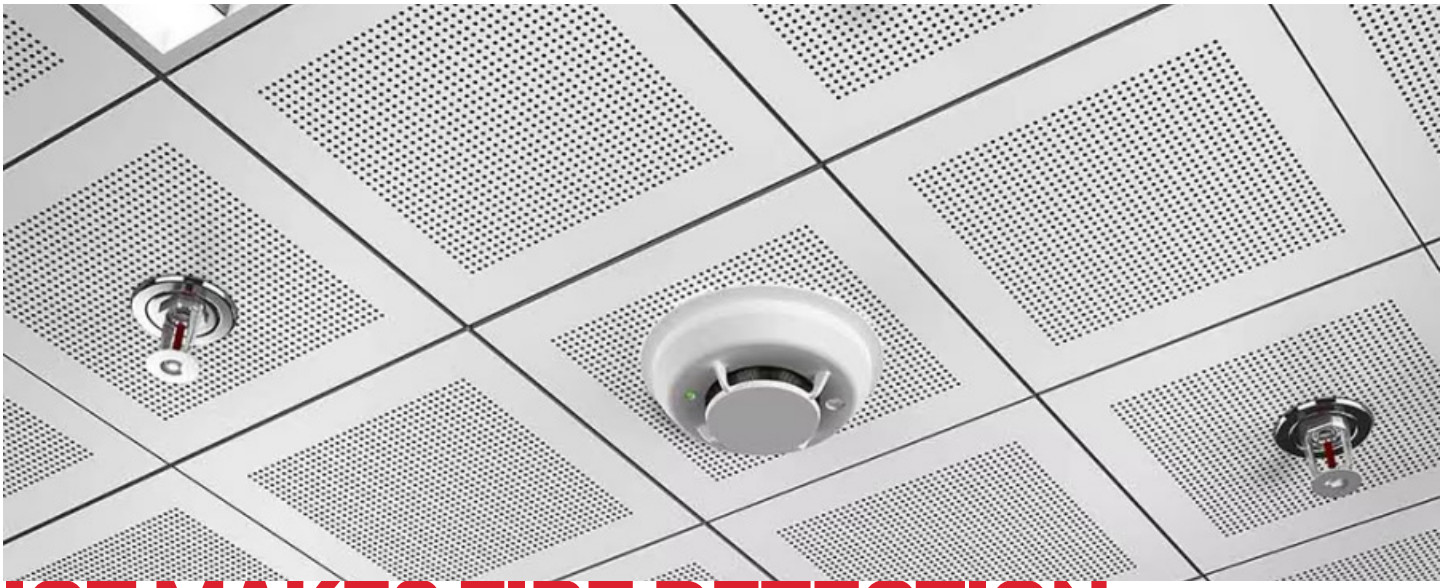

IOT MAKES FIRE DETECTION SYSTEMS SMARTER

A combination of cloud computing, sensors, and an IoT gateway provide valuable intelligence for firefighters before they get to an emergency.

For years, first responders relied on paper maps to reach a fire in an apartment building or office. Incomplete information would delay firefighters from arriving at an emergency, and false alarms would set them on the wrong path altogether. Dispatchers in emergency centres would receive erroneous information on a problem with a smoke detector rather than a sprinkler switch.

"It gets to the point where you don't even trust the data," said Dick Bauer, fire chief for the Killingworth Volunteer Fire Company in Killingworth, Connecticut.

Now cloud computing, mobile apps, edge computing and IoT gateways will enable fire safety personnel to gain visibility into how to reach an emergency.

Remote monitoring and diagnostic capabilities of an IoT system helps firefighters know where to position personnel and trucks in advance, according to Bauer. An IoT system tells fire personnel the locations of a smoke detector going off, a heat detector sending signals or a water flow switch being activated.

"You can see a map of the building with the actual location identified where the fire really is, and you can actually watch it spread if you have enough sensors," said Bill Curtis, analyst in residence, IoT, at Moor Insights & Strategy.

IoT will make systems in commercial buildings work together like Amazon's Alexa controls lights, thermostats and audio/video (AV) equipment in a home, Curtis said. An IoT system could shut down an HVAC system or put elevators in fire mode if smoke is blowing around a building, he suggested. A mobile app populated with sensor data can provide visibility into emergency systems and how to control specific locations in a building. It provides a holistic view of sensors, controls and fire panels.

Firefighters speeding to the scene will know what floor the fire is on and which sensors the emergency triggered. They'll also learn how many people are in the building, and which entrance to use when they get there, Curtis explained.

"The more sensors and different types of sensors mean earlier detection and greater resolution as well as greater precision on exactly where the fire is and how it is moving," he said..

How IoT Fire Detection Works

Companies such as BehrTech and Honeywell offer IoT connectivity systems that provide situational awareness when fighting fires. BehrTech's MyThings wireless IoT platform provides disaster warnings to guard against forest fires. It lets emergency personnel monitor the weather as well as atmospheric and seismic data.

On 20 Oct., Honeywell introduced a cloud platform for its Connected Life Safety Services (CLSS) that allows first responders to access data on a fire system before they get to an emergency. It's now possible to evaluate the condition of devices and get essential data about an emergency in real-time using a mobile app.

The CLSS cloud platform connects to an IoT gateway at a central station, which collects data from sensors around a building. CLSS transmits data on the building location that generated the alarm to fire departments. It also provides a history of detector signals over the previous 24 hours and indicates whether the smoke detector had previously triggered a false alarm, says Sameer Agrawal, general manager of software and services at Honeywell.

Agrawal said smart fire IoT platforms like CLSS indicate precisely where an emergency is occurring and will enable firefighters to take the right equipment to the correct location.

"When the dispatch sends a fire truck, the Computer Aided Dispatch (CAD) system will provide an access code that the officer in the truck can punch into an application; that will bring up a 2D model of the building and place the exact location of the alarm," Agrawal said. "You're able to track your crews that way, so this really is the kind of information that's going to make their jobs so much safer and more efficient and take all the guesswork out of it.

IoT Fire Safety Systems in the Future

Curtis suggests that as more emergency systems become interconnected in the future, building managers and workers should get access to these dashboards in addition to firefighters.

"Why not show the building occupants where the fire is so they can avoid it?" Curtis says.

In addition, smart fire detection systems will use artificial intelligence (AI) to detect false alarms and provide contextual information on how to prevent them—and prevent people from being thrown out of their hotel beds unnecessarily at 3 a.m., Agrawal said.

"When next-generation AI comes into play," Agrawal says, "we start understanding more information about, you know, why was it a false alarm or what could have been done differently."

An AI-equipped detection system will present a score to a facility manager indicating whether there's a need to call the fire department. Information on the cause of an event and how first responders responded to past emergencies will help the software come up with the score.

What's more, the algorithms will help detect anomalies in the data from multiple sensors. These anomalies can include a sensor malfunction, a security breach, or a reading that's "unreasonable," says Curtis.

By Brian T. Horowitz

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