

Vibration Analysis vs Vibration Monitoring

Vibration analysis: MTN/1100 sensor, AC output, 0-10 V measuring acceleration

This sensor is designed to measure bearing problems caused by rollers or ball bearings travelling at different speeds relative to each other. The AC signal from the sensor needs to be conditioned, using a signal conditioner module, data logger or something more powerful.

This sensor is often used for large installations where the end user wants to have both analysis and monitoring. The AC signal from the sensor can be integrated to convert acceleration into velocity. This is undertaken by the host system the sensor is connected to, effectively producing two outputs which cover both monitoring disciplines.

Vibration monitoring: MTN/1185 sensor, DC output, 4-20 mA measuring velocity

This sensor measures overall velocity and is used to measure movement, which through a PLC can trigger alarms. It isn't designed to detect component failure - more a gradual deterioration by monitoring increased vibration. For example, in an application where there is a fan connected to a motor via an extended shaft, connecting a monitoring sensor (1185) enables increased vibration from fan wear or motor bearings to be detected and acted upon, although the sensor will not be able to identify the fault.

To summarise:

The analysis sensor can be used to measure both acceleration and velocity, whereas the monitoring sensor can measure only velocity. Larger installations are more often than not installed with MTN/1100 units. When analysis isn't required, only straightforward movement measurement which can be input directly into a PLC, the vibration monitoring sensor should be used (MTN/1185).

Ten steps to choosing the right sensor:

- Q1. What is the customer monitoring? Bearing wear (1100) or movement (1185).
 - Q2. If the sensors are being used to monitor both bearing and movement (velocity) then offer the 1100.
 - Q3. If the customer is using a handheld data logger, again offer the 1100.
 - Q4. If they want to connect the sensors directly to a PLC and measure movement, offer the 1185.
- Either/or questions:
- Q5 Top entry or side entry (dependent on available space).
 - Q6. Integral cable (fewer components) or connector (2pin military or 4pin M12).
 - Q7. Are the sensors being used in a hazardous area? If so, offer intrinsically safe Atex units 1100I or 1185I.
 - Q8. Length of cable, default being five metres, anything up to a hundred metres.
 - Q9. Sensitivity analysis 100mV/g velocity 20 mm/sec.
 - Q10. Numbers are break prices.