

Application Note

Floating Roof Tanks.



Floating roof storage tanks commonly contain highly flammable products with the potential for catastrophic fires. If the fire is not detected early it can cause significant loss of plant, down time of production and in severe situations even risk to life. These can have a large financial or environmental impact.

The main cause of fires is the ignition of flammable vapours leaking from a worn or damaged rim seal. Early detection of the incipient fire is paramount for any fire suppression measures preventing the growth and spread of the fire.

The design and size of storage tanks can differ with each operator and site, requiring a flexible solution to meet individual needs. With its ease of installation and low maintenance digital Linear Heat Detection (LHD) provides a cost effective answer. The LHD cable can be cut to length as required and a single cable can protect the largest of storage tanks.

Linear Heat Detection cable is a simple and reliable product providing uninterrupted detection along its length ensuring the complete circumference of the rim seal is protected.

The sensing cable is formed from a pair of twisted steel conductors each with temperature sensitive insulation and then an overall outer sleeve. When the temperature sensitive insulation reaches its predetermined alarm temperature the two conductors short together providing the digital or switched signal.



Typical rim seal and foam dam.

The cable can be connected to any unit capable of monitoring a switched signal, i.e. conventional fire panel, addressable switch monitor unit or PLC

LHD cable is classified as a "simple device" but suitable safety barriers must be used to provide the Intrinsically Safe (IS) protection required for the system in hazardous areas.

Having a fixed alarm temperature, the operation of the digital LHD is unaffected by changes in the ambient temperature.

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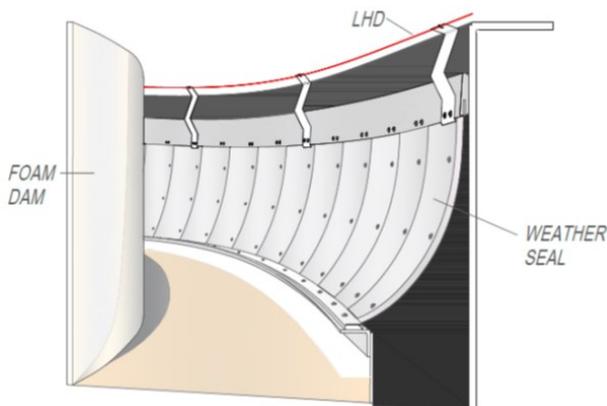
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When a failure occurs on a rim seal there is the potential for flammable vapours or product to escape. Should there then be a source of ignition then a fire may ensue. To detect the fire as early as possible LHD cable is installed at or close to the rim seal.

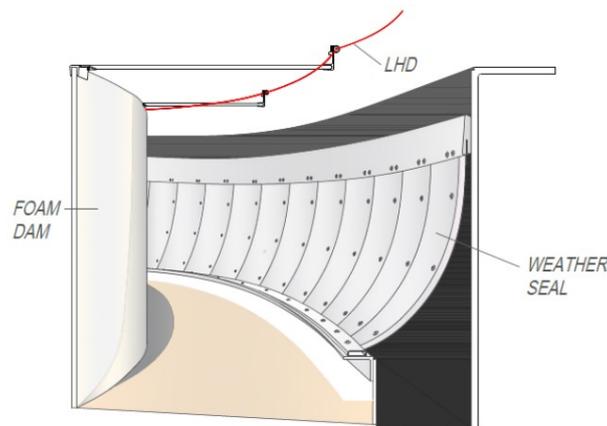
Linesense provide a selection of fixings and clips to retain the Linear Heat Detection (LHD) cable in place. Fixings should be placed at intervals of no more than 1.2m apart.

Where cable ties are used they should be used in conjunction with a neoprene sleeve and not over tightened to prevent damage to the outer sleeve of the LHD.

Suggested Fixing Configurations.



1. Bracket fitted directly at the weather seal.



2. Bracket fitted to foam dam wall.

Automatic Cable Reeler and Retractable Cables

Electrical connection between the roof and the tank rim can be made using the ATEX approved automatic cable reeler or retractable cable.

The Automatic cable reeler is installed at the tank rim and connected to a junction box on the roof. As the roof rises and falls the reeler compensates for the change and winds cable in and out as required.



Alternatively Linesense provides coiled retractable cables which require to have a junction box mounted at the rim and another fixed on the roof top.

Typical wiring schematic.

