Fire Detection in Storage Tanks

THE CHALLENGE

Floating and fixed roof tanks are storage vessels containing fuel and chemicals which are flammable and oftentimes explosive. These tanks easily catch fire and burn in many uncontrollable circumstances, such as lightning activity, gas leakage from the rim seal, static electricity, or electric sparks igniting flammable gases and liquids. Due to the significant safety risks and financial loss posed by a fire or explosion, these vessels need to be monitored and protected with a system that provides quick and reliable fire detection.

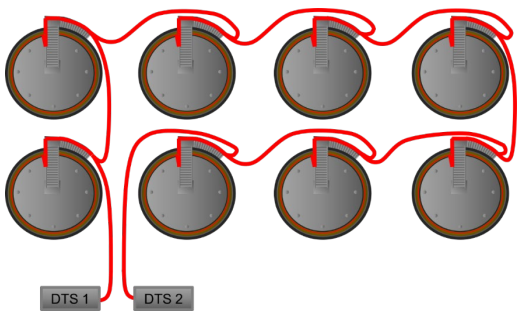
However, tank fire detection poses some challenges. Tanks are large assets to protect, and often an entire tank farm must be monitored. In addition, the installation of fire detection systems can be tricky when installation methods prohibit hot working. Certain fire detection certifications and standards must be met, and lastly the fire detection method needs to be able to accurately and precisely locate a fire.

THE INNOVATION

AP Sensing's fiber optic Linear Heat Detection (LHD) provides an advanced solution for mitigating all of these challenges while keeping the operational expenditure minimal.

Utilizing a simple installation, with one passive fiber optic cable as a distributed temperature sensor plus one or two control instruments for the entire tank farm, our LHD system continuously and simultaneously measures thousands of temperatures in real time. The system can measure a complete temperature profile of the entire tank farm within just seconds.

It has the industry's lowest false alarm rate and market's most complete set of certifications including VdS EN 54-22, UL 521, ULC-S530, FM 3210 and 3010 and SIL-2, plus explosion certifications ATEX and IECEx. The system is robust, thoroughly tested and has a low failure rate that exceeds the designed MTBF of 33 years. It is also fully integrable with other tools and fire suppression systems such as foam extinguishing systems or a FACP.



Fiber optic cable routed through a tank farm

QUICK & ADVANCED DETECTION

The system is laboratory tested to allow temperature measurements up to 750 °C for two hours, according to IEC 60331-25. This means that the system not only precisely pinpoints hotspots and locates fires with high accuracy, but can also monitor fire development by continuing to provide vital information about fire development, size and spread over time.

As an addressable linear heat detector, multiple project-specific fire zones are mapped to the control instrument and a variety of alarm parameters (rate-of-rise, maximum, adaptive) can be programmed to each tank/fire zone. This solution delivers fast detection and precise location, while minimizing false alarms.

Pre- and main alarms can be programmed to initiate automatic countermeasures. In the event of a fire, our linear heat detection system provides immediate information regarding fire location, size and spread. All information is available through dry-contacts and TCP network communication, e.g. Modbus protocol.

RELIABLE & COST-EFFECTIVE

AP Sensing's sensor cables are passive, robust, immune to EMI, resistant to dirt and dust, and do not require maintenance. In the case of a cable break, the cable is easily spliced and repaired – reducing off-times. Regulation stipulates testing of the fire protection system in certain intervals; testing of our LHD system is simple, time-saving and does not require down-time.

The LHD system can also be accompanied by AP Sensing's comprehensive asset-visualization software SmartVision™, where all information is available at-a-glance and rendered for further processing by SCADA.

WHY AP SENSING?

- Industry-leading Linear Heat Detection technology with fast response times, excellent accuracy and low maintenance
- All product variations are fully certified and in compliance with internationally recognized standards
- Our experience and proven deployment in all regions in the world – our project reference list is extensive and comprehensive
- Range of certified sensor cables to fit every need
- Easy system integration through flexible protocols and interfaces
- World-class service, support and training

made in Germany

SIGNALING c UL us LISTED

SIL

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VdS

FM APPROVED

Passion for Plants.
For every unit sold, AP Sensing plants 100 trees