

Fire protection for cabinets and enclosures

Potential fire hazards abound at airports. Now, dispersion systems for various fire-suppressant agents are available that protect vulnerable areas such as petrol pumps and electrical cabinets.

William A Eckholm, Firetrace International

For airports, protecting the interior of critical cabinets, enclosures, machines or specialty vehicles from fire has always been a challenge. To solve this problem, a major international airport in Canada turned to the unique Firetrace linear pneumatic fire detection and fire suppression systems that are installed inside electrical cabinets and other critical equipment.

Direct Low-Pressure system

The cabinets containing the electrical controls that handle the runway lights were the first applications that the airport decided to protect. This called for the implementation of a Firetrace Direct Low-Pressure (DLP) system. The DLP system uses the proprietary Firetrace fire-sensing tubing for both fire detection and the delivery of the fire-suppressing agent. Care was taken to ensure that the tubing was installed near any potential sources of fire when being routed through the runway lights cabinet.

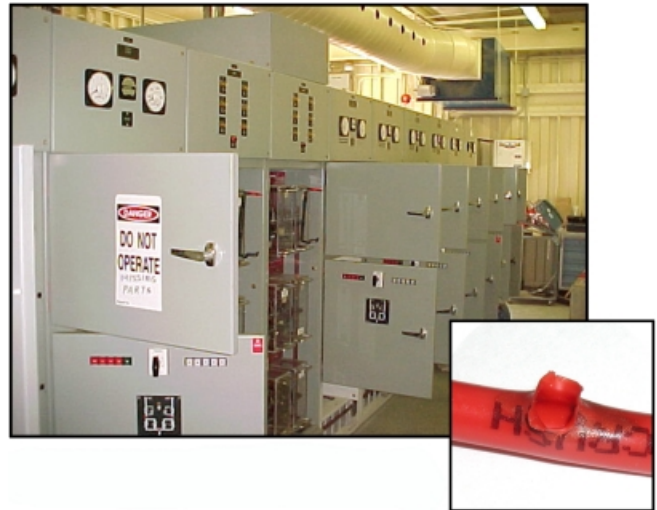
Firetrace tubing is connected to a small cylinder that serves as a reservoir for the fire-suppressing agent. When the tubing senses fire, the area on the tube closest to the fire 'bursts'. The fire-suppressing agent immediately flows directly through the 'burst' point in the tubing and reaches the source of the fire. In this case, Firetrace selected a clean, gaseous fire-suppressing agent called FM-200®, which rapidly suppresses fire. As FM-200 works extremely efficiently, only a few hundred grams of agent were needed to protect all the large cabinets.

To integrate the system into the airport's main fire-alarm system, a pressure switch was added. This alerts operators as to when the Firetrace system has been activated.

Indirect Low-Pressure system

The second application that the airport wished to protect was enclosures surrounding mobile fuel pumps. It was concerned that a leak or operator error might present a fire hazard. Firetrace tubing was routed in such a way that a fire within the fibreglass pump enclosure would be sensed quickly. Once a fire has been detected, the fire-suppressing agent is discharged immediately onto the spilled fuel.

To control the direction of the flow of the firefighting agent, the airport selected the Firetrace Indirect Low-Pressure (ILP) system. Instead of discharging directly



Fire-sensing tubing is routed round cabinets and 'bursts' when it detects a fire.

onto the fire via the 'burst' tube, the ILP system releases the fire-suppressing agent into the enclosure through fixed nozzles that are connected to the reservoir cylinder via copper tubing. This allowed the designers to aim the discharge of the fire-suppressing agent at the most critical areas within the enclosure. In this case, Firetrace selected a synthetic firefighting foam, which quickly coats the pump and any spilled fuel to suppress fire. A pressure switch on the cylinder also provided contacts that are used to shut off the pumps when a fire is detected.

Fewer costs and greater flexibility

Firetrace systems are highly reliable, cost effective and simple to install. They work with a variety of firefighting agents, such as FM-200, CO₂, foam, dry chemical powders and water. Their compact size and incredible flexibility make them ideal for protecting a wide range of airport applications, including pump enclosures, power supplies, fuel cells, engine compartments, control consoles, motors, electrical equipment cabinets, and other critical enclosures.

ati

Author

William A Eckholm is president and CEO of Firetrace International, which is located in Scottsdale, Arizona, USA. He has been in the fire-protection industry for almost 30 years and is a member of, and serves on, many National Fire Protection Association technical committees. Mr Eckholm also serves on the board of directors of numerous industry trade associations.