

ExAct fire protection for storage of flammable liquids



Application

Design and supply of an automatic fire detection and extinguishing system for the protection of areas where flammable liquids are stored

Special requirements of storage facilities containing flammable liquids

Flammable liquids are often stored in large storage tanks. Such a storage facility constitutes a hazardous area. Hazardous areas are classified into zones depending on the probability of an explosive atmosphere being present.

Equipment used in hazardous areas must be ATEX certified and meet the requirements of the area in which the equipment will be used. It is often required that fire detection and alarm equipment be located in zone 0, where an explosive atmosphere is present continuously or for long periods. For example, the ceiling height in storage tanks/areas for flammable liquids is often low, so that fire detection devices need to be placed near the liquid surface. This presents a challenge to system design and component selection. Another challenge is presented by the fact that there may be several storage facilities for flammable liquids in the same area.

Solution

System characteristics

ExAct fire detection and extinguishing systems supplied by Mikro-Pulssi Oy are turnkey solutions specifically tailored to customers' fire protection needs. Technically, the system provides automatic fire detection, alarm, extinguishing and system control functions in a single package. From the service point of view, the solution includes everything from the system design and component selection to installation, commissioning and system servicing.

In case there are several areas that need to be protected separately, it is advisable to choose **ExAct FP-200** as the control panel for the system. ExAct FP-200 is an **automatic fire alarm and extinguishing control panel** that can effectively manage fire detection, fire extinguishing and system controlling functions in **even 200 separate extinguishing areas**. The entire fire detection and extinguishing control system can be **serviced and tested centrally** through one control panel only. All system events (alarms, faults, actions) are indicated on the control panel.

The control panel can be equipped with four addressable loops. All field devices will be connected to the loops of the control panel. An addressable **system reduces the need for cabling** and allows for **easy future expansion** of the system.

In the systems designed by Mikro-Pulssi Oy, all devices located in ATEX classified areas are Ex ia certified and usually all ATEX circuits are galvanically isolated.

Detection

In areas where flammable liquids are stored, quick, accurate and reliable detection of fires is of vital importance. To meet this requirement, Mikro-Pulssi Oy has developed the **ExAct FD-20 flame detector**. It can be used **in especially demanding environments**. The ExAct FD-20 flame detector detects a fire within 10 seconds of ignition. For example, in case of kerosene fires, this means time counted from ignition of the kerosene vapours (on top of the liquid). The fire will be detected and extinguishing control system activated before actual kerosene liquid ignites.

The FD-20 flame detector does not require servicing. The device has **built-in self-diagnostics** and fault conditions are indicated effectively.

Usually each protected area also includes **Ex ia certified manual call points** for releasing the extinguishing system manually.

Alarm indication

The system often includes **separate alarm devices** (e.g. sounders, beacons, sounder beacons), or even a voice evacuation system, for each extinguishing area. The equipment is available in Ex ia certified versions and can be located in a zone 0 area.

Extinguishing

Extinguishing fires in storage facilities containing flammable liquids requires a lot of attention and careful planning. The **extinguishant** to be used is **selected carefully** according to the special characteristics of the flammable liquid and the extinguishing area. High pressure water mist is an example of an extinguishant that can be used in storage facilities containing flammable liquids.

End result

The ExAct FP-200 fire detection and extinguishing system directs detection and extinguishing activities precisely at the target. With the help of the system, the quantity of extinguishant required for extinguishing a fire can be reduced. At the same time, production downtime caused by the fire can be minimized. The system is easy to use and to maintain.