Wormald provides fast turnarond for a specialised fire detection solution for NSW data centre

When a leading data centre operator in New South Wales required a bespoke fire detection and protection system to be retrofitted into a new facility in Western Sydney, Wormald was chosen as their trusted partner of choice.

The combination of high value equipment, large electrical cabinets, multiple server rooms, as well as a substantial amount of electrical wiring, power cables and energy outputs, makes mitigating fire risk a critical consideration. Data centre operators not only have a responsibility to protect staff and assets, but also safeguard large quantities of sensitive information that is essential to many businesses. The impact of a data centre fire can also cause costly operational downtime.

The Australian Government Data Centre Strategy 2010-2025 Better Practice Guide: Data Centre Power recommends monitoring power use as well as the reliability of the power supply, pointing to excess heat as an early warning sign of system failure. "Every component in a power system is subject to wear and tear. Regular inspection and maintenance is essential."

With previous experience and industry appropriate solutions specifically suited to the data centre environment, Wormald was contracted to design and install a highly specialised solution, tailored to the requirements of facility, and help address the tenants' operational requirements with a fire protection and suppression system that supported it's disaster recovery plan and provided resilience and stability.

The brief

A fully compliant, fire detection and prevention solution needed to satisfy the high standard of service required by data centres and, importantly, meet all prescribed fire safety requirements of the Building Code of Australia (BCA). A solution with a guaranteed capability to protect highly sensitive data, valuable assets and systems, and be implemented within extremely tight project timelines, was also required. With energy efficiency becoming increasingly important in data centre facilities, Wormald also needed to provide a fire protection solution that had minimal impact on the environment.

Wormald designed and installed a tailored solution that was delivered within the project's tight timeframe. During the installation process, technicians worked alongside multiple trades in a congested and partially operational facility. In partnership with the data centre operator, Wormald completed the project during a series of carefully planned stages, enabling the facility to commence operations as quickly as possible.

The solution

A range of fire detection and protection solutions were selected with features ideally suited to support the functionality of the data centre.

The VESDA early warning smoke detection system was combined with a Victaulic Vortex hybrid fire extinguishing system. The VESDA system provides early detection and warning of a fire hazard using advanced smoke detection technology. VESDA works by continually drawing air into a network of pipes via a high efficiency aspirator. As air passes through a dual stage filter, dust and dirt is first removed from the sample before it enters a calibrated detection chamber where it is exposed to a laser light source. When smoke is present within the air sample, light is scattered within the detection chamber and is instantly identified by a highly sensitive receiver. VESDA detectors communicate the danger to a fire alarm control panel, a software management system or a building management system via relays or a High-Level Interface (HLI).

The VESDA smoke detection and early warning is enhanced by a pre-action sprinkler system to minimise any likelihood of water being unnecessarily discharged onto sensitive electronic equipment and data racks. The Victaulic Vortex hybrid system absorbs heat and reduces oxygen to extinguish the fire through tiny water droplets that are discharged from a single emitter. This approach simultaneously protects valuable equipment while also ensuring minimal water use.

The outcome

Wormald commenced the project in January 2019 and completed the installation of the systems within the project timelines, working within an unusually short design phase that required the Wormald team to adapt the solution to enable timely and efficient installation without impacting or compromising quality of the system in any way.

This involved using a press-fit pipe in lieu of traditional fabricated pipe, which increased the pipe's flexibility and reduced on-site installation time. As an added advantage, the press-fit pipe delivered a more aesthetically pleasing stainless steel look compared with the usual fabricated galvanised pipe.

Category: Data centres   Focus: Fire detection and prevention systems
Location: Western Sydney   Year: January – August 2019
Technology: VESDA early warning smoke detection system, Victaulic Vortex hybrid fire extinguishing system