

Line type heat detector MHD 535 protects coal conveyor belts

Conveyor belts are a frequently used method to transport coal from one location to another in power plants, harbours, coal mines, or steel mills. Fire is a risk that might lead rapidly to big damage in these facilities. Due to this reason, fire prevention and early fire detection has a high priority in coal transport. Due to the high level of dust around the conveyors, normal detectors cannot be used for fire detection. The SecuriSens MHD 535 line type heat detector is the ideal product for the job.



The rollers of conveyor belts can heat up and ignite the coal dust

Conveyor belts are worldwide used to transport coal in mines, loading and storage areas like harbours, and consumption facilities as power plants or steel mills. However there is a continuous risk with this application. The roller bearings supporting the belt might run hot or in the worst case the rollers block completely and the belt slips along them. In both cases the construction is heating up locally. As usually the whole belt and its surrounding are covered by coal dust, the hot surface of the bearings can initiate a local fire which rapidly can spread along the belt.

In the worst case, an explosion of the coal dust might result, usually ending in a chain reaction, as the shock wave of a first explosion brings up even more dust. Usually these environments are classified as ATEX Zones 21 or 22 due to the dust explosion risk.

There are basically two methods to prevent such incidents. First is continuous cleaning, removing the dust such avoiding a base for fire and explosion. But this is very labour intensive. Second is an early detection of any local heat sources. Ideally local overheating is detected even before the fire is starting. But definitely the fire itself has to be detected as fast as possible to allow its suppression and protection of the facility.

Conventional fire detectors cannot be used due to the harsh environment with high dust levels and frequently outdoor conditions. Line type heat detectors (LTHD) are the best choice, as they are resistant to aggressive surroundings and ideal for the monitoring of extended constructions like conveyor belts or transport tunnels.

In addition to the heat sources referred above, they might detect any hot material falling of the belt. However they cannot detect hot spots moving on the belt. For this purpose, IR detectors have to be used.



Loading and storage areas are typical installations for coal conveyor belts

The SecuriSens MHD 535 line type heat detector is well suited for this application. It consists of a semiconductor based sensor cable and a control unit as interface to the fire alarm panel or PLC system. The robust electrical sensor cable insensitive to soiling and with high resistance to mechanical shocks matches perfect to this harsh environment. Easy to install and with no need for maintenance after installation it also provides an economic solution regarding cost of ownership.

The multipoint detector cable can be installed with 7m or 4m sensor distance, the latter providing increased sensitivity for early detection of heat sources. The maximum length of the cable is 250 sensors, i.e. 1750m or 1000m for the two most common sensor distances in this application. For larger installations with long belts or several conveyor systems, several MHD 535 systems can easily be networked.

Design information

Selection of the 4m or 7m sensor distance cable according to desired sensitivity and/or local fire detection system design rules.

To enable highest sensitivity, the sensor cable should be fixed

above the conveyor or to the side walls close to the belt. Positioning below the conveyor or direct attachment to the conveyor construction is not recommended.

For installation in Ex zones, the ATEX version of the product has to be applied. The sensor cable and connection and termination modules can be installed in zone 21. The control unit however should be installed in the safe area.

Facts about MHD 535:

- Highly resistant to harsh environments
- Maintenance free
- Easy mounting and installation
- Freely configurable pre-alarms and alarms
- Easy connection to a superior system, such as a fire alarm control unit, PLC, etc. by relay contacts or digital interface
- Each sensor can be custom programmed and adjusted
- VdS approved in accordance with EN 54-5 classes A1, A2, B, or C

Reference applications (selection):

- Savona harbour (IT)
- Port Coper harbour (SI)
- Coal mine (RU)



Installation of MHD 535 above a conveyor belt



Line type heat detector MHD 535



All specifications subject to correction. Securiton planning guidelines are binding.



Securiton AG
Alarm and Security Systems
Head Office
Alpenstrasse 20, CH-3052 Zollikofen, Switzerland
Tel +41 31 910 11 22, Fax +41 31 910 16 16
www.securiton.ch – info@securiton.ch
A Swiss Securitas Group company

Securiton GmbH
Alarm and Security Systems
German Sales
Von-Drais-Strasse 33, D 77855 Achern
Tel +49 7841 62 23 0 Fax +49 7841 62 23 10
www.securiton.de – info@securiton.de