



Raychem

HYDROCARBON LEAK DETECTION

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Primary concern is rapid detection of potentially hazardous hydrocarbon liquid leaks; requires review by early 2014



Hydrocarbon liquid such as gasoline, diesel, hydraulic fluid, heating oil and jet fuel are stored in aboveground tanks at airports, factories, farms, hotels, hospitals, municipal garages, shopping malls and office buildings. While usually stored to support ongoing operations, hydrocarbon liquid is also stored for emergency purposes, such as to power generators or emergency vehicles.

Properly engineered and installed above-ground storage tanks for hydrocarbon liquid

offer many advantages over belowground tanks. In general, leaks are easier to detect and faster to contain. Aboveground tanks can be relocated as needed or removed when a property changes hands or purposes.

Aboveground tanks to store diesel or gasoline for large-scale emergency generators, for instance, are often located in parking garages or on rooftops. Leaks in these tanks can result in discharge that not only impacts the immediate structure, but also can find its way into storm drains or nearby streams

and ponds. Leaks can occur from corrosion, broken connectors, human error, lightning strikes, vandalism, vehicle strikes and even high winds.

Many factors must be taken into consideration when planning the installation of an aboveground storage tank. Factors such as site and tank selection, proper base and containment, grounding, venting, maintenance, inspections and labeling all must be considered. The FM Global Property Loss Prevention Data Sheet

7-88, *Flammable Liquid Storage Tanks*, provides guidance for engineers, designers, contractors and building owners in many aspects of tank selection, location, venting and other factors.

Recently, FM Approvals introduced a revised version of Approval Standard 7745, *Hydrocarbon Leak Detectors*. The standard, which previously covered only diesel fuel leak detectors, now covers almost any leak detector for hydrocarbon liquid as specified by the manufacturer.

“We developed the original diesel fuel leak detector standard in 2009 in response to demand from FM Global field engineers,” says FM Approvals electrical group manager Jim Marquedant. “The devices that had been approved in the past had been tested according to our hazardous locations standard, which meant they would not start a fire, but did not verify their performance characteristics as detectors.”

In 2007, prior to development of the diesel fuel detector standard, FM Global field engineers identified nearly 500 deficiencies among insured locations, with a total loss expectancy of more than US\$10 billion.

“Our primary concern is rapid detection of the leaking hydrocarbon liquid,” explains FM Approvals senior engineer Ed Laliberte. “We require FM Approved

“We have already notified manufacturers that are required to undergo reviews,” Laliberte notes. Approval Standard 7745 includes performance tests that

“WE REQUIRE FM APPROVED DETECTORS TO PROVIDE AN ALERT WITHIN 30 SECONDS OF EXPOSURE TO THE HYDROCARBON LIQUID. THE INTENT IS TO PREVENT A CATASTROPHIC LEAK BEFORE IT ESCALATES INTO A DISASTER.”

Ed Laliberte

Senior engineer, FM Approvals

detectors to provide an alert within 30 seconds of exposure to the hydrocarbon liquid. The intent is to prevent a catastrophic leak before it escalates into a disaster.”

The revised Approval Standard 7745 has an effective date of March 31, 2014. By that time, any hydrocarbon leak detection systems that are currently FM Approved by the hazardous locations standard only must also meet the performance requirements of Approval Standard 7745 in order to maintain their *Approval Guide* listing. New certification of leak detectors must comply with Approval Standard 7745 and the appropriate hazardous locations standards.

subject the leak detection system to a variety of stresses, including vibration, corrosion, voltage variation and surges, dust, temperature, humidity and failure modes. “The original need was to protect diesel fuel stored on large commercial buildings, but we have extended that to meet a growing need to protect other hydrocarbon liquid in many different occupancies. The revised standard benefits manufacturers by providing a more encompassing certification and, of course, listing in the *Approval Guide*.” ■





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