Directory

Track & Infrastructure

Stat-X

Fire Suppression for Rolling Stock Depots and Train Stations

When considering fire protection for rolling stock, the train itself receives the most attention. Firstly, it is on the conveyance where passengers and crew will concentrate. And secondly, when in transit, the risk of a fire occurring in rural areas away from fire suppression resources is high.

But depots, train stations, support buildings and rooms also contain a myriad of components which, from a fire protection standpoint, also require careful consideration.

The Problem

By their nature, rolling stock depots are often crowded places, so there is a significant safety exposure. Many stations are also underground or partially enclosed. This makes egress problematic and can result in exposure to the toxic by-products of combustion.

When you examine the fire risks contained within a rolling stock depot or station, you will find many electrically oriented or Class C risks such as:

- Tech rooms
- Battery back-up and uninterruptible power supply (UPS) rooms

Stat-X is proven to be effective on Class C fires and at mitigating the risk of thermal runaway propagation in lithium-ion battery fires. The proprietary, potassium-based agent acts quickly to interrupt the chemical reaction needed to sustain a fire and remains suspended for several minutes to provide reflash protection.

- Control rooms
- Switch rooms
- Power generator rooms
- Electrical substations

Fires with an electrical origin are all too common. When a Class C fire erupts, it often becomes large quickly and can be difficult to extinguish. If a fire occurs in an underground station, then the difficulty in extinguishing it increases exponentially.

While fires in train stations are fortunately not common, they do happen. A notable train station fire occurred in London in 2021. Named for the London Underground station where it occurred, the "Elephant and Castle Fire" began suddenly and spread rapidly. Witnesses reported hearing several loud bangs and were then confronted with a fast-moving fire. Six people were injured, and it took hours for over 100 firefighters to control the blaze. The cause of the fire was not disclosed, but experts suspect it was electrical in nature due to the loud bangs heard by witnesses.

The aftermath of a fire at a rolling stock depot can be substantial, as a fire of any significance can put the station out of service for months. When equipment—e.g. signalling equipment—is damaged, this puts trains on the move in jeopardy. Critical equipment such as this must be fully and properly repaired before the line can again become fully operational.

As is often the case, indirect damage from a fire can exceed direct fire loss. The loss of ridership for passenger trains and reduced freight capacity can quickly add up to a substantial economic impact. Because customers are forced to find a workaround, many may never return to using the rolling stock service due to the fire. Direct damage can be considerable too, particularly if technical or control rooms are involved.

Providing fire suppression for rolling stock depots may not be a straightforward affair. Depots can be found in rural areas away from local fire departments and where water supply may be an issue. If the station is underground, this also can complicate the situation.

Clearly, the nature of a rolling stock depot fire is a major consideration as well. The fire suppression system must be capable of effectively managing Class C fires while also being effective on Class A (ordinary combustibles) surface fuel loads. Because people may be present, it needs to be safe, and it needs to work fast.

The Fire Suppression Objective

The ideal fire suppression system for rolling stock depot fire protection is a quick-acting system that is proven to effectively handle Class A and Class C fire risks that will likely be present. The objective is to detect a fire early in its development and then deploy a fire suppression agent that will rapidly extinguish or contain the fire.

The benefits to this approach are enormous, beginning with life safety. By suppressing the fire early, the system protects scores of lives. It prevents people from being exposed to fire and its toxic smoke. While an evacuation may be required, it is more likely to be conducted calmly when appropriate fire suppression is deployed.

Aside from the safety component, suppressing a fire in the incipient phase also reduces both direct and indirect property/economic fire losses. When the fire is confined to its area of origin, less equipment is damaged because the fire does not spread. This allows the organisation to return to service easier and faster, minimising the costs associated with lengthy downtime.

Another major factor to consider with any fire suppression option is the ease of installation and servicing. A rolling stock depot that is located deep underground or in rural areas can make it difficult to install and/or support many of the legacy-type fire suppression systems such as sprinklers and clean agent gas systems. These systems require extensive piping and often their own room in which to house the myriad of components. They also have strict testing and maintenance requirements which add significantly to their lifetime costs.

Aerosols are an effective alternative to traditional special hazard fire protection

Lastly, the fire suppression agent must be safe for people and the environment. Currently, this is a growing concern. There are several fire suppression agents that are being taken off the market or having their production severely curtailed. This is because they have been found to pose health hazards to humans, contribute to global warming or have ozone-depletion potential. Consequently, many organisations are finding themselves faced with the costly problem of replacing their fire suppression system.

The Stat-X® Solution

There is a system that has all the benefits needed in a fire suppression system while avoiding the downsides found with many agents currently available: Stat-X.

Stat-X is proven to be effective on Class C fires and at mitigating the risk of thermal runaway propagation in lithium-ion battery fires. The proprietary, potassium-based agent acts quickly to interrupt the chemical reaction needed to sustain a fire and remains suspended for several minutes to provide reflash protection.

Further, Stat-X units are self-contained, and they can either be installed as a system tied to fire-detection equipment, or installed in a standalone fashion where the unit is activated at a predetermined temperature. The compact units have no piping requirements, are virtually maintenance-free, and have a long service life. Also important, they can easily be retrofitted in existing spaces without the need for costly infrastructure work.

Aside from Stat-X's effectiveness, one of its best features is the safety of the agent. Stat-X is safe to use in normally occupied areas. It has zero global-warming potential, zero ozone-depletion potential and zero atmospheric life. It also requires minimal clean-up after use.

When considering fire protection for rolling stock assets, organisations should pay careful attention to the depot. With all the electrical componentry present, there is the real risk of a fire occurring in this crowded environment. When a fire breaks out, you can rely on Stat-X to suppress it quickly and limit the damage. Plus, you can have certainty that Stat-X will not join the long list of fire suppression agents banned because they pose a risk to people and/or the environment.

statx.com

Stat-X®
Aerosol Fire Suppression