

# MILLWATCH/ SILOWATCH

EARLY FIRE DETECTION  
IN MILLS AND SILOS



● CO and O<sub>2</sub> Measurements for Coal and Biomass



**LAND**  
**AMETEK**<sup>®</sup>  
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QUALITY CUSTOMER SOLUTIONS

# MILLWATCH/ SILOWATCH

## DETECT RAPID BUILD-UP OF CARBON MONOXIDE INSIDE MILLS AND SILOS

Millwatch and Silowatch continuously monitor the atmosphere and respond quickly to any significant increase in the levels of CO created by the onset of a fire in coal or biomass storage and processing. Advance warning allows preventative action to be taken.

AMETEK LAND HAS BEEN  
MANUFACTURING PRECISION  
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We are specialists in non-contact temperature measurement and combustion monitoring with applications across diverse industries such as steel and glass making, power generation and cement manufacture.

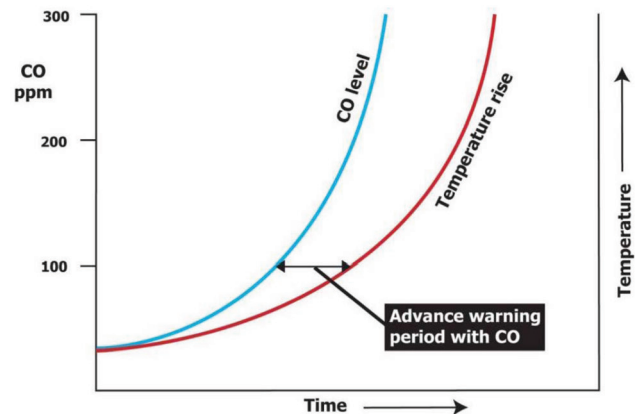
As part of AMETEK Process & Analytical Instruments Division since 2006, our customers benefit from the worldwide AMETEK sales and service team.

### HOW IT WORKS

The analyzer extracts sample gases from the mill outlet or silo headspace and continuously monitors the levels of carbon monoxide (CO). Automatic calibration confirms correct operation and maintains integrity.

### WHY CARBON MONOXIDE?

There is very little CO in ambient air, so CO measurement provides a sensitive method to detect early-stage combustion. The system will detect changes significantly faster than temperature measurement - in time to prevent damage.



Fire Advanced Warning - CO vs Temperature

### FEATURES ▼

Detect precursors of a fire  
Specifically designed for coal mills and silos  
Suitable for biomass storage and processing  
Standard analog and discrete contact outputs  
Z-purge available  
Detection limit 2ppm  
Early stage combustion releases high levels of CO  
Gives fast indication of onset of fire  
Suitable for enclosed areas  
No multiplexing  
Automatic calibration  
Rugged sample probe with abrasion protection

### BENEFITS ▼

Protect expensive equipment and prevent downtime  
Ideal for the demanding measurement environments  
Detects CO emitted by early stage combustion of biomass  
Connect to plant operating system  
Suitable for hazardous areas  
No significant CO in ambient air - presence of CO indicates a problem  
Provides time to take preventative action  
T90 typically < 45 seconds  
Ideal for coal mill or silo  
Continuously monitor one or two locations  
Verifies correct operation  
High reliability in aggressive environments

# SPECIFICATION & DESIGN

## MILLWATCH AND SILOWATCH FIRE DETECTOR

Millwatch is suitable for monitoring on both horizontal and vertical mills, typically at the classifier outlet.

Silowatch is used to monitor coal stored in silos and pulverized fuel bins.

The detector monitors the carbon monoxide concentrations inside the mill, silo or bunker. A rapid rise in the concentration indicates combustion is underway, so preventative action can be taken before a fire starts or an explosion occurs. In this way, Millwatch and Silowatch can increase plant safety and reduce downtime.

## BIOMASS APPLICATIONS

Silowatch can also detect carbon monoxide emissions from early-stage combustion of biomass.

## OPTIONAL OXYGEN MEASUREMENT

An optional sensor allows measurement of the O<sub>2</sub> concentration in an inerted silo.



**Z-PURGED VERSION  
AVAILABLE FOR  
HAZARDOUS AREAS**

## RUGGED SAMPLE SYSTEM

The mill probe has a large area stainless steel filter and hardened abrasion shield for maximum lifetime and reliability.

Blowback keeps the filter clear for minimum downtime.

Freeze-protected sample lines available for outdoor applications.



## APPLICATIONS

**MILLWATCH IS SUITABLE FOR MONITORING ON BOTH HORIZONTAL AND VERTICAL MILLS, TYPICALLY ON THE PF OUTLET.**

**SILOWATCH CAN BE USED IN AN ENCLOSED FUEL STORE CONTAINING COAL OR BIOMASS**

- Pulverizing Coal Mills
- Coal Bins
- Grinding Plants
- Storage Silos
- Enclosed Conveyors
- Biomass Storage

# MILLWATCH/SILOWATCH

CO AND O<sub>2</sub> MONITORING

## SPECIFICATIONS

<b>Measurement Range</b>	
CO Measurement Ranges:	0-100 up to 2000 ppm in 50 ppm steps
Resolution:	1 ppm / 1 mg/m <sup>3</sup>
Optional O <sub>2</sub> Ranges:	0 - 5 % to 0 - 25 %
<b>Calibration</b>	
Calibration Method:	Automatic 2-point calibration span and zero
<b>User Interface</b>	
Type:	LCD with backlight 4 x 20 character, 8 access keys
<b>Outputs/Inputs</b>	
Analog Output:	4 to 20 mA isolated current loop for each CO & O <sub>2</sub> measurement
Relay Outputs:	2 x Level Alarms; System OK; Calibration/Maintenance
Relay Rating:	Isolated changeover (Type C) 1 A @ 240 V a.c. or 5 A @ 240 V d.c.
<b>Environmental</b>	
System Enclosure:	Painted steel, sealed IP65 / NEMA 4
Ambient Temperature:	0 to 45 °C / 32 to 113 °F standard; to -20 °C / -4 °F with optional case heater; to 50 °C / 122 °F with optional vortex cooler
<b>Compliance</b>	
EMC:	Conforms to EN-50 081 & EN-50 082
Electrical Safety:	Conforms to EN-61010-2
<b>Power</b>	
Power Supply:	100 - 120 V a.c. or 190 to 240 V a.c., 50-60 Hz, 300 VA
<b>Gas and Air Requirements</b>	
Instrument Air (cooling):	5 - 10 bar / 70 - 150 psi clean and dry, 300 l/min/10.5 cfm
Calibration Gas:	100 ppm to 500 ppm CO, balance N <sub>2</sub> recommended 2 bar / 30 psi 20 liters (0.7 cu.ft.) per calibration approx.
<b>Mechanical</b>	
Size (H x W x D):	600 x 600 x 350 mm / 24 x 24 x 14 in.
Weight:	53 kg . 117 lb.
Options:	Twin Stream CO System Sample Probe and Lines Heating / Cooling Z-purge for hazardous area operation Oxygen measurement (Single Stream only)

SEE OUR OTHER COAL FIRE PREVENTION PRODUCT LITERATURE:



CONVEYOR BELT  
HOT SPOT  
MONITORING



COAL PILE FIRE  
MONITORING

DISCOVER HOW OUR BROAD RANGE  
OF NON-CONTACT TEMPERATURE  
MEASUREMENT AND COMBUSTION &  
EMISSIONS PRODUCTS OFFER A  
SOLUTION FOR YOUR PROCESS

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