Coal Fire Detection

Mill/Silo Fire Detector
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.

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.
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.

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  Grinding Plants
Coal Bins  Storage Silos
Enclosed Conveyors

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
Further Information

U.K.
Telephone: +44 (0) 1246 417691
Facsimile: +44 (0) 1246 290274
E-Mail: combustion.info@landinst.com

U.S.A.
Telephone: +1 215 504 8000
Facsimile: +1 215 504 0879
E-Mail: combsales@landinstruments.net
Web: www.landinst.net

Italy
Telephone: +39 02 91 08 0020
Facsimile: +39 02 91 08 0014
E-Mail: comb.info@landinst.it
Web: www.landinst.it

France
Telephone: +33 (0) 1 30 80 89 20
Facsimile: +33 (0) 1 30 80 89 21
E-Mail: info-combustion@landinst.fr
Web: www.landinst.fr

Poland
Telephone: +48 (0) 12 632 82 62
Facsimile: +48 (0) 12 632 24 74
E-Mail: land@land.com.pl
Web: www.landinstruments.pl

Spain
Telephone: 91 630 0791
Facsimile: 91 630 2918
Email: land-infrared@landinst.es
Web: www.landinst.es

Germany
Telefon: 02171/7673-0
Telefax: 02171/7673-9
Email: infrared@landinst.de
Web: www.landinst.de

Mexico
Telephone: +52 (0) 55 5281 1165
Facsimile: +52 (0) 55 5281 5364
E-Mail: ventas@landinstruments.net

Japan
Telephone: 06 6330 5153
Facsimile: 06 6330 5338
Email: info@landinst.jp

Land Instruments International has a comprehensive range of Combustion and Environmental Monitoring Instrumentation.

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/m³ in steps of 50 mg/m³
Resolution:
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:
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:
Relay rating:
Auto cal relay contacts:
Auto cal initiation contacts:

Environmental
System enclosure:
Operating (ambient) temperature:
Compliance
EMC:
Conforms to EN-50 081 & EN-50 082
Electrical safety:
Conforms to EN-61010-2
Power
Power supply:
Power consumption:
Gas and Air requirements
Instrument air (zero calibration):
Instrument air (cooling):
Calibration gas (recommended):
Calibration gas type:
Gas and Air requirements
Dimensions (H x W x D):
Weight:
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