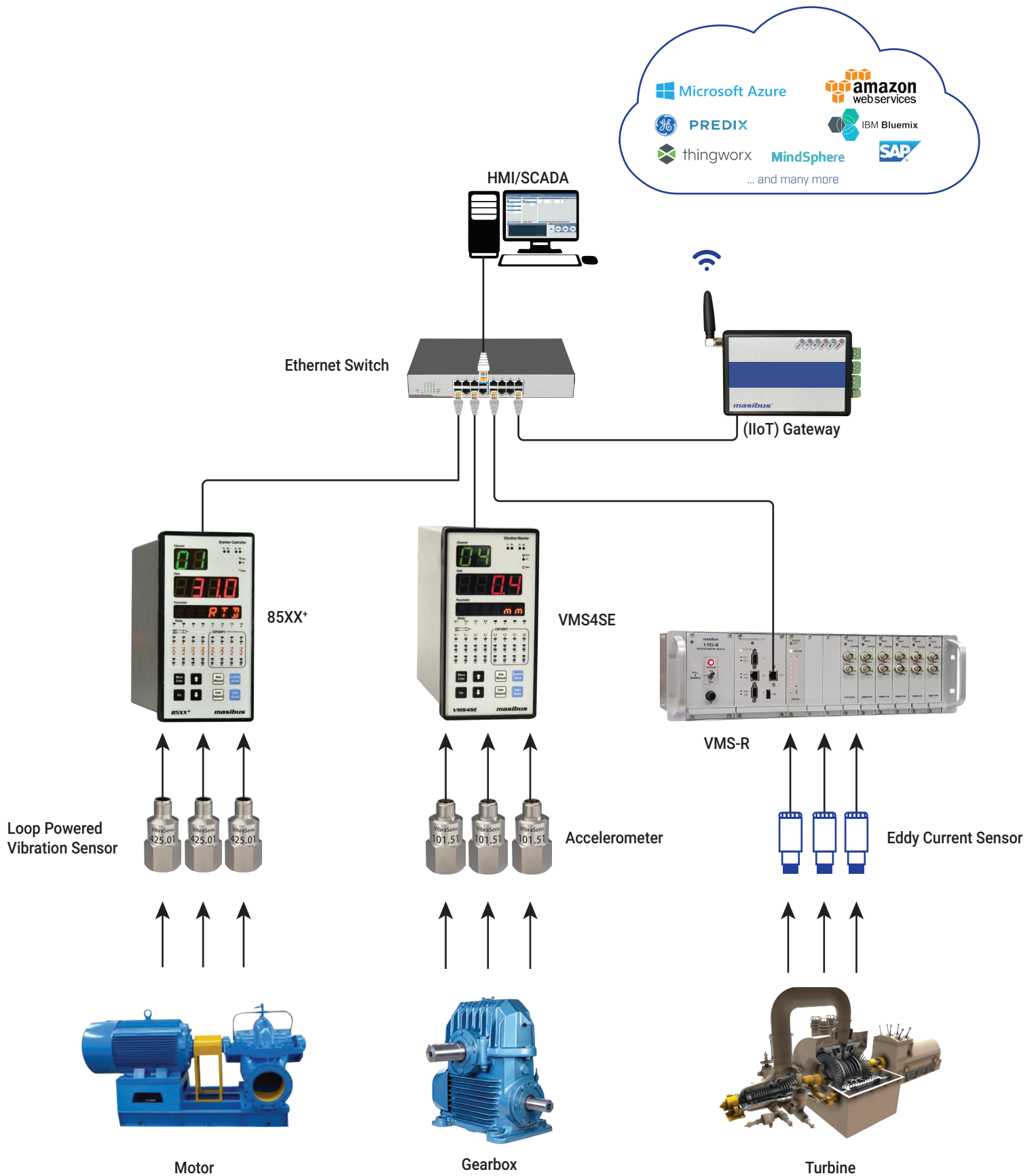
Turbine Vibration Monitoring



Comprehensive Condition Monitoring Offering



- One stop shop for all condition monitoring requirements
- All types of equipment get covered (Low speed to high speed)
- System for monitoring, protection & analysis



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A Sonepar Company



Thermography

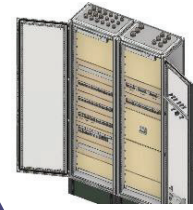
Fault Detection by Infrared Inspection

Our Services

Thermography study & health report of the equipment for preventive action.

- ➔ IR Inspection of MCC / PCC / VFD Panels for hot & cold junction & leak detection
- ➔ IR Inspection of Furnace Insulation
 - ✓ Blast Furnace
 - ✓ Reheat Furnace
 - ✓ Tempering Furnace
 - ✓ ARC Furnace
 - ✓ Ladle Furnace
 - ✓ Carburizing Furnace
- ➔ IR Inspection of High Voltage Transmission & Distribution Line

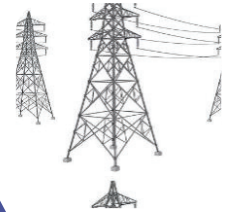
MCC Panel



Furnace



Distribution



VFD Panel



Industries Served



Power



Oil & Gas



Chemical



Metal



Paper



Fertilizer



Automobile



Glass



Cement

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