

Responder/Operator Interfaces for Fire Alarms

Firefighters called to large buildings frequently have trouble spotting the fire, or knowing where they are in relation to it.

By BRIAN O'MAHONEY

An often-expressed concern of fire fighters around the world is their unfamiliarity with the information made available to them with fire detection panels as they enter a building responding to a fire. Now through an International cooperative effort, a major step has been made creating an operator interface screen for fire detection systems.

The most critical information that fire fighters need to know as they rush to respond to an alarm includes:

- Where is the fire?
- Where are we in relation to it?
- How do we get from here to there?
- What will we find when we get to that location?



Fire fighters and fire marshals are also interested in learning if a smoke detector, a heat detector, a waterflow detector or a manual station sent the alarm, because that helps define the type of event they are going to encounter. In general, the fire-alarm industry has done a good job of building intelligent detectors that respond quickly. However, it has not done as good a job in terms of presenting information about the building and about the fire events to the fire fighters responding in an emergency.

The Status Quo

Most fire systems today offer a short text message that describes the location of the alarm. With only 30 or 40 characters worth of space, it is usually abbreviated to the point where it might as well be coded. If the panel serves a large building, it can be virtually impossible to pinpoint the alarm location. In many cases, fire fighters say they hate to waste time studying the uninformative screen message.

Of course, the idea of providing generous fire- and building-related information is not new. PC-based graphic annunciator and command centers offer both pictures and graphic maps of the building as well as virtually unlimited information.

However, a strange computer is not usually friendly to a fire fighter in a hurry. The cost of such an installation often puts it out of reach of competitive bidding. In other words, costs have been controlling the amount of information offered to fire fighters by today's detection systems.

Bigger, Better Information

A new system with a display size allowing easier viewing, and a touch screen permitting operation that is more intuitive brings understandable information into the average system without the cost of a PC. The new system offers considerably more of the information that fire officials say they need.

This improved operator interface screen

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communicates in easy-to-read, large-text characters, displays up to five events simultaneously and uses standard hazmat icons for safety. It employs shading to highlight critical information and two sizes of type for emphasis, with further information accessed via a lighted "More Info" button. Simple graphic maps are incorporated for clarity.

NFPA Symbols Make the Situation Clear

The standard NFPA fire safety symbols, as delineated in NFPA 170 and NFPA 704, provide information about the type of fire service equipment available in the alarm area.

Some of the graphics standard NFPA Fire safety symbols that could be in the "Fire Service Equipment" info screen include:

- Gas shut off valve;
- Fire Extinguisher;
- Automatic Sprinkler control valve ;
- Electrical Panel ;
- Fire fighting hose Standpipe outlet; and
- Automatic sprinkler connection Siamese.

Some of the graphics symbols that could be in the "Area Contains" info screen include details of the type of alarm (smoke, manual, heat, waterflow, etc), for a customized message about the location of the alarm event and the time.

For further information, the responder pushes the "More Info" button and is offered specifics of the alarm location. Over 200 characters worth of information can be provided. This screen offers information of time- and life-saving value to the fire fighters.

The "area fire equipment" shows the equipment that's available in that area to help fight the fire, such as sprinklers, standpipe connections and fire hoses that can be connected to the sprinkler mains, plus other physical equipment such as electric panel disconnect or main gas valve shutoff. NFPA 170 symbols are used in this box.

The box offers intelligence on hazards in the area, according to the recommendations of NFPA 704. The diamond symbol identifies materials in the fire-involved area by hazard rating in categories of health, flammability and instability. Of course, this information is only supplied where applicable; hazmat would not be stored in every building or every part of every building.

This screen also notes particular prob-

lems that may arise with occupant evacuation, such as handicapped personnel, location of the hazardous materials by type, location of the exit, etc.

Sequence of screens tells the story.

The first screen gives general information about locating the alarm; the second screen gives specific details about fire service equipment, hazards and occupants of the fire-involved area. The third screen provides a map showing the relation of the control panel to the fire involved area in the building, with provision for text to explain exactly how to get there.

Beyond Code Requirements

These provisions go far beyond the requirements of NFPA 72. Neither NFPA, FM nor UL specify any specific annunciation features for reporting in addressable systems. The new panels are designed to save lives, health and property by giving fire responders and end users more information to make it easier for them to interact with the system and most importantly, locate alarms in the building.

Other experts who were consulted were



A Siemens FP-10 underfloor detector.

local fire chiefs from the Pittsburgh, PA area and several dozen fire chiefs, local AHJ inspectors (Continued on page 24)

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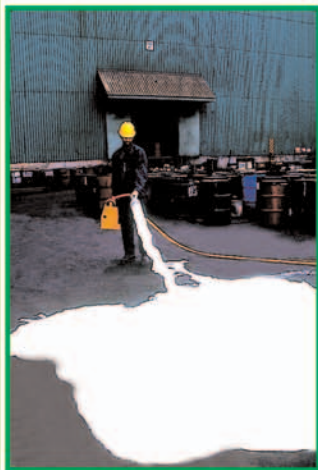
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Responder/Operator... (Continued from page 23)

and fire fighters from the Morris County, NJ Fire Prevention Association.

Later in the design process, screen details were reviewed with fire service personnel. They liked the concept and helped fine-tune design and operation of the interface. "It's about time" was a common comment.

Accommodating Several Levels

Besides the first responders, the operator interface is designed to accommodate several other levels of users. For building operators, everything was made easy and systematic, as close as possible to intuitive.

Building maintenance workers are not concerned with the details or physical architecture of systems. Rather than wasting panel space with loop number and device address, more room was allowed for detailing the actual location in the building. The fire panel software displays a geographic view: the way people look at the building, rather than the way the fire alarm architecture is set up.

Instead of requiring the specific device address, maintenance personnel can navigate and control any detector or group of detectors by working their way geographically to the units they need without a printout or set of plans.

Further Advantages

The system stresses ease of installation and service, reducing overall installation cost to the user and installer, and total life-cycle cost. It features color-coded hardware layout and quick-disconnect pull-offs. Intelligent device wiring is polarity-insensitive, and existing lines can be used, helping to reduce installation costs and minimize the disruption of business associated with installing new conduit and wire in existing buildings.

System packaging is consistent in terms of standard modules and footprints, with ample room for wiring and removable terminals. Functions have been combined into single modules to minimize space, and a 12-amp power supply is designed into the control unit.

The detection interface/loop accommodates up to 252 devices per loop, and each of those addresses has the capability of several sub-addresses for control and logic activation. The system's new software configuration tool is Windows based with drag and drop functions and advanced compile checks with logic to ensure that system design parameters and NFPA Code requirements are not violated.

The system is available with and without digital emergency voice evacuation. The voice system model carries eight channels of digitized audio. It enables a complete voice system command center, or remote-paging microphones at multiple locations throughout a building, offering the ability to page and send emergency information throughout the entire building as needed.

The voice system is designed to provide a high level of system intelligibility to ensure that all live voice pages and spoken messages can be clearly heard and understood by building occupants.

The Universal Screen

The new FireFinder generation of detection systems will be better, faster and safer for fire fighters and fire marshals to use to enhance the safety of firefighters around the world. **FSM**