Fire Alarm Panels:
Life Expectancy and Upgrades

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Just as for any electronic piece of equipment, an aging fire alarm control panel is expected to create nuisance alarms from time to time. They do not include malicious false alarms caused by disgruntled employees or vandals. However, these nuisance fire alarms cost the business operators thousands upon thousands of dollars each time the premise is evacuated. The bulk of this expense is the cost of time lost by the company's employees as they wait to return to the building. The company's particular business activities are also brought to a complete halt. Add into the mix the fire department's two to three hundred dollar fee per fire truck to dispatch, and company executives will be motivated to consider corrective measures required to avoid unwarranted evacuations. In addition, from the standpoint of fire safety, employees become jaded by numerous nuisance alarms and begin ignoring them, which can end in tragic results and potentially huge liabilities, both direct and indirect.

There are four principal objectives for any fire alarm system. These are: 1) warn occupants of a fire, 2) encourage occupants to take immediate action, 3) initiate evacuation of the premises and 4) allow sufficient time to escape. The degree to which these objectives are met varies widely depending on the class of building and the nature of the business. It has been observed time and time again that building employees are slow to respond to fire alarm signals. In fact, research shows that in some buildings, employees tend to continue their activities and completely ignore the signal. Given these circumstances, business operators are faced with an increased level of responsibility to ensure the safety of their employees. This situation also highlights the most critical question regarding aging fire alarms systems: what is the operational life expectancy of a fire alarm panel? In fact, this is the most common question being asked by business operators. The answer is usually determined simply by asking the fire alarm system service company maintaining the fire panel whether new parts are available in the event that a module or electronic component fails to operate. Another option is to contact the original manufacturer of the fire alarm panel. Fire alarm systems are manufactured from electronic components readily available in the marketplace at the time of manufacture. However, as time passes and technological advances make some electronic components obsolete, it is often difficult or next to impossible to find new replacements for the original components.

This leads to the next question: when should a fire alarm system be replaced? The answer is different in nearly every case. Most fire alarm systems have an expected life span of about 12 to 15 years, if the system is properly maintained and tested on a regular basis. A fire alarm system must be properly designed and installed; otherwise, overall system reliability and occupant confidence in the system will be eroded. As a life safety system, it must be reliable and have the ability to perform the tasks it was designed to accomplish. There must be a minimal number of nuisance alarms, trouble signals or failures to alarm under specified conditions. Surprisingly enough, there are still many fire panels within buildings that are known to be in operation beyond the standard time frame. The decision to replace an aging fire alarm panel can become very complex, especially if the business operator does not fully understand the compliance requirements. Compatibility of the existing fire detection system and audible devices is a major factor to consider, along with any current retrofit legislation.

The outcome of the overall replacement of the fire alarm panel and its field devices may differ greatly depending on building classification. It is important to recognize that a qualified fire system engineer should be contracted to prepare the specifications of the proposed fire alarm panel and to determine the compatibility of the existing field devices. The engineer will verify if it is necessary to replace the existing fire detection devices or audible devices of the fire alarm system, such as the fire bells. Once the engineer has prepared the entire specification for the new fire alarm panel, the system modifications and all accompanying drawings, the complete package is submitted to the building department for their review.

When approval has been obtained from the building department, a permit will be issued. The business operator may then disperse the approved fire alarm specification to qualified installers for tendering purposes. Once an installer (or installers) has been selected, they will commence with the installation as outlined in the approved specification. The installer will be required to take out applicable permits for the scope of their work before commencing the project. In addition, once the project has been completed, the installer must arrange for a third-party company to perform verification testing of the fire system. The test results and installer permits are presented to the fire department as the final step in the acceptance of the project.
After alteration of the fire alarm system, it is important to ensure that the business operator and supervisory personnel are fully trained on the fire alarm panel. These personnel must have a thorough understanding of the system's sequence of operation during a typical fire alarm situation, as well as the general fire panel or system trouble indicators. It is recommended that the fire alarm panel manual be readily available at a designated location for the appropriate personnel to review as needed. The building's fire safety plan (FSP) must also be updated to reflect the changes which have been made to the fire alarm system. Revisions to the FSP include information on the make and model of the fire alarm panel, the system's sequence of operation and any upgrades to field devices.

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