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Accessories

ifm Solutions for Vibration Screen / Feeder Monitoring

Technology for Mining Industry



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ifm solutions for vibration screen

Feeder monitoring



What are the challenges in monitoring the Vibration Screen / Feeder?

1. This amazing machine runs normally at 3 to 7G of acceleration. No doubt that protection against abnormal vibration is really important;
2. Motors and gear-boxes are exposed to extreme conditions due to the excessive movements of the screen itself therefore to measure the temperatures of this equipment is essential for a smooth operation and historical trending;
3. Unbalance, Misalignment, Gear Mesh Frequency, Bearing, Peak Acceleration (produced by the feeder) and also the angle of the screens are critical and require an online protection;

What solutions does ifm offer?

1. To ifm, even more important than having a catastrophic structure failure alarm is to see the trend of the failure and also to have the diagnoses from the recorder devices;
2. In addition to monitoring the vibration, the temperature sensors from ifm have a fast reaction time, allowing for accurate online data logging;
3. Predictive monitoring of bearings, gears and electric motors using accelerometers is normal, however the ifm diagnostic electronics offers more than an online technology of Screen condition monitoring, which includes: (1) Speed Monitoring and (2) the Angle of the Screen and (3) the displacement of the screen;



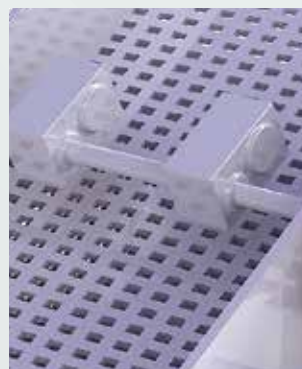
How to ensure a safe operation against excessive structural displacement?

A vibrating screen is used to sort different size rocks or other products, the force is generated by using eccentric weights or eccentric bearing set to produce an angular orbital motion. When using weights, they are mounted on the exciter motor shaft for small screens and on gearbox shafts for larger screens. In case of a catastrophic failure, the machine can automatically be switched off to avoiding a safety risk to other equipment and people nearby. To monitor the trend of the screen movement, displacement is required in horizontal and vertical axis. ifm vibration controller type VSE is capable of detecting tenths of millimeters and re-transmitting the data via different platforms.



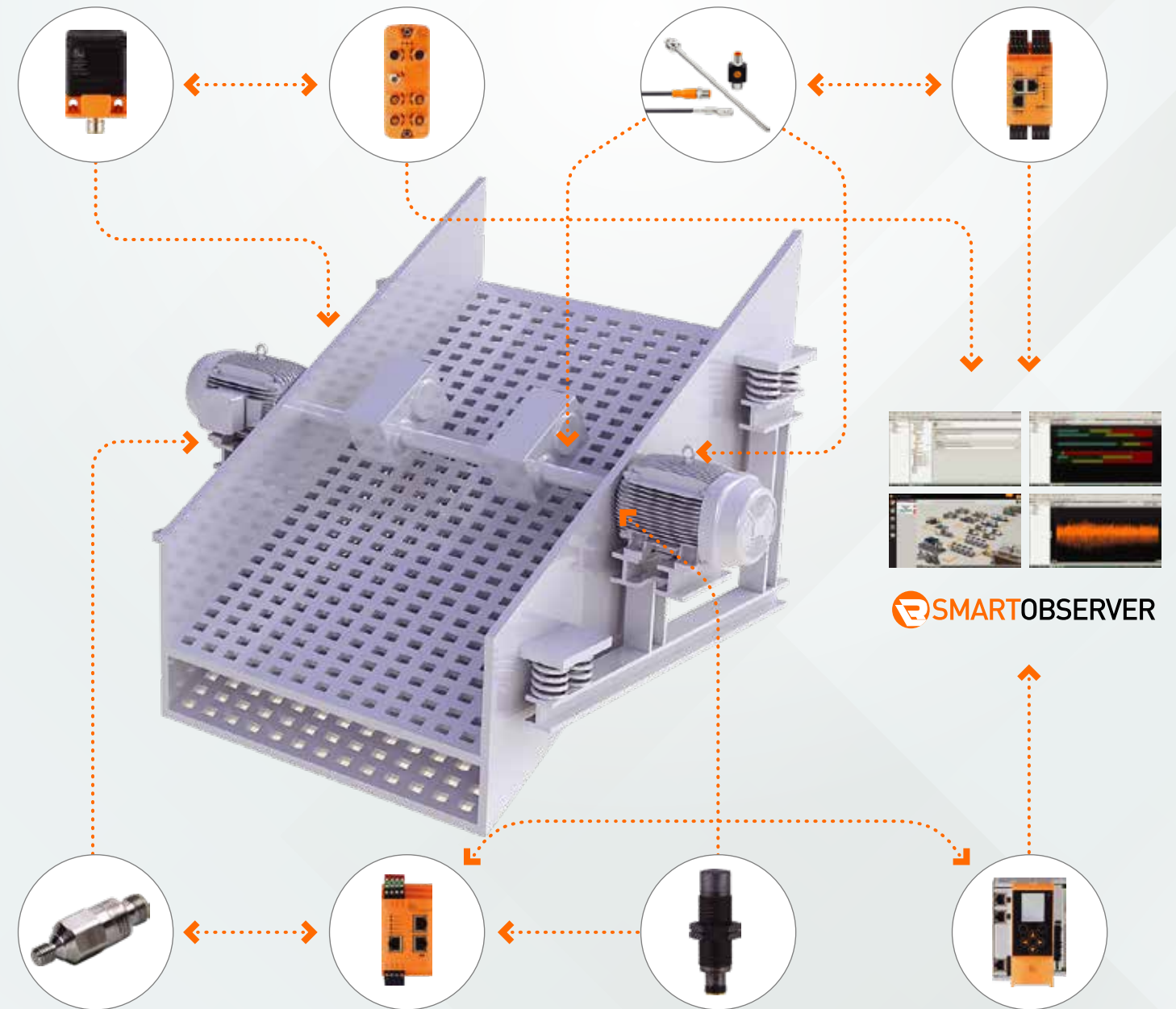
How to protect the screen against a sudden increase of temperature?

The efficiency can be assessed by monitoring the variation of the temperature in the motors and/or gearboxes. Process quality will only be met by ensuring the vibration and temperature on each point are measured and timously transmitted. In addition to temperature measurement the ifm temperature sensors are able to send internal sensor diagnostic information from each point of measurement, building up a reliable system based on auto-check. To perform the diagnostic function ifm provides a IO-link Master to Fieldbus protocol for connection of analogue devices and temperature PT100's.



Process quality will only be met by ensuring the proper vibration level, but the question is, how to implement a cost-effective monitoring solution?

Due to the high stresses on the metal, these screen frames sometimes crack or break or the rubber or spring mountings fail. If the cracks or defects are detected before excessive damage then a repair can be scheduled before a catastrophic failure occurs. With the sensor type VSA / VSP machine vibrations can also be measured at inaccessible places. Up to 4 measuring points can be monitored and documented per diagnostic electronics type VSE. The Ethernet and fieldbus interfaces simplify networking and remote diagnostics. The overall vibration velocity is used in industry standards to evaluate the status of the complete machine. ISO 10816 categorises machines and set the overall protection, but the system also allows to detected specific problems as listed bellow: - Speed Monitoring Sensor - Vibration motor sensor - Vibration Gear-box sensor - Angle positions sensor, etc.



Item	Quantity	Description
VSE151	4	Diagnostic Electronic Ethernet/IP or Other
VSA001	12	Vibration sensor
EVC561	12	Sensor Cable
E30115	3	Sensor Washers
IGW201	1	Speed Proximity
EVC561	1	Sensor Cable
AL1120	1	Master IO-Link Ethernet/IP field or Other
AL1920	1	Control Cabinet Ethernet/IP or Other
IM5173	4	Position Sensor IO-link
EVC528	4	Sensor cable 10m shield
TS2229	4	Temperature sensor (Motor & Gear-Boxes)
TP3237	4	Transmitter for temperature sensor (Analogic or IO-link)
EVC561	4	Sensor cable 30m shield
DN4013	1	Power Supply 24V DC 10A
AC1423	1	PLC Ethernet/IP
QW0501	2	Annual software update service
QDI001	1	Configuration and commissioning services
QLS030	2	LR SmartObserver monitoring software



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Application Package Suggestion!