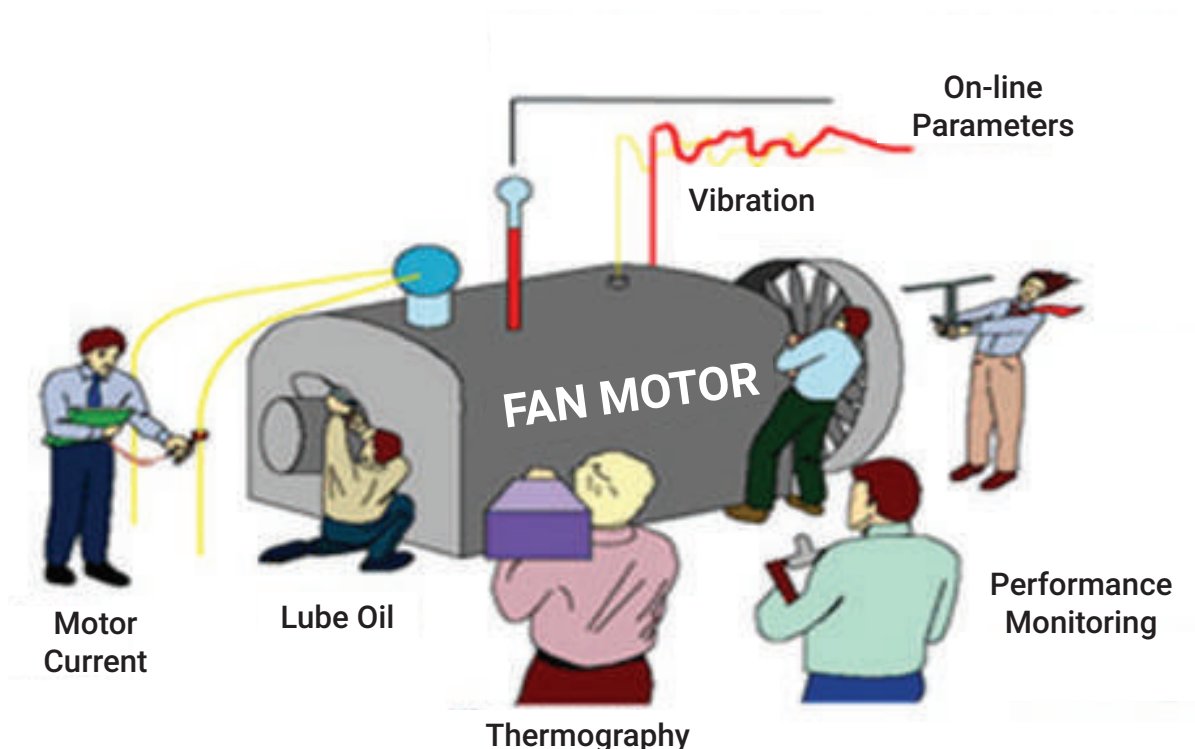


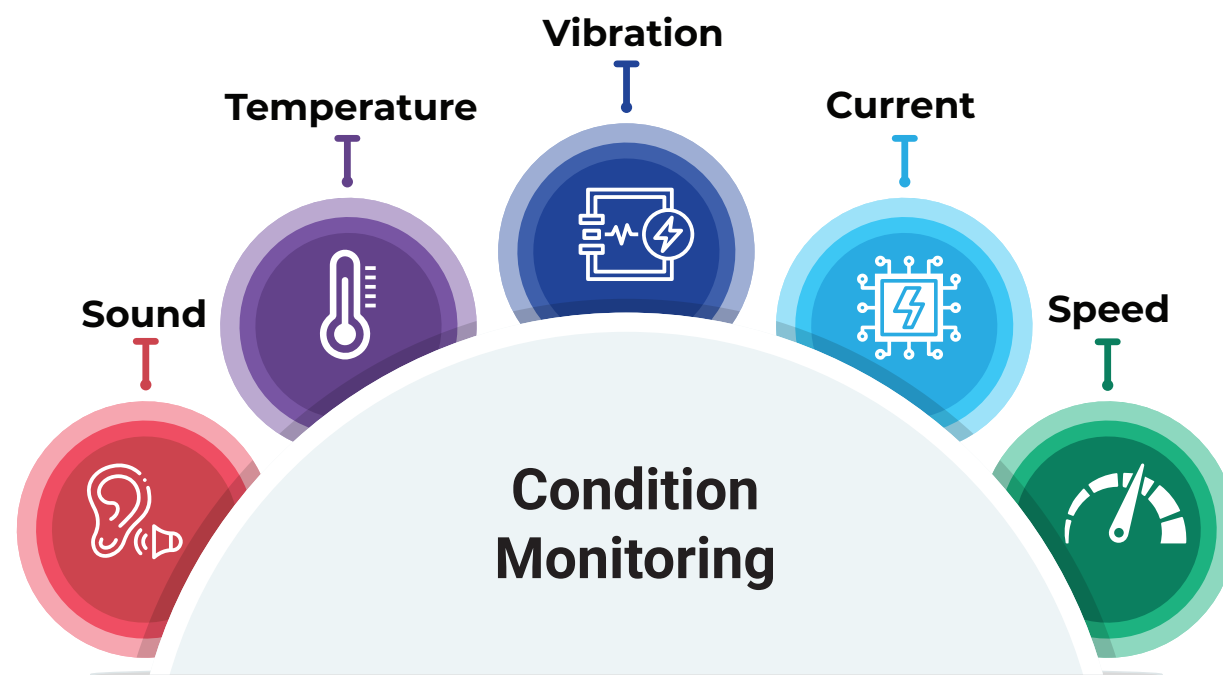
# Condition Monitoring Offerings

- 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



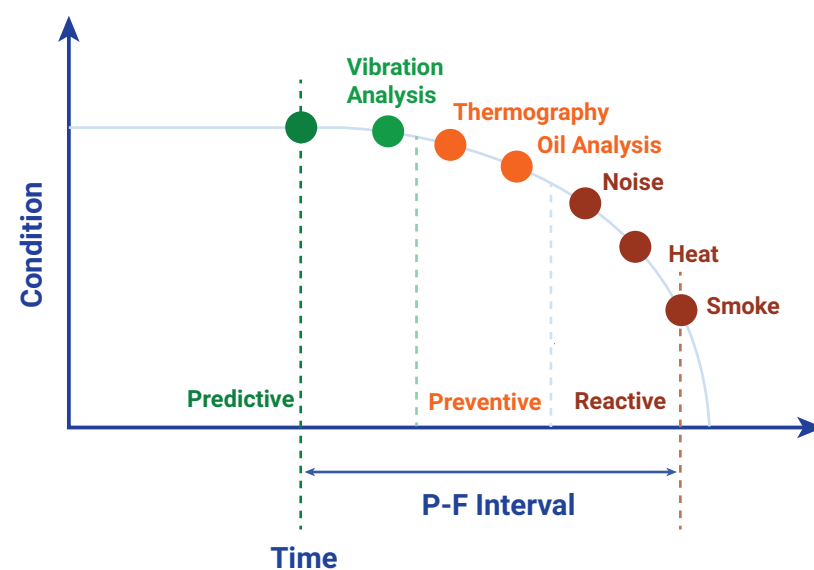
## What is Condition Monitoring ?

Condition monitoring is 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 - At Point at which you can Recognize a Potential Failure
- F - At Point at which the Failure Occurs



## BENEFITS OF CONDITION MONITORING



Increases Machine Uptime



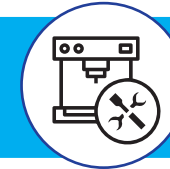
Decreases the Risk of Machine Failure



Allows Predictive Maintenance



Reduces Capital Costs by Extending Machine Service Life



Decreases Machine Repair Costs



## Vibration Sensors Contact Type



## Vibration Basics



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

### • 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





## Rotating Machinery Protection and Monitoring System

**TECHNICAD**  
Spółka z o.o.

## 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



## 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



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

VM908 - Vibration Meter

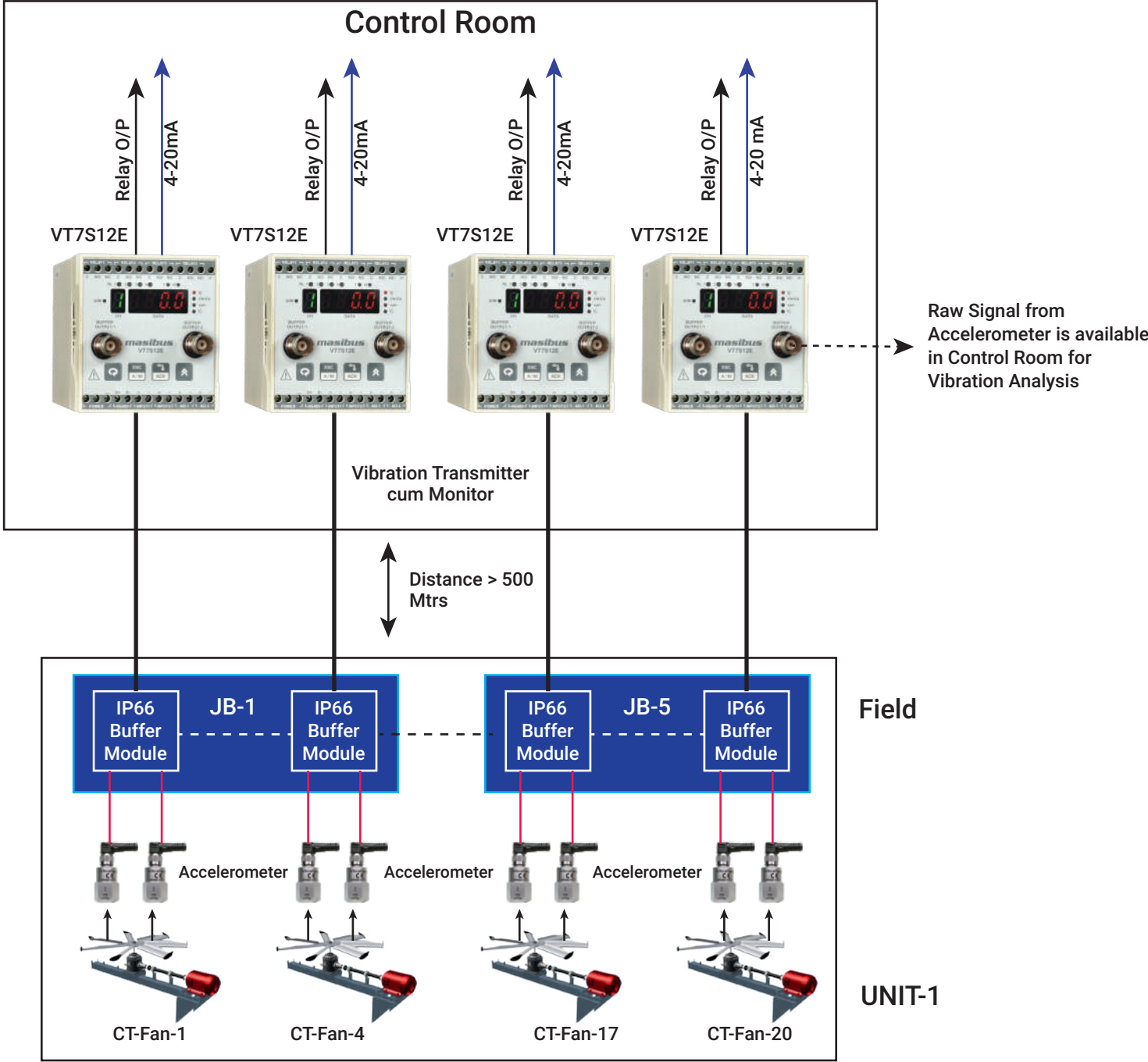


VM908

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

Cooling Tower Fan Monitoring



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

Pricing and positioning support from principals

Unique product for compressor

IIOT Compatible offerings



## 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

## 85XX+ - 24 - Channel Scanner/DAQ Module

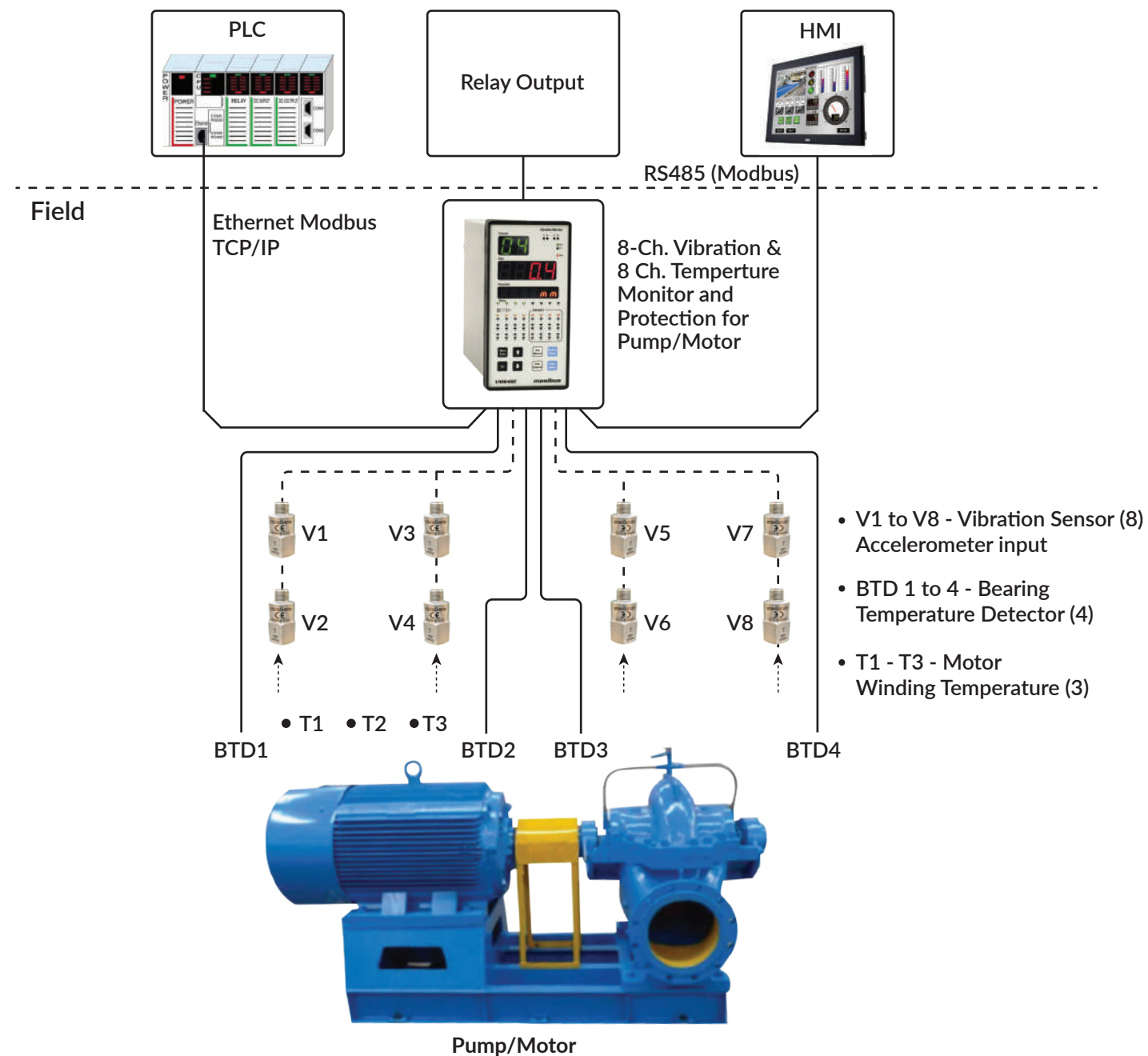


85XX+

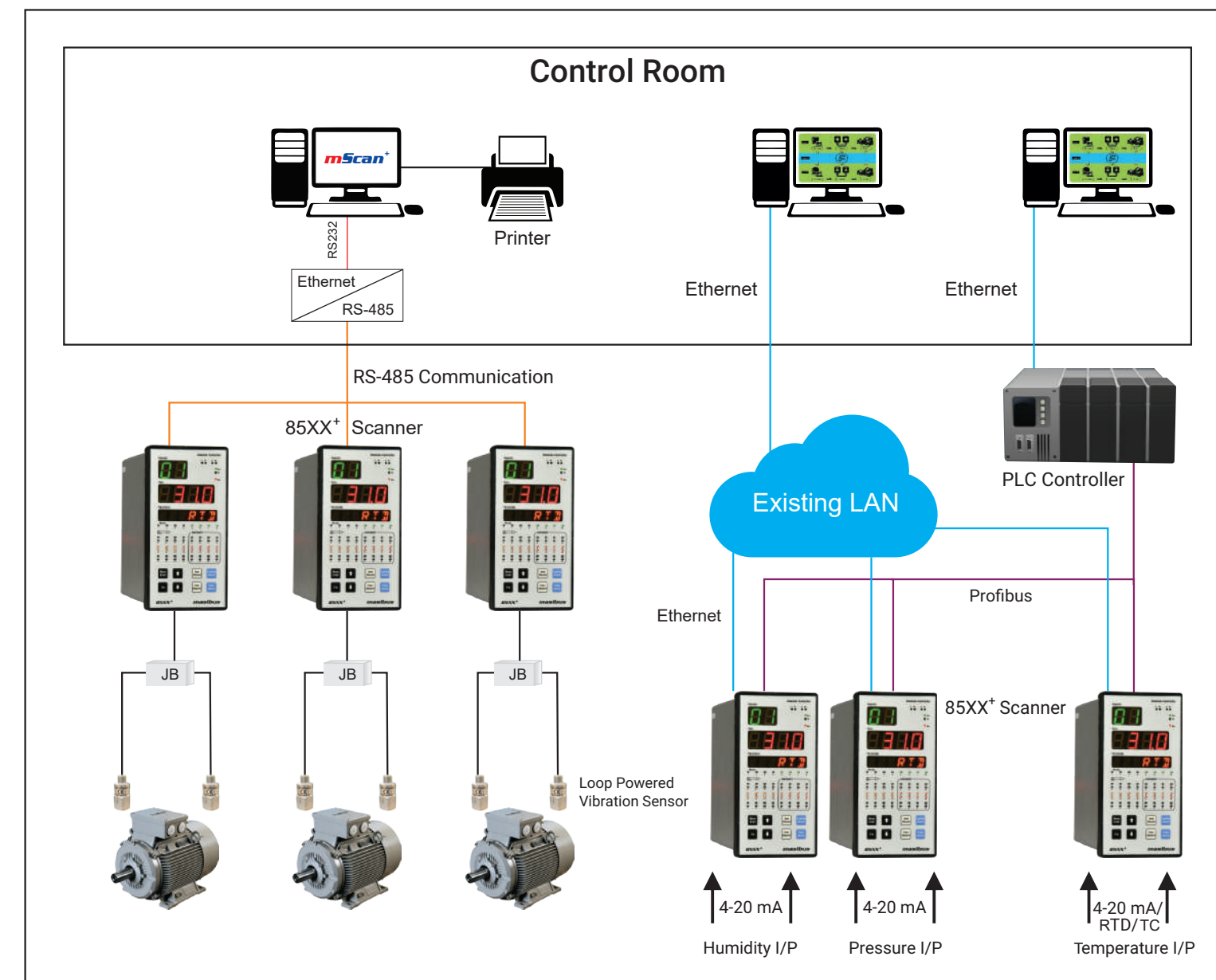
### Features

- 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

## Pump/Motor Vibration & Temperature Monitoring System



## Condition Monitoring with Loop Powered Sensor



# VMS-R - Rack Based Vibration Monitoring System

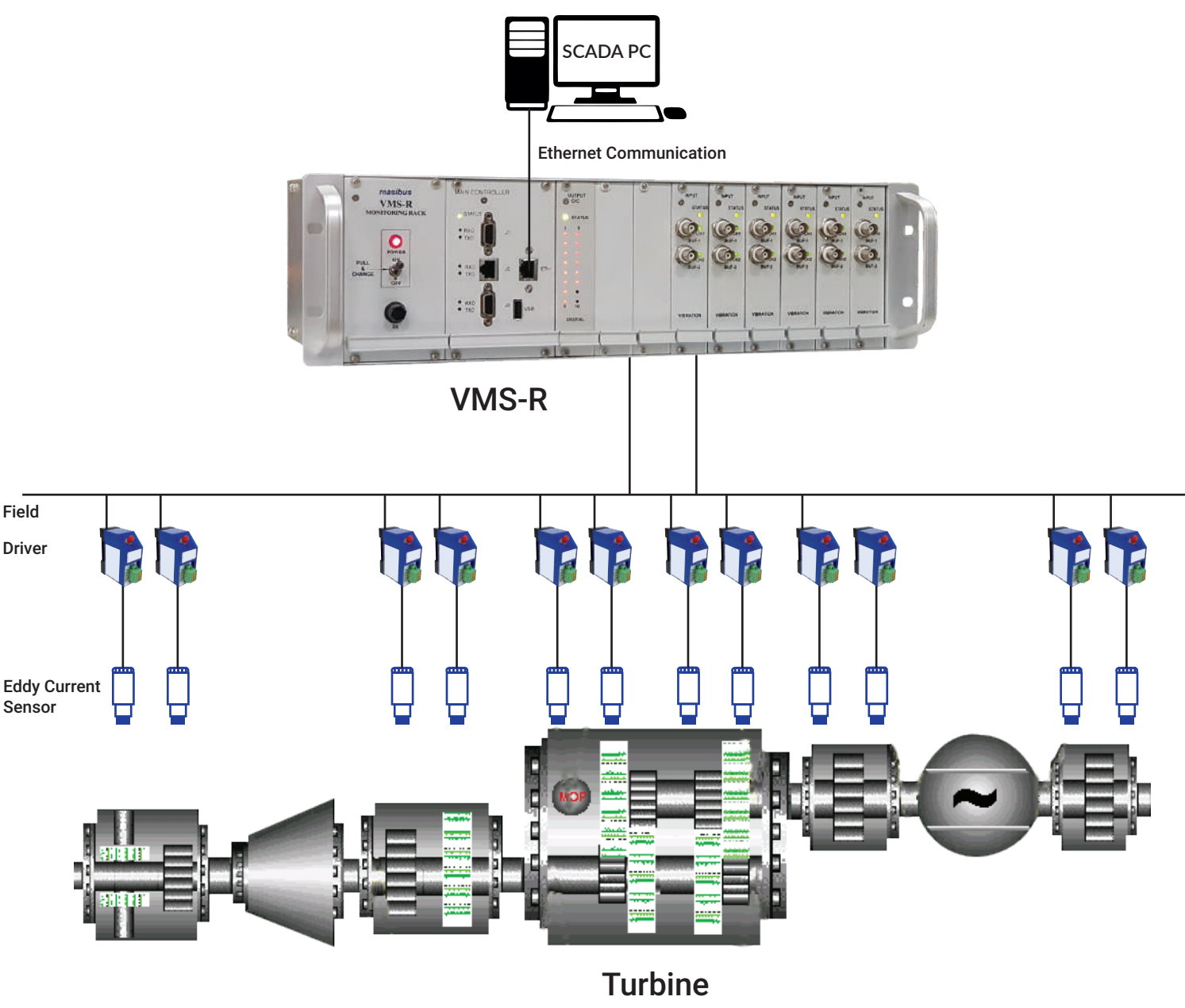
## Features

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



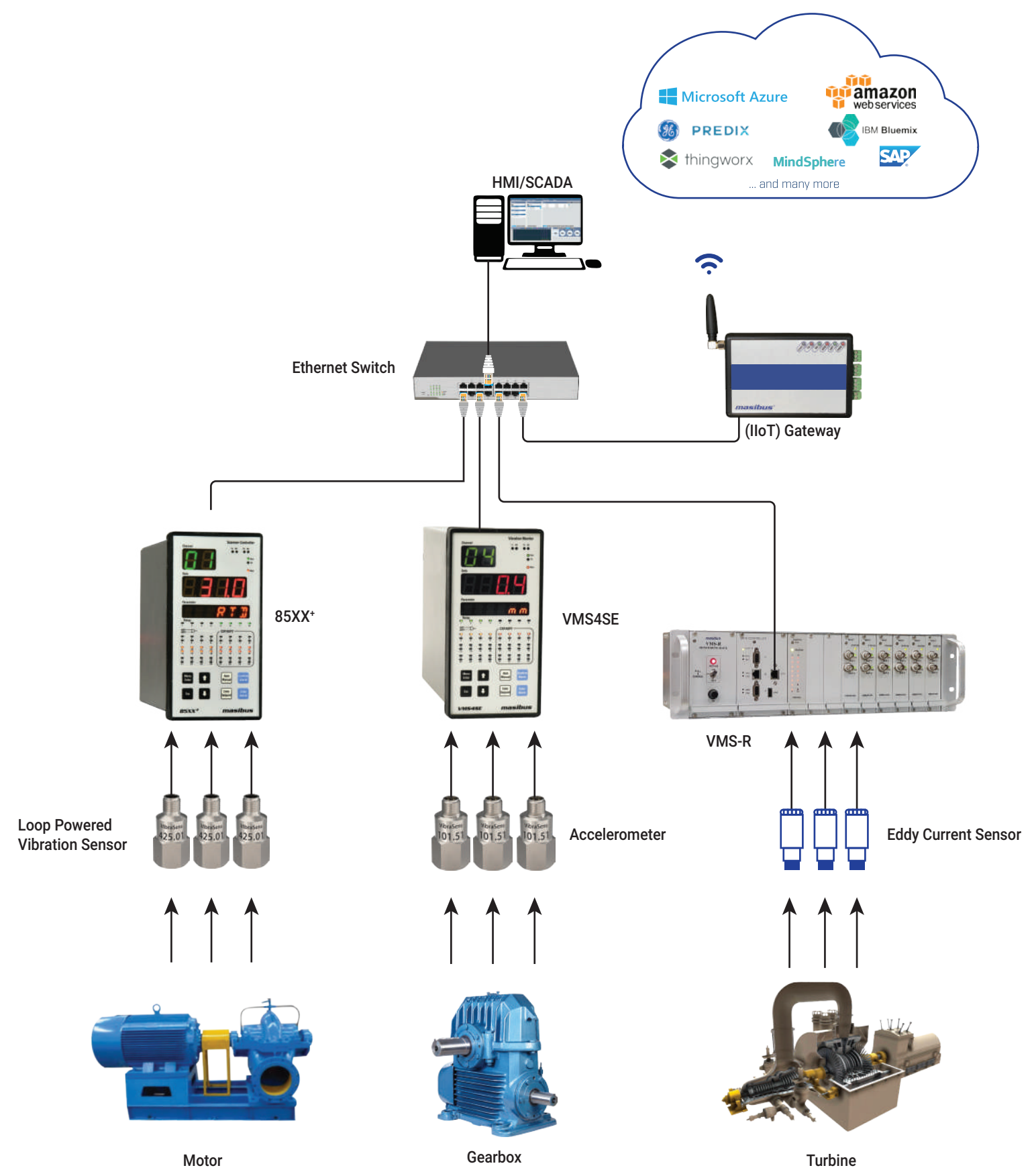
VMS-R

## 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





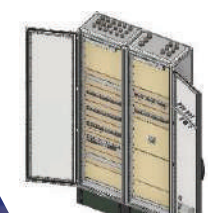


## Our Services

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

# Thermography

*Fault Detection by Infrared Inspection*



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