Coffee Break Training - Fire Protection Series

Fire Alarms & Detection: Fire Alarm Control Unit Overview

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Learning Objective: *The student shall be able to explain the fundamental functions of a fire alarm control unit.*

Fire alarm and detection systems are outfitted with a fire alarm control unit (panel) (commonly called an FACP) that is considered the "brain" of the system. The FACP takes inputs from the various alarm and supervisory devices that may be located throughout a protected property, interprets the inputs, processes outputs in the form of audible or visual alarm signals and ancillary actions, and reports to monitoring services to summon the necessary human intervention that identifies and solves the fire problem.

Fire alarm control units (panels) contain a complex array of wires, electronic components, and, in some cases, standby power sources.

FACPs can be simple or very complex. They may consist of a cabinet that houses small microprocessors, electrical terminals, batteries, light emitting diodes, relays, and fuses or they may be a sophisticated computerized terminal that employs touch-screen technology and provides controls for an endless variety of fire protection and life safety systems within a building.

The location of the FACP is subject to approval by the code official. National Fire Protection Association (NFPA) 72, *National Fire Alarm Code®*, allows the FACP be to be located in an open lobby or entry area, within a closed or secure electrical or communications equipment room, or, in some cases, within a separate Fire Command Center. The FACP should be secure from malicious or inadvertent tampering. The FACP door should be lockable if it's in an area that is not controlled at all times by responsible personnel.

Any component of the fire alarm control that is essential to its operation—and not located in an area that is occupied *continuously*—must be protected by smoke detectors. Thus, if a building were outfitted with only manual pull stations for occupant evacuation, the room in which the FACP is located must have a smoke detector in the vicinity of the FACP. The purpose of this detector is to alert someone to a problem before the FACP is compromised by a fire. It does not require the entire room to have smoke detection, only the area near the FACP, subpanels, circuit interfaces, signal boosters, and similar components.

All of the components that make up the FACP must be listed together for use in fire protection service. Since FACPs are used for life safety and property protection, the listing standards are more stringent than those used for electrical safety only. Listed panels are published in the current Underwriters Laboratories (UL) *Fire Protection Equipment Directory* in the subcategory "Control Units, System" of "Signal and Fire Alarm Equipment and Services." Panels are tested for performance against UL Standard 864, *Control Units for Fire-Protective Signaling Systems*. There are at least 100 manufacturers of FACPs listed in the UL *Fire Protection Equipment Directory*, and many manufacture more than a dozen different models of panels.

For additional information, refer to NFPA 72.