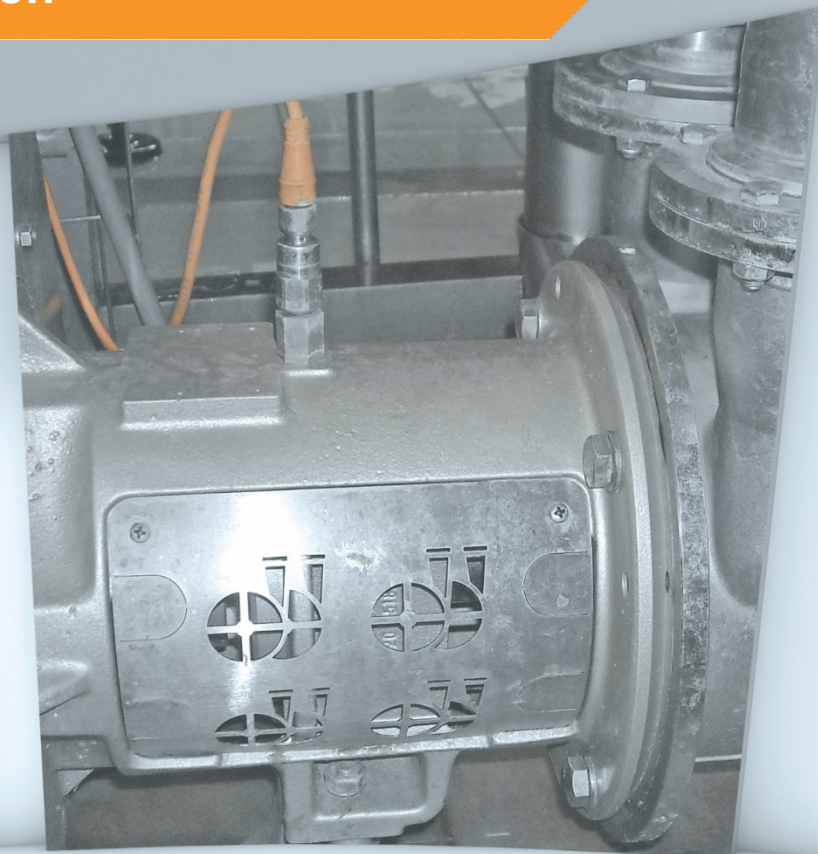




# Technology for Mining Industry

## *Underground Ventilation*

Instrumentation





# ifm solutions for underground ventilation

## Condition monitoring



### What are the challenges concerning condition monitoring of fans in mining?

Reliable ventilation in mines is decisive for the health and safety of miners. In ventilation systems, uninterrupted fan operation is very important, this is why often redundant fans are used. All drives should be provided with safety functions to protect the drive, motor and fans against overload. These protective functions usually trigger the drive and bring it into an alarm state causing the fan to stop.

The condition monitoring system from ifm electronic offers various programmable functions that constantly monitor the permanent fan operation while the higher-level control system receives a warning signal.

### Which solution does ifm offer for it?

We offer the following technologies for online condition monitoring of fans:

- Condition monitoring of bearings and gear mechanisms
- Shaft monitoring
- Unbalance monitoring
- Speed monitoring
- Oil flow monitoring
- Medium temperature monitoring
- Bearing temperature monitoring
- Operating status signaling and status indication
- Fault signal
- Interface connection via Ethernet



### Typically sensors for condition monitoring:

- Vibration sensor
- Speed sensor
- Flow sensors
- Temperature sensors
- Pressure sensors

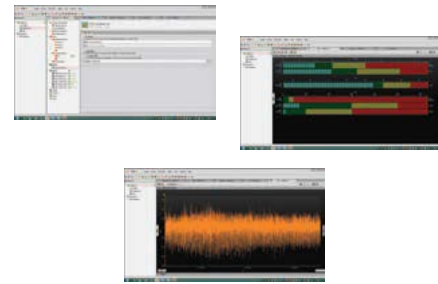


### Sensor technologies for condition monitoring

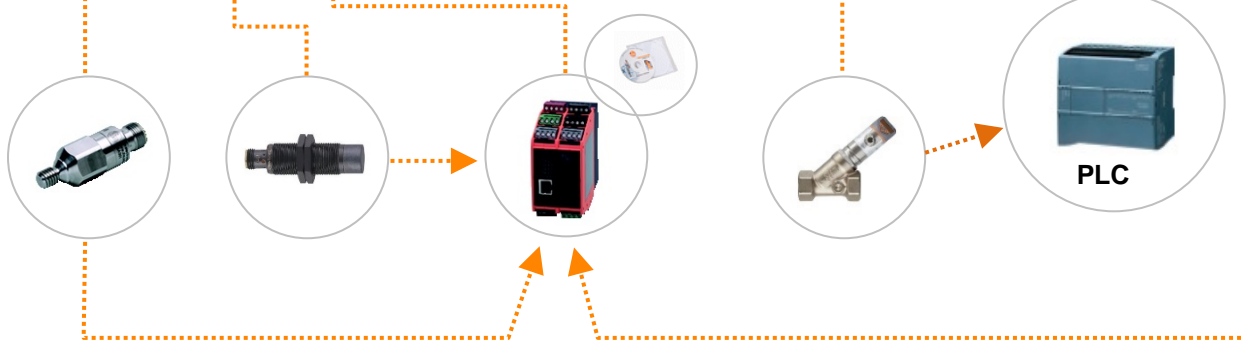
Many sensors can detect changes of machine components. Vibration sensors are most often used to monitor rotating machine parts. It is often stated that they can detect mechanical efficiency loss up to two months before the actual defect. Other sensor technologies used in condition monitoring are sensors for speed, pressure, temperature and flow.

These sensors can monitor efficiency loss of mechanical and electric components in rotating installations.

**They ensure reliable fan operation, even under extreme operating conditions, as well as optimum energy utilisation.**



**SMARTOBSERVER**



Sensor	Measurement	Measurement range	Operating mode		
			Permanent	Speed	Condition monitoring
VSA001	vibration	0...6000 Hz			✓
IGW201	reference speed	0...2000 Hz		✓	
VSE100	evaluation	0...12000 Hz	✓		
SBY246	flow	2...100 l/min	✓		

Article no.	Quantity	Description
VSE100	1	Diagnostic electronics for vibration sensors
VSA001	4	Vibration sensor
IGW201	1	Inductive sensor M18 x 1, PNP, for speed monitoring
SBY246	2	Flow meter with integrated backflow prevention and display
EVC084	3	Connecting cable with socket, 25m, PUR
EVC561	4	Connecting cable with socket, 30m, PUR
E30115	1	Conical washer, 5 pieces for vibration sensors
DN4012	1	Power supply 24 V DC / 5A

**Application  
Package  
Suggestion!**

**ifm – close to you!**

For further technical details please visit: [www.ifm.com](http://www.ifm.com)





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**Position sensors**



**Identification systems**



**Sensors for motion control**



**Condition monitoring systems**



**Industrial imaging**



**Systems for mobile machines**



**Safety technology**



**Connection technology**



**Process sensors**



**Software**



**Industrial communication**



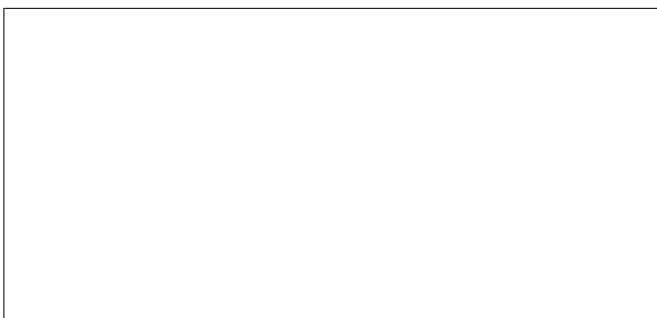
**Power supplies**



**IO-Link**



**Accessories**



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