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Fire alarm and emergency communication systems should be a key focus when seeking to understand the condition of a property to be purchased, leased, or simply maintained.

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Property Condition Assessments: Fire Alarm and Emergency Communication Systems

Whether purchasing an existing building or preparing a capital improvement plan, understanding the condition and potential remaining useful life of a building’s fire alarm and emergency communication systems is essential. Not only are these systems key to a facility’s life safety and business continuity program, they are expensive to replace and require regular maintenance to ensure they will perform when needed.

Providing a Critical Role

Fire alarm systems often provide the first indication of a hazardous condition within a building, notify affected occupants to evacuate, activate emergency features and control hazardous operations, and transmit alarm signals to emergency responders. Emergency communication systems serve as means to provide information and instructions to occupants and emergency responders. Large or complex buildings may have multiple systems working independently or in a coordinated manner.

These systems serve a critical role in the safe use of buildings and continuity of business operations. Their complexity often requires staff with specialized training to maintain and to operate during an emergency. This critical role makes it important to avoid unanticipated impairments, which can result in fire watch and significant repair costs. Therefore, the fire alarm and emergency communication systems should be a key focus of building owners and managers, as well as those looking to purchase or lease existing buildings.

Evaluating for Reliability and Due Diligence

Fire alarm and emergency communication systems are periodically evaluated to determine current system reliability and

anticipate future required expenditures. System condition is also assessed as part of the due diligence process when purchasing or leasing a building. Evaluations can be performed for an entire system or on a component-by-component basis. These evaluations generally focus on “infrastructure” such as the fire alarm control panel, data gathering and transponder panels. However, the detection devices, audible and visual alarm notification appliances, addressable interface modules and field wiring can be just as important.



FIRE ALARM SYSTEMS CAN BE COMPLEX, SUCH AS THIS BUILDING THAT IS PROTECTED BY TWO INTERCONNECTED SYSTEMS.

Property Condition Assessments: Fire Alarm and Emergency Communication Systems (CONTINUED)



VISUAL INSPECTIONS CAN REVEAL DEFERRED MAINTENANCE SUCH AS THIS SMOKE DETECTOR WITH SIGNIFICANT PARTICULATE ACCUMULATION.

When assessing fire alarm and emergency communication systems, several facility-specific factors can be considered, such as remaining expected useful life, component availability, compatibility and capacity, general visual condition, deferred maintenance and code-required upgrades.

Remaining Expected Useful Life

Starting with the type and age of the system or component, it is possible to make a general assessment of how many years it can be expected to reliably function. This is commonly referred to as the remaining expected useful life. The remaining expected useful life of a system or component is impacted by its environment and the manufacturer's ability to support ongoing maintenance.

Availability of Components

As a manufacturer begins to phase out production of its legacy equipment in favor of newer technology, replacement parts become more difficult to procure for the phased-out systems. Should a critical component fail, a costly fire watch may be necessary until replacement parts are sourced, procured and installed. Advance planning may include obtaining

spare stock of critical system components or performing system upgrades before manufacturer support lapses.

Compatibility and Capacity

Critical system components include central processing units, amplifiers and power supplies along with the system's software and firmware. While new addressable devices are often compatible with older hardware, legacy software and firmware may not allow for installation of modern addressable initiating devices. Similarly, older fire alarm power supplies and strobe lights may not have the synchronization capability required for new strobe light installations. These compatibility issues should be identified when assessing needs for ongoing maintenance and potential system modifications.

Similarly, the ability to perform building alterations may be impacted by the expansion capability of the fire alarm control equipment. Therefore, available capacity of existing circuits, power supplies, and equipment should be ascertained.

General Visual Condition

A visual inspection can help identify physical deterioration of system components. Deterioration can occur due to extreme or highly variable temperatures or humidity, water infiltration through roofs and along exterior walls, or from physical impact. Visible deterioration can indicate a potential for nuisance alarms or component failure.

Deferred Maintenance

Periodic inspection, testing and maintenance are required by local fire codes to ensure system condition and continued functionality. Reports are

typically required to be maintained on site for at least two years. Evaluating these routine maintenance records in conjunction with those for unplanned repairs can be used to evaluate whether components are failing at an increasing rate or if there is significant deferred maintenance. Additionally, documented nuisance alarms can reveal equipment mechanical failure or malfunction, improper installation, or lack of maintenance.

Code-Required Upgrades

Finally, local codes and standards may dictate that existing fire alarm and emergency communication systems be modified or have additional features added when certain conditions are present. Evaluating the triggers for such retroactive requirements can be accomplished in conjunction with the visual survey of the system's general visual condition. Additionally, planned building alterations, changes in use or additions may also require upgrades to existing fire alarm and emergency communication systems.

Conclusion

Fire alarm and emergency communication systems are a major financial investment for building owners and prospective buyers. Understanding their current condition and expected useful life allows for successful planning and can reduce life safety and business continuity risks. An experienced fire protection engineer can provide valuable insight and help develop site specific plans for upgrade or replacement.

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