



Coal Fire Detection



Mill/Silo Fire Detector

LAND

Combustion & Environmental Monitoring

An **AMETEK**® Company



LAND

Coal Fire Detection

Advance warning of the onset of coal mill and silo fires through the build-up of carbon monoxide

This unique detection system is specifically designed to detect rapid build-up of carbon monoxide inside pulverizing coal mills and silos. It continuously monitors the atmosphere, and responds very quickly to any significant increase in the levels of CO, created by the onset of a fire. This provides the operator with advance warning to enable preventative action to be taken before damage to the plant, or injury to personnel occurs.

The saving in cost of repairs following a mill fire would pay for the system many times over.

Features and Benefits

- **Advanced fire detection system - Protect expensive mill equipment and prevent downtime**
- **Specifically designed for fire detection on coal mills and silos - Robust, low maintenance system**
- **Continuous self-checking of measurement integrity - High level of reading confidence**
- **Tailored to each application - Easily set, site-specific alarm thresholds**
- **Easy connection to plant control equipment - Standard analog & discreet contact outputs**

Why Carbon Monoxide (CO) ?

Monitoring of CO, as opposed to temperature sensing, provides much earlier detection of combustion and subsequent prevention of a mill fire. The system will detect changes significantly faster - in time to prevent damage.



CO Mill/SiloFire Detector with probe

How it works ?

It extracts sample gases from the mill (often the mill outlet) or silo and continuously monitors the levels of carbon monoxide (CO). Dual sensors continuously monitor CO, with self-checking and auto-calibration to maintain integrity.

Alarms

Alarm threshold levels can be set to best suit the plant operating conditions. These settings can also compensate for externally introduced CO, where mills are using recycled combustion air for coal feed heating.

Optional O₂ Measurement

Measurement of oxygen is an option in the single stream instrument. Oxygen-limited silos will benefit from this additional measurement as an additional fire prevention precaution. Similarly, plants using re-cycled flue gas can continuously monitor oxygen levels.

Applications

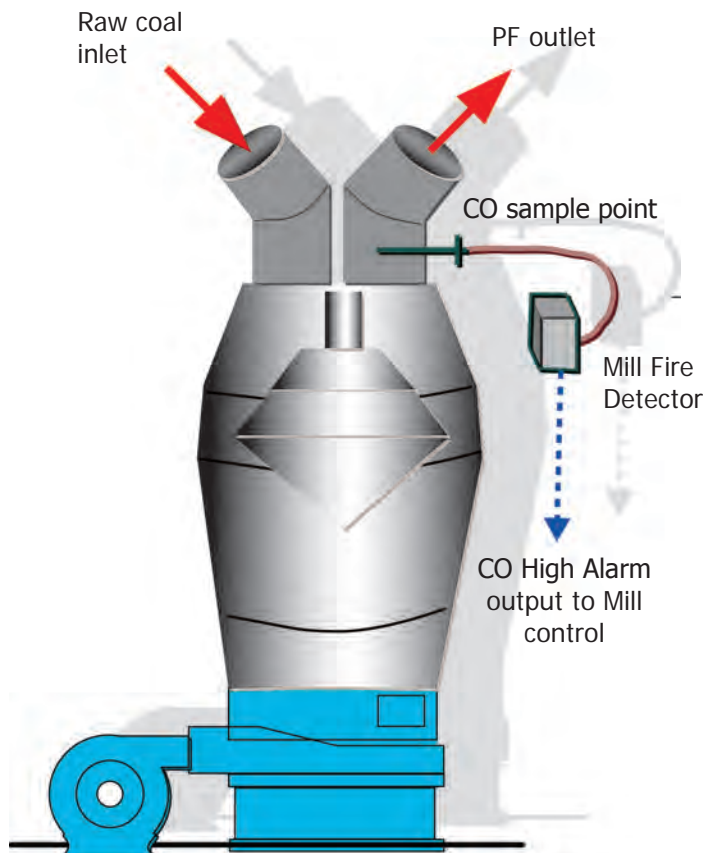
The Mill/Silo Fire Detector is suitable for monitoring on both horizontal and vertical mills, typically on the PF outlet. It is equally effective in monitoring ground coal stored in silos and bins.

Pulverizing Coal Mills
Coal Bins
Enclosed Conveyors

Grinding Plants
Storage Silos

Sample Probe - Mill applications

The specially designed probe is able to withstand the erosive conditions at the mill outlet where the measurement is made. The outer protection tube is cast from erosion resistant material, while the sampling tip has a screw-on replaceable steel filter to protect the sample line and analyzer from dust ingress. The probe and filter are both simple to remove and replace.



Typical Mill Fire Detector installation, with CO detector fitted to PF outlet at mill exit

Twin Stream System

Where the application specifies, a twin stream system is available. This can simultaneously monitor 2 measurement points on a single mill, or 2 separate mills; reducing installation costs and increasing the protection levels on a single mill.

Multipoint Switching Unit

Where the application allows, a 6-point switching unit is available to sample several points on a single mill or any combination up to single points in six mills. The switching unit is set to sample at customer set intervals for a specified period.



Coal Fire Detection - Product Range

Mill/Silo Fire Detector

CO monitor for early detection and advance warning of mill/silo fires

Conveyor Fire Detector

Early detection of hotspots/fires along the conveyor

Railcar Fire Detector

Check and detect hotspots and fires in coal railcars

IR Coal Fire Monitor

Infrared thermometer for detecting fires on the mill/bunkers

Coal Pile Fire Detector

Early detection of hotspots/fires in coal stockyards

Portable Thermal Imager

Hotspot and fire detection in bunkers/hoppers/silos and plant integrity checking

Specifications

Analyzer

Measurement Ranges

CO Ranges (selectable): 0-100 up to 4 000 ppm in 50 ppm steps or
0-100 up to 5 000 mg/nm³ in steps of 50 mg/nm³
Resolution: 1 ppm / 1 mg/nm³
Linearity: < 2 % of range
Zero drift: < 2 % of range per month
Span drift: < 2 % of range per month

Optional O₂ Ranges (selectable): 0 - 5 % to 0 - 25 %
Resolution: 0.1 Vol %
Linearity: < 0.2 Vol %
Zero drift: < 0.2 Vol % per month
Span drift: < 0.2 Vol % per month

Response time: < 30 secs. to T₉₀ (excluding sample line)

Calibration

Calibration method: Automatic
2-point calibration span and zero
Microprocessor controlled

Display

Type: LCD (Supertwist)+ LED backlight
Size: 60 x 16 mm / 2.4 x 0.6 in
Parameters: 4 x 20 character dot matrix, 8 access keys

Indicators

Type: 2 LEDs on door panel
Use: 'Power On' and 'System OK'

Outputs/Inputs

Analog output: Single, isolated current loop for each CO level & O₂ if fitted
0, 2 or 4 mA to 10 or 20 mA
Relay outputs: 2 x Level Alarms; System OK; Calibration/Maintenance
Relay rating: Isolated changeover S.P. 1 A @ 240 V a.c.
or 5 A @ 240 V d.c. resistive
Auto cal relay contacts: Zero, Span check/calibration
Auto cal initiation contacts: For use with external contact closure

Environmental

System enclosure: Painted steel, sealed IP65 / NEMA 4
Operating (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 air conditioner

Compliance

EMC: Conforms to EN-50 081 & EN-50 082
Electrical safety: Conforms to EN-61010-2

Power

Power supply: 83 V a.c. to 132 V a.c. or 165 to 264 V, 50 - 60 Hz
Power consumption: 300 W

Gas and Air requirements

Instrument air (zero calibration): 2 bar / 30 psi clean and dry, 5 l/min / 0.2 cfm
Instrument air (cooling): 5 - 10 bar / 70 - 150 psi clean and dry, 300 l/min / 10.5 cfm
Calibration gas (recommended): 2 bar / 30 psi
20 litres (0.7 cu.ft.) per calibration approx.
Calibration gas type: CO in N₂; Air for O₂

Dimensions (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 System
Heating/Cooling
Multi-point Switching Unit
Sample Probes and Lines
Oxygen Measurement (Single stream only)

Continuous product development may make it necessary to change these details without notice

LAND

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Monitoring**

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Applies in the UK

Applies in the USA