The Fire Protection Debate

THE FIRE PROTECTION DEBATE

Fire protection is critical. Fires cause downtime (loss revenue), smoke permeation (lost data and early component failure), and lost confidence (lost customers). Data center fires break out due to failed components, loose terminals, overheated cables, maintenance problems, and human error.

Fire protection for data centers has unique requirements:

» Detect fire early

» Suppress fire quickly

» Minimize damage

» Maximize uptime

» Prevent false alarms

» Provide clear indication of system activity

» Safe for equipment and personnel

» Safe for the environment

Data center professionals often debate whether a facility should be protected with a pre-action sprinkler system or a clean agent system.

Pre-action sprinkler systems

For many of our clients, sprinkler systems are required by the Authority Having Jurisdiction. But rather than running the risks associated with wet-pipe systems, data center professionals choose instead to install pre-action sprinkler systems, which have the following advantages:

» Proven extinguishing agent

» Inexpensive to operate and maintain

» No water until a sprinkler head is opened and detector is in alarm

» Protects against accidental water damage due to leaks

However, pre-action sprinkler systems also have the following disadvantages:

» Heat activated

» Extensive clean up required

» Damaging to equipment and data

» Extended data center down time

» Designed to protect structure, not contents

Clean agent systems

Two categories of clean agent systems exist. Halocarbon agents absorb heat from the fire to the point where combustion can no longer occur. Inert gas agents lower the hazard's oxygen content below the level necessary for combustion.

Clean agent systems have the following advantages:

» Extinguish fires in seconds

» Do not leave a residue

» Work on class A, B, and C fires

» Are safe to use in occupied areas

» Are safe for the environment

However, clean agent systems are costly and some are damaging to the environment.

Which to choose

Many data center professionals are of the opinion that installing a sprinkler system per the Authority Having Jurisdiction is enough fire protection to protect the facility. Adding a clean agent suppression system is a luxury, not a need.

The data center professionals that take this view realize the extensive damage that a sprinkler system could cause in the event of a discharge, but reduce that risk by installing an early warning air sampling system. The early warning air sampling system detects potential fires in the pre-combustion stages--allowing enough time to remedy pre-combustion stages--allowing enough time

to remedy the situation.

Unfortunately, not all data center fires are detected in the pre-combustion stages. For example, what happens if an event occurs after hours or in a dark facility? Even with monitoring, personnel may not be able to react quickly enough. Reality is that situations occur when pre-action sprinkler systems discharge, even with early warning air sampling systems. And in the event of a discharge, it can take days or weeks to clean up.

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Other data center professionals are of the opinion that a clean agent fire suppression system is the most effective way to suppress a data center fire--due to the quick response time and quick clean up. The data center professionals that take this view mitigate the risk of the required sprinkler system by making it a secondary system.

Installing a clean agent fire suppression system is costly. It is understandable that data center professionals try to avoid that expense. But the invaluable information that data centers process should be protected as effectively as possible. The risks associated with not having a clean agent system just aren’t worth it.

For more information on the various fire protection systems and their advantages and disadvantages, please see our article, *Clearing the Smoke on Mission Critical Facility Fire Suppression Systems.*

Bick Group has subject matter experts in this and many other topics. Talk to our Fire Protection experts by emailing: jknabe@bickgroup.com