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Ask The Electrician: Fire Alarm Testing - Brian Leborgne

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Why should I test my building's fire alarm system?

Staying up to date with today's fire alarm systems can be challenging, but it is crucial. The typical lifespan for a fire alarm control panel is 20 years. While this may seem like a long time, if you fail to maintain and test your fire alarm system, you'll be left with outdated and antiquated equipment. When manufacturers like Honeywell, Simplex and FCI phase out equipment, they no longer support or offer replacement parts for, you'll be left unprepared and in a potentially dangerous situation. Unfortunately, this happens often in schools.

In this Ask The Electrician, I'll break down the components of a fire alarm system and the four testing segments.

Fire Alarm System Components

A fire alarm system is a life safety device consisting of several components that detect fire, smoke and carbon monoxide in a designated area. It also signals emergency personnel and alerts building occupants to the potential hazard. Because fire alarms are life safety systems, state and local jurisdictions have specific regulations regarding periodic testing and maintenance. It is imperative these regulations and guidelines be followed in any, and all, fire alarm testing, while also being performed according to the manufacturer's specifications.

Fire alarm testing, when done correctly, exercises the entire fire alarm system and typically includes five testing segments:

1) Initiating devices: smoke detectors, heat detectors, fire sprinkler system devices and pull stations

2) Signal devices: horns, strobes and exterior beacons

3) Control devices: elevator recall and smoke evacuation

4) Communication devices: municipal master box unit and/or digital communicator that alert the fire department and/or central monitoring station

5) System battery load testing

Testing Initiating Devices

Testing of smoke detectors consists of a chamber test. This is performed by introducing actual smoke or approved aerosol smoke into the smoke detector chamber to ensure the sensor elements are properly detecting smoke.

Testing of heat detectors consists of introducing infrared heat into the detector using an approved heat testing tool to ensure the sensor element is able to properly detect heat. IESC uses a Solo Test Kit (www.solo-tester.com) for smoke, heat and CO detectors.

When testing pull stations, the unit must be physically activated by pulling the designated pull station lever. Simply unlocking the front cover of the pull station and opening the internal toggle switch by hand is not an approved method.

Testing Signal Devices

The best method to test the horns and strobes in a building is to activate an alarm condition, then walk to each unit to ensure that each device is sounding and/or strobing properly. In addition to the interior horns/strobes, it is important to test any exterior beacons as well. These devices serve as an extra measure to help the fire department to identify the building.

Testing Control Devices

Testing control devices is a more complicated procedure that may require the presence of additional industry professionals, such as elevator or HVAC technicians. Some buildings may have elevators that need to be called to a specific floor to avoid opening on the floor where there is smoke or fire detected. Some buildings may have smoke evacuation systems that need to be tested. These buildings may require that sound systems be shut down to allow fire evacuation announcements and signals to be clearly identified.

Testing Communication Devices

It is imperative that communication devices be tested during inspection such as master boxes, phone dialers and radio boxes. These technologies are often directly connected to external sources, such as municipalities and/or monitoring stations and must be tested.

At the end of the inspection, the fire alarm system must be restored to normal. After that, the fire department and/or central monitoring station should be contacted to inform them the inspection is complete, and to verify that the system has been restored to normal operating on their end.

While testing a fire alarm system can be disruptive, it is absolutely essential. Testing on a regular basis can save time and money. Replacing an entire fire alarm system can cost tens of thousands - testing only costs a couple of hundred dollars. They say that if you were in a time machine and went ahead 100 years, the only thing you'd recognize in your hometown is the schools. Make sure your systems are maintained and tested.

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