

DuPont™ FE-36™

PROVIDING RELIABLE PROTECTION IN FLOATING ROOF TANK APPLICATIONS



Overview

Floating roof tanks, such as the ones operated by CIM snc (Compagnie Industrielle Maritime) in Le Havre, France, are used for the transportation and storage of crude and refined petroleum products. They have helped reduce tank fires by approximately 86 percent since their introduction. They do, however, still have one weak spot. Between the rim of the floating roof and the tank shell is an annular seal, where a flammable mixture of air and vapor can collect.

To date, protection of this area has often been carried out by using Halon 1211 (phased out since the end of 2003) or a foam projection system. Consisting of a total of eight components, the complex system has many areas with a potential for failure and usually requires some form of human intervention for activation. Regular drills, involving the pumping and subsequent cleaning of the old foam, coupled with a high cost of maintenance, increase overall cost of ownership. Finally, as the foam only extinguishes in a physical manner, it is a relatively slow process, increasing risk to the premises and nearby tanks.

Solution

Orfeo International, the Spanish market leader in high risk/high value protection, teamed with DuPont to develop a new, automatic system based on the DuPont Fire Extinguishant FE-36™. It consists of a delivery pipe (sited along the annular seal) connected to a storage cylinder, both placed on the roof, in which FE-36™ is held under pressure in liquid state. Automated sprayers are located along the delivery pipe and are opened upon the detection of heat from a fire. The extinguishing agent is applied, directly, and the fire is out even before it has been spotted. At the same time, an alarm is automatically activated in a central control room.



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CIM has already replaced tanks of Halon with 51 tanks of FE-36™. The Orfeo FE-36™ system is used either as a stand-alone system or as an add-on to a foam projection system, with successful results and numerous benefits.

Materials Selected

FE-36™ is a pure non-corrosive, electronically nonconductive, volatile product with zero ozone depletion. It is U.S. EPA SNAP approved, listed in NFPA 2001 and ISO as an acceptable Halon alternative, and a component listed by UL. Its specific properties make it very attractive to protect tanks exposed to all types of weather. It leaves no residue, minimizing the need for clean-up after discharge. It is also non-miscible with the petroleum products stored in the tanks.

Benefits Gained

- **Clean and effective fire suppression**

The Orfeo system uses FE-36™, specifically developed to replace Halon 1211. FE-36™ has instant extinguishing capabilities, and is a clean agent, leaving no residue to be cleaned after extinguishing the fire.

- **Fail-safe activation**

The Orfeo system itself is low in cost, of prefabricated construction and is easy to install and maintain. Each tank has its own independent system, where pressure and levels in the storage system are continuously monitored. In the unlikely event of a leakage or discharge, the drop in pressure is signaled in the control room. There is also automatic monitoring of the overall system, ensuring day and night protection, even when no personnel are present.

- **Reduced maintenance, reduced operational costs**

Maintenance is limited, subject to local regulations regarding equipment under pressure. As each storage tank is divided into different zones, each with its own independent system, only the system protecting the area with a fire will be activated – and will need to be recharged – offering minimal post fire costs and a shorter return to operations. A further benefit is the reduced risk of having the whole tank unprotected in the period before the system is recharged. Finally, comparable installation costs for one storage tank using the Orfeo FE-36™ system can be 15 to 20 percent lower than the equivalent cost of installation of a new foam system.



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Manufacturer

ORFEO INTERNATIONAL is a group of leading Spanish companies for the study, manufacture and installation of all kinds of certified fire fighting equipment and systems. The general range of products provided is in accordance with European Norms, 0098 CE marked according to European Directives on Full Quality Assurance by Germanischer Lloyd AG Notified Body and, under TÜV Cert Quality Registration ISO 9001:2000. The extinguishers and hose reels with cabinet, approved for use on board of ships, are certified according to SOLAS (International Convention for the Safety of Life at Sea) and IMO Resolutions and European Marine Equipment Directives 96/98/EC-98/85/EC by the EC Type Examination Certificate of the GL Luxembourg Notified Body. ORFEO INTERNATIONAL also manufactures high-quality fire fighting equipment and systems.

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