

**SIEMENS**



[siemens.com/processprotection](http://siemens.com/processprotection)

# Is your process protected?

Siemens process protection: Low maintenance, easy to install, and cost-effective protection that saves you money.



**Answers for industry.**

# Proven continuous protection for industry begins here

You have insurance for everything: your car, your home, maybe even your pet! But what about protecting all of that valuable machinery and equipment installed throughout your plant?

Process protection devices are like an insurance policy for your plant, except better. These devices warn you of problems *before* they occur or before they develop into something more serious.

Siemens offers two types:

## Non-contacting motion sensors

- Detect changes in motion and speed of conveying, reciprocating, and rotating machinery
- Warn you of equipment malfunction and shut down machinery in case of slowdown or failure
- Perform even in harsh industrial conditions

## Non-invasive acoustic sensors

- Detect high frequency acoustic emissions caused by materials in motion
- Alert you of flow/no flow or high/low flow
- Warn you of blockages, product absence, or equipment failure

## Protection for any industry

### Water/wastewater

- Motion sensor on a sludge disposal screw conveyor

### Mining/aggregates/cement

- Acoustic sensor mounted to a pneumatic conveyor for flow detection

### Chemical

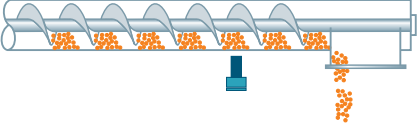
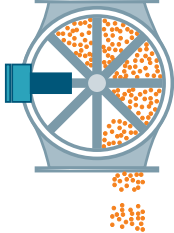
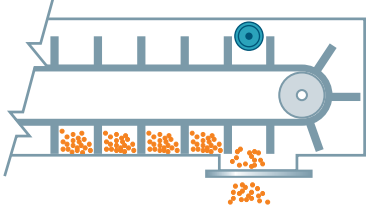
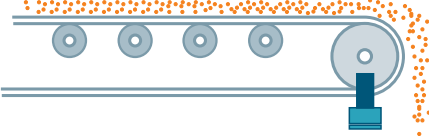
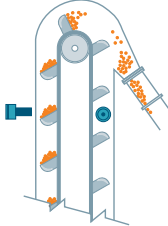
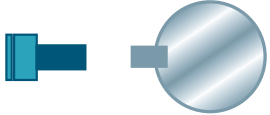
- Measuring the pressure relief valve response time with an acoustic sensor

### Food and beverage

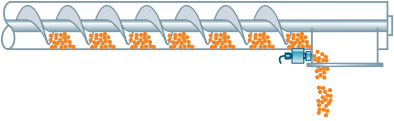
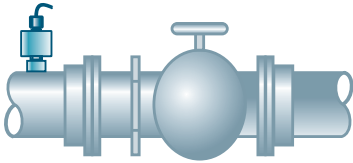
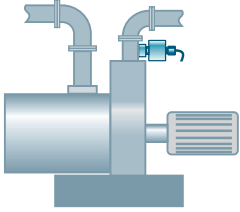
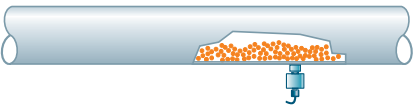
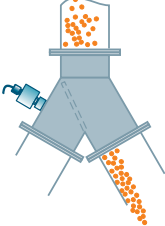
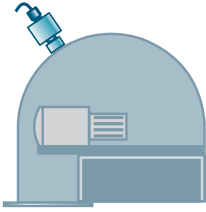
- Monitoring the rotation of mixers for batching with a motion sensor



# Motion sensor applications

Screw conveyor	Rotary feeder	Drag conveyor
		
Belt conveyor	Bucket elevator	Rotating shaft
		

# Acoustic sensor applications

Plugged discharge chute detection	Leak detection	Cavitation monitoring
		
Pneumatic conveyor/material flow pipe	Diverter gate	Machine condition monitoring
		

# Motion sensors

Motion sensors are industry's version of a backseat driver: letting you know if machinery is going too fast, too slowly, or has stopped altogether. While constant feedback in your car can be annoying, knowing what is happening in your process is essential.

Safeguard valuable process equipment with cost-effective and reliable motion sensors and controllers from Siemens.

Highly sensitive, these systems detect changes in motion and speed of conveying, reciprocating, and rotating machinery.

Alarming for loss of motion, underspeed, or overspeed, these devices are your early warning system for preventing costly process interruptions and equipment breakdown.

Visual indication for target detection

Outdoor rated NEMA 4X, IP65 enclosure



Heavy-duty probe for the harshest environments and conditions

Industry-leading target-to-probe gap of up to 4" (100 mm)





	Milltronics MFA 4p	Milltronics MSP	SITRANS WM100
<b>Order No.</b>	7MH7144	7MH7146	7MH7158
<b>Key features</b>	<ul style="list-style-type: none"> <li>• Up to 100 mm (4") gap between target and probe</li> <li>• Selectable overspeed or under-speed detection</li> <li>• Setpoint adjustment 2 to 3000 PPM (pulses/minute)</li> <li>• Visual indication of probe operation and relay status</li> </ul>	Versatile motion sensing probes with four models: <ul style="list-style-type: none"> <li>• Standard MSP-12 for general purpose use</li> <li>• Stainless high temperature MSP-9 for hygienic applications</li> <li>• High temperature MSP-3 for temperatures up to 260 °C</li> <li>• Stand-alone MSP-7 for use with a PLC</li> </ul>	<ul style="list-style-type: none"> <li>• Up to 100 mm (4") gap between SITRANS WM100 and targets</li> <li>• Rugged, low maintenance suitable for tough environments</li> <li>• Up to 3000 PPM detection</li> </ul>
<b>Outputs</b>	Two relays working in unison, each providing one SPDT Form C relay contact, rated 8 A at 250 V AC resistive	12 mA no target and 45 mA detected target	One SPDT Form C dry relay contact, rated 5 A at 250 V AC, fail-safe operation
<b>Approvals</b>	CE, CSA <sub>US/IC</sub> , FM	CE	CE, CSA <sub>US/IC</sub>

## Field notes from the water/wastewater industry

A wastewater treatment plant transports sludge waste materials in the form of solid cake with a screw conveyor system, conveying it to trucks waiting downstream for further disposal. If the screw stops because it breaks or disengages from the motor, conveyance is interrupted and sludge begins building up in the conveyor system.

- Siemens Milltronics heavy-duty motion sensing probe detects any changes in the motion and speed of screw rotation – these changes could signal a problem with the equipment.
- Milltronics MFA 4p motion failure alarm controller sends an alarm to the control system if changes occur. The control system then stops the belt press and stops loading sludge onto the conveyor.

Operators can now take immediate corrective action to prevent damage to the filter press and also to ensure that trucks are continuously receiving the sludge.

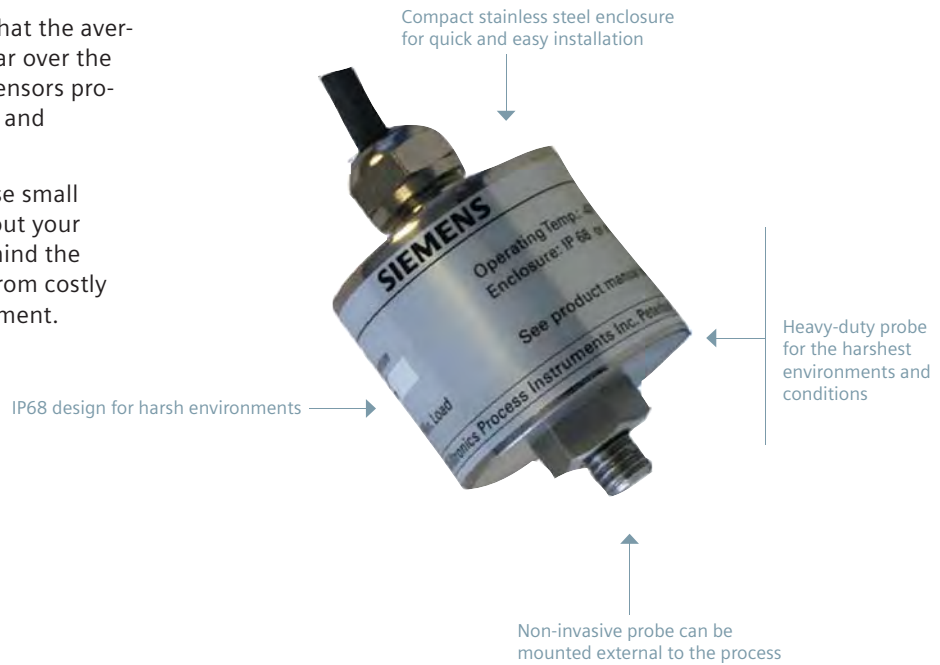


# Acoustic sensors

Your workplace can be a noisy environment. Machinery, materials on the move, and workers yelling above it all! With all of this noise, process protection is an important piece of your production.

Able to detect subtle noises that the average worker simply cannot hear over the noise of the plant, acoustic sensors protect your valuable machinery and equipment.

You may not even notice these small devices as you walk throughout your plant, but they're at work behind the scenes, helping to save you from costly repairs or equipment replacement.





	SITRANS AS100	SITRANS CU02
<b>Order No.</b>	7MH7560	7MH7562
<b>Key features</b>	<ul style="list-style-type: none"> <li>• Easy, low-cost installation</li> <li>• Non-invasive mounting – screw-in, bolt on, weld or bond in place with optional mounting disc – ideal for hazardous or hygienic environments</li> <li>• Low and high sensitivity ranges</li> </ul>	<ul style="list-style-type: none"> <li>• Two programmable relays and isolated 4 to 20 mA analog output</li> <li>• Ability to mount the control unit up to 500 m (1500 ft) from the sensor</li> <li>• DIN rail mounting provides easy installation</li> <li>• Local programming and calibration with display and four buttons</li> </ul>
<b>Outputs</b>	0.08 to 10 VDC	<ul style="list-style-type: none"> <li>• 4 to 20 mA</li> <li>• Two Form C relays 5 A at 250 VAC</li> </ul>
<b>Approvals</b>	CE, optional FM/CSA Class II, Div. 1, Group E, F, and G, ATEX II 2GD, ATEX II 3D	CE, CSA

### Field notes from the cement industry

A cement plant needed detection of filter failures in its dust extraction system. Filters help protect the environment and the machinery running the system, and a faulty dust extraction can create blockages or damage equipment.

- SITRANS AS100 detects a failed filter by monitoring particulate hitting the fan housing, which creates an impact noise.
- SITRANS CU02 sends an alarm or notification if filters stop working well, alerting operators to repair or replace the filter.

Acoustic sensors are key to protecting this plant's machinery and to keeping efficiency high during cement production.



**Find out more:**

[www.siemens.com/processprotection](http://www.siemens.com/processprotection)

Visit us online to learn more about how Siemens process protection devices save you both time and money.



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Siemens AG  
Industry Sector  
Sensors and Communication  
Siemensallee 84  
76181 KARLSRUHE  
GERMANY