"CAN AN ESFR SPRINKLER SYSTEM KEEP YOU FROM GETTING SOAKED?"

As a warehouse professional, you must deal with and make decisions about fire protection systems for your operation. Insurance companies and particularly local municipalities have become increasingly stringent in their fire protection requirements. While existing systems are often grandfathered by local authorities, acquiring a Certificate of Occupancy in a new or expanded facility often translates into the need for an expensive in-rack sprinkler system in order to satisfy local requirements.

Besides being expensive to install, in-rack sprinkler systems can cause operational problems, and may prevent layout improvements from being made because the sprinkler system inhibits change.

In many cases, greater product losses have resulted from water damage caused by accidentally broken sprinkler heads than from the fires these systems were designed to contain. In addition, making layout changes to an operation with an in-rack system is difficult and expensive because water must be cut off and the system must be drained before the sprinklers can be disassembled and the racks moved. After the racks are moved, the pipes and sprinkler heads must be reconnected, installed and tested. While the work is being done, the area may be left without fire protection.

ESFR TECHNOLOGY

A relatively new sprinkler technology is changing that. Around 1990 EARLY SUPPRESSION FAST RESPONSE (ESFR) sprinkler systems began being installed in warehouses and distribution centers. An ESFR sprinkler system is located in the ceiling structure yet for many categories of product offers fire protection better than in-rack systems.

With ESFR sprinkler heads further away from the fire than the sprinkler heads in an in-rack system, how is that possible? The answer lies in the three ways ESFR systems differ from conventional systems:

A. SPEED

ESFR sprinkler heads sense a fire and begin spraying water in half the time of conventional heads. The sooner the system starts to fight the fire, the smaller the fire will be, so it is more likely that the ESFR system will be capable of extinguishing the fire promptly.

B. VOLUME

Conventional heads output water at a rate of about 25 to 30 gallons per minute (gpm), and high output conventional heads (used with hazardous and explosive materials) output approximately 60 gpm. ESFR heads output water at 100 gallons per minute.

C. DROPLET SIZE

ESFR heads emit larger droplets of water with greater momentum than conventional heads. When extra water is forced through conventional heads, it tends to come out as a mist and a greater percentage evaporates than when conventional heads flow at a normal rate. ESFR heads

not only output larger amounts of water, but a greater share of the water reaches the fire, hastening the extinguishing process. Conventional systems are generally not designed to extinguish a fire, but rather to keep it from spreading by moistening the area around the fire.

These three factors build upon each other to increase ESFR's efficiency. By detecting the fire sooner, outputting more water, and increasing the likelihood of the water reaching the fire because of the droplet size, ESFR systems are able to compensate for the sprinkler heads being further from the fire.

WHO CAN USE ESFR?

For many (but not all) categories of product, ESFR technology can be used in warehouses with storage that does not exceed 35 feet in overall height, and with a ceiling height that averages 40 feet or less. You will need to confirm with your insurance carrier and local authorities (i.e. fire and building inspectors) that ESFR is appropriate for the product being stored in your facility.

COST

At present, an in-rack system consists of a conventional ceiling system and in-rack sprinklers. While each operation must be looked at individually to determine the relative cost of ESFR and existing in-rack systems, in new facilities an ESFR system generally costs 30% to 50% less than an in-rack system. Additional savings occur if racks are rearranged or dismantled.

Retrofitting an existing building with ESFR is more difficult to justify, since it generally means totally dismantling the existing ceiling system because conventional pipes do not have the capacity to deliver sufficient water to ESFR heads. The cost analysis in an existing building may swing in the direction of an in-rack system because the ceiling component of the in-rack system is already installed, while for ESFR the cost of removing the system must be included. In some instances, it may still pay to retrofit an ESFR system into an existing facility.

Some municipalities cannot provide water at high enough pressure to support the rate which an ESFR system requires. In these instances, an auxiliary fire pump and/or on-site water storage may be required. The cost of these items must be factored into the justification equation.

Before making a decision about using ESFR, be sure to consider the product stored, the increased flexibility and the higher potential for reduced fire losses as well as the cost differentials.

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