tyco Fire Protection Products

25 February 2016

Integrated Solutions to Protect a Data Centre Environment

With technology at the forefront of every new initiative Tyco embarks on, Tyco Fire Protection Products (TFPP) is embracing smarter ways to protect people and save lives through integrated fire safety and security systems.

TFPP is encouraging connectivity with a focus on developing complete solutions which directly address the hazards and threats associated with particular environments. At Tyco, we are always concerned with understanding the nature of fire risks associated with a particular environment. We use this understanding to ensure the solutions we offer are fit for purpose and address any threat to the safety of the building and people within it.

Risks in a data centre

In a data centre there are a number of potential risks. The main one is fire caused by overheating electrical components, cables, power supplies or faulty lighting. The volume of cables in a datacentre can lead to excess heat that cannot disperse, this heat can cause the insulation on cables to melt, resulting in live cables igniting. Fans and ventilation systems used to keep the room and equipment cool, cause an increased amount of air movement often pulling air away from conventional smoke detectors.

Air movement also has a dilution effect on the smoke. Under such circumstances, smoke could go undetected for some time and its concentration could be allowed to reach undesirable levels.

Consequently, in the early stages of this type of fire, the only evidence of fire is the presence of highly diluted, often invisible, smoke. This smoke is difficult to detect with a standard smoke detector because of the increased air movement.

Detection solutions

A typical early Automatic Smoke Detector (ASD) consists of sections of small diameter pipe with sampling holes drilled at regular intervals along their lengths. An aspirator (fan) in the detection unit, at one end of these pipes, actively draws in air and smoke through these sampling holes towards the smoke detector. Once inside the detection chamber, a laser light scattering technique is used to determine the amount of smoke present in the air sample. The ability to actively collect air samples from the vicinity of the sampling holes and the sensitivity of the smoke detection technique, allows ASD systems to detect smoke very early - in the incipient (smouldering) stage of a fire event.

The VESDA VLQ provides very early warning fire detection as it has a highly sensitive smoker sensor. The sensors are often placed in front of the air handling systems to effectively draw air into the sensor. The VESDA system is designed to continuously test samples of the air for smoke and once it has detected even a small amount it can be programmed to give a signal to shut down any air handling equipment to allow the conventional fire detection system a better chance of detecting smoke. However if the air handling equipment is shut down, the data room can crash almost instantly due to the subsequent overheating.

Integration within a fire suppression system is highly significant in ensuring the ultimate protection is achieved for this environment. Regardless of the type of suppressant used, a crucial issue is, at what stage during a fire should we trigger the release of fire suppressants? Unnecessary or poorly-timed suppression dumps must be avoided since the cost of such mistakes is enormous.

Delayed fire suppression will expose the facility to unnecessary smoke and heat damage; together with all of the associated risks to life safety, business continuity and assets. Releasing suppression too late also drastically decreases the possibility that the fire will be brought under control by the suppressant.

iFLOW Technology

Tyco Fire Protection Products understands the challenges of fitting fire suppression systems in a data centre. The latest development, iFLOW technology, expands the flexibility available from a fire suppression system. Inert gases are made up of naturally occurring gases, present in the atmosphere we breathe. When used with iFLOW technology, which helps engineers and operators accommodate the fire protection system in a less obtrusive way, it addresses many of the concerns often associated with inert gas clean agent systems.

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Using innovative technology, the VdS iFLOW Fire Suppression System is a state-of-the-art delivery system that provides a regulated and effective discharge of inert gas clean agent. Inert gases are colourless and odourless, safe for people and the environment.

Integrating this suppression with an effective detection system like VESDA is essential to providing the most effective solution for this high risk environment.

In order to minimize the possibility of unnecessary suppression release as a result of a single detector issuing a false alarm, it is common practice that two or more detectors have to issue an alarm before a suppression dump can occur. The two detector method is known as a 'coincidence detection scheme', while more than two alarms constitute a 'counting system'.

Integration with Fire Control Panel

These two technologies (VESDA System and the iFLOW System) integrate to provide an ideal fire protection solution for a data room via the MZXe Panel from ZETTLER. The VESDA System can be integrated to the panel as a detection sensor for an auxiliary zone – which will provide an early detection of smoke and sound an alarm to alert the building users. In addition, coincidence operation can be used when protecting a data room.

As the fire spreads, conventional detectors in Zones 1 and 2 will send a signal to the panel which will trigger the release of the gas suppression as required.

Effective protection of a data centre environment involves integrating these systems successfully. At Tyco, we have an advanced understanding of various fire risks associated with different environments. We can determine how they impact on the activation of the fire protection system and through our technologically advanced complete solutions offering, we can recommend an inclusive solution that considers all the major risk factors to ensure the safety of your property.

For more information on iFLOW click here

For more information on VESDA click here

For more information on MZX-e Gas detection panels click here

To read our white paper on protecting a data centre click here