

the global view

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NOTIFIER and Zarifopoulos Team Up to Protect Olympic Games

Whenever people come together in large numbers, whether it be in a big city or small town, at the neighborhood school, an area mall, a sporting event, or the local movie theatre, fire & security protection are always on the minds of those responsible for the facilities in which people are present.

Now imagine for a moment the dilemma faced by those responsible for organizing an event held on the world stage that brings the top athletes from every corner of the globe to compete in one place for a 16 day period. This was exactly the situation being faced by those charged with the design and construction of the facilities that would host the Olympic Games.

Contractors were assigned the task of putting together a comprehensive plan

that would encompass fire protection and security for several facilities as well as for athletes, spectators and various world leaders who would be on hand to witness the different competitions.

Obviously this was a case where only the best would suffice, and when it came down to deciding how to best protect their distinguished guests against fire emergencies, contractors turned to their respected local fire protection representative, Takis G. Zarifopoulos S.A.. "A project of this size was an incredibly daunting task" said Spiliios Alexopolous of Takis. "The logistics and planning involved for this type of project was unique and had never been attempted on such a grand scale. It was clear that we needed to select a manufacturer who was capable of working closely with us and providing

support every step of the way. In the end, only NOTIFIER provided the products and technology we needed."

NOTIFIER fire alarm systems were installed in nearly all athletic facilities, living quarters and other public venues to ensure that in the case of a fire, there would be ample warning to evacuate calmly and safely. NOTIFIER was chosen for this high profile project due to its proven excellence and outstanding reputation as a leading manufacturer of fire & life safety technology.

In an atmosphere where nerves and stress run high, NOTIFIER provided athletes and spectators with one less issue to worry about.

Safety Never Sounded So Good

— Condon continues his examination of life safety technologies.

By Tom Condon, RPA, FMA

There's a brand new technology that may have a profound impact on emergency evacuation and the safety of facilities. But in order to convey its potential impact, it's necessary for me to relay an "interesting" experience that happened to me. A short time ago, I found myself in a room filled with smoke. I stumbled around, bumping into walls, unable to see more than two feet in any direction. I could not find the exit, even though I knew approximately where it was.

After a short time, I started to get slightly panicked. You see, I was experiencing the sense of disorientation that occurs when someone is completely deprived of visual cues. Suddenly, a remarkable sound pierced through the smoke, and I was able to walk directly to the exit at a brisk pace. Before this sound came on, I had spent 30 seconds stumbling around without finding a way out. With the help of this amazing sound, I was out of the room in less than three seconds.

Fortunately, I was not in a burning building. Instead, this all took place in a test room filled with "movie smoke" (a substance with similar visual qualities as real smoke, but without the toxins that can kill so quickly). This was a demonstration of a brand new technology that is, I believe, the single most important advance in emergency exit technology since horns and strobes.

Obviously, in a fire, the number one priority is to get out of the facility. But this can be very difficult. Visibility is cut off very quickly because of smoke. Even a relatively small, smoldering fire can produce enough smoke to drastically impair visibility. A full, flaming fire produces huge amounts of black, dense, toxic smoke that chokes the lungs and produces uncontrollable watering of the eyes.

Many people die in fires simply because they could not find their way out. Sad proof of this fact is the high number of victims found near exits, only a few feet away from doors they could not see.

Facilities professionals have tried various solutions to this problem, including mounting exit signage down low and using lighted strips in the floor. This is logical, because smoke usually rises, and it is sometimes possible to see these cues when crawling. However, in many fires, the rapid production of smoke will result in a total loss of vision relatively quickly.

A new approach called Directional Sound Egress Technology offers an extremely effective answer to this problem. It uses a distinct directional

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sound to help occupants find exits. A small unit mounted above a door emits this directional sound when the fire alarm is activated. The sound is an intermittent, pulsating, "whoosh," somewhat similar to the sound a television makes when it is showing only static. But what is extremely remarkable is the incredible directional effect of the sound. It is so directional that, even with no vision whatsoever, it is extremely obvious where the device is located. (I even tried to obstruct the sound by covering one ear, and by standing behind something I thought would block the sound, but even in these instances, the sound was remarkably directional.)

It takes no effort to locate the source of the sound. The device captures anyone's attention immediately. And because it uses multiple frequencies, the sound pierces through other noises like fire horns, human voices, and background chatter



extremely well. The technology was developed by a team of researchers led by Deborah Withington, a professor of auditory neuroscience at Leeds University in England. It uses a patented combination of sound frequencies tested to be the most effective in providing directional guidance to the human ear.

The results of the research have been so successful, Professor Withington has worked with Leeds University to co-found Sound Alert. The result of eight years of research, the technology is now being incorporated into a new line of devices by System Sensor, a manufacturer of fire detection and alert devices.

This technology is receiving a great deal of attention. It has received the prestigious Prince of Wales Award for Innovation by a panel of industry experts. It has also received excellent reviews from fire fighters who were able to navigate quickly through three smoke-filled rooms in full gear (oxygen masks and helmets).

Furthermore, the American Council for the Blind is a big supporter of the technology, because it is the first of its kind

to address the needs of sight-impaired occupants as well as sighted occupants. The organization has passed a resolution to work for code changes in ANSI and other standards setting bodies to require Directional Sound devices in buildings, aircraft, and ships.

The potential of this technology has not even been fully explored, and System Sensor is already looking into a range of possible enhancements. One idea would be to alternate the white noise directional sound with a recorded voice announcement indicating the location of the device. The goal would be to help occupants when they are calling for help.

Another enhancement would be an intermittent sound that either increases or decreases in pitch to indicate the location of stairs. Rising pitch would indicate stairs going up, and decreasing pitch would indicate stairs going down.

A future addressable unit conceptually would allow an intelligent controller to direct occupants away from areas unexpectedly engulfed in the fire. For instance, employees would be directed away from closed doors or down hidden stairwells where fires could be burning.

System Sensor will start selling the new product line of Directional Sound Egress devices sometime this fall. System Sensor estimates the additional devices will add 4% to 8% to the cost of installing a fire alarm system—a reasonable price to pay for something that is clearly a quantum leap in egress systems.

Condon, a Facility Technologist and former facility manager, is one of the contributing authors for BOMI Institute's revised Technologies In Facilities Management textbook. He works for System Development Integration, a Chicago, IL-based firm committed to improving the performance, quality, and reliability of client business through the use of technology.

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Work Together

The idea of cooperative multi-sensor technology allows a fire-alarm panel to analyze the input of three or more separate sensors for more reliable alarming with an often faster signal

By Donald Goosman, Construction Manager, RJA and Assocs., Chicago

For almost 50 years, fire-alarm system designers have used both photoelectric and ionization devices because each ensures reliable operation. Photoelectric detectors were preferred for smoldering fires because they could easily detect specific types of smoke, including burning plastics. Ionization detectors were used to sense clean-burning fires such as paper and wood. Because a single device could not reliably detect both types of fires, designers were forced to opt for one type of detector over the other. Rather than install both types in one area, the less expensive ionization detector often won out.

Eventually, manufacturers and system designers realized that by combining both elements into a single initiating device, the effectiveness of two individual fire-detection methods was maximized, and thus, the genesis of multi-criteria detection. Working in unison, the two sensing technologies created a device that was not only more reliable, but also more sensitive to a wider range of fire stimuli. Another unintended benefit also arose—the combined input signals improved response speed.

The next logical step was to determine whether adding a thermal heat detector would further enhance the device. In theory, this third element would create a device with faster response times and greater stability for rejecting false alarms. When heat-rise output is recorded into a microprocessor, the smoke-detection element outputs are amplified proportionally through the use of software algorithms. Based on this concept, it was thought that the rise in heat-element output could accelerate the response of the smoke elements. However, due to the low ratio of heat-to-smoke in slow-growing incipient fires, some experts have questioned

whether there would be any real response-time improvement. Some smoke models suggest that in an incipient fire, the amount of smoke generated prior to the rise of the room temperature should create a reaction in the smoke-detection elements long before the heat element responds, except in very small enclosures. Therefore, the effectiveness of adding a heat element remains unclear.

Despite this debate, the use of dual smoke-sensing elements can provide a distinct advantage over traditional single-detection devices for slow-growing incipient fires. While smoke in the early stages of a fire may not be of significant enough concentration or obscuration to set off one sensing element, the output from the combined signals of two detection elements forms a single, more stable signal. This means a positive reaction to smoke can be reliably obtained earlier in the fire timeline, even without a heat element.

Historically, attempts to increase sensitivity in detectors have resulted in a substantial increase of nuisance alarms. While combining two smoke-sensing technologies into a single detection unit created a superior device, it was still possible for both technologies to react jointly to a single false stimulus, such as cigarette smoke—one of the biggest causes of nuisance alarms. This results from each detection element sensing the products of combustion in a single puff of smoke and reacting similarly to the same source.

Distance the key

Adding one more key element to the mix—distance—corrected this problem. A cooperative multi-sensing system

identifies a fire as quickly as the best multi-criteria sensors, yet it is less susceptible to nuisance alarms because of the distance between the individual sensors in the "group." For example, a mix of standard photoelectric and ionization sensors is installed according to the spacing specified by fire codes to create a multi-sensing system. This multi-sensor approach will analyze the smoke levels of all devices over the entire protected area. Multi-criteria technologies are still used, but instead of being housed in a single enclosure, the signals from adjacent devices are used as inputs, creating a more intelligent alarm system. This design makes it very difficult, if not impossible, for a single puff of nuisance smoke to be reported by two sensors simultaneously. In addition, by combining values of adjacent sensors, the fire-alarm panel should respond faster to uniformly distributed smoke than any other technology.

Based on the identification of a fourth fire signature called uniform smoke spread, cooperative multi-sensor detection incorporates two distinct principles: First, smoke, by virtue of the laws of physics, acts like a gas, dispersing uniformly; second, sampling smoke over a wider area is more reliable than spot sampling. Using uniform smoke spread as its foundation, cooperative multi-sensor technology is recognized as a highly effective approach to fire detection. A fire-alarm panel's software can analyze the input from three or more separate standard sensors to create a more reliable and often faster signal.

Each sensor measures the ambient smoke conditions at its location and communicates the values to the main

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Fire-Protection System Gives Guadalajara World Trade Center Increased Security in Insecure Times

When the developers of the World Trade Center Guadalajara began the facility design, they envisioned it as the most impressive and technically advanced building in all of Mexico. The developers insisted on including the latest technology in the construction and specifiers for the project were given a clear directive to ensure that the facility was constructed with that vision in mind.

Opening in 1993, the Guadalajara World Trade Center (GWTC) quickly became the epicenter of area commerce by virtue of its sophisticated infrastructure and advanced electronic systems. The GWTC is anchored by the Pacifico and Atlantico towers and features a busy commercial complex that includes a 450-room Hilton hotel, a Jewelry Exhibition Center, the Mexican Household/Furniture Association, and a world-class, 26,400-square-meter Exhibition Center, the Expo Guadalajara.

However, completing construction on the facility was only the beginning. As the most intelligent building in Mexico, they knew they had to keep up with and implement the newest technology to protect the facility. While protection of GWTC's physical resources was important, it was even more crucial to facility operators to protect human life. More than 700 employees work within the GWTC. These people deserve and expect the highest level of protection possible to feel secure each time they walk through the center's doors.

The security measures at the GWTC were constantly being reviewed by management as they understood that protection from everyday safety issues was critical to the continued success of the facility. Among the safety issues discussed; fire protection was always seen as most important.

The GWTC did have a facility-wide fire-protection system in place, but upon closer examination, they realized that it was no longer the most technically advanced system available and therefore did not provide a level of protection required. Consequently, GWTC turned to NOTIFIER, a world leading manufacturer of commercial fire alarm systems and part of Honeywell's (NYSE: HON) Life Safety Group.

The decision to purchase NOTIFIER products was largely based upon superior technology. First, NOTIFIER's systems meet Mexico's international fire codes as set forth by the National Fire Protection Association (NFPA). Conpel's Director General, Carlos Monroy, a NFPA certified installer had enjoyed a very positive working relationship with facility managers over the years, so his recommendation was given great weight in the decision making process. As a result, it was decided to replace the original equipment with a NOTIFIER system.



The GWTC did due diligence and investigated competitive systems, but was convinced that NOTIFIER's superior technology, references, international expertise and local support made them the ideal choice.

NOTIFIER's NFS-3030 is the foundation of the GWTC system. The NFS-3030, an intelligent Fire Alarm Control Panel designed for medium to large-scale facilities, is part of NOTIFIER's ONYX® Series of Fire Alarm Control Panels. The NFS-3030, which features a powerful evacuation system, incorporates up to ten Signaling Line Circuits (SLCs), to support up to 3,180 intelligent addressable

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devices. In addition, the NFS-3030's large 640-character Liquid Crystal Display (LCD) presents vital information to operators in a fire situation including, fire progression, and evacuation details.

Options including single or multi-channel voice; firefighters' telephone; LED, LCD, or PC-based graphic annunciators; fire or integration networking; and advanced detection products for challenging environments. Because the NFS-3030 features a modular design, it can be reconfigured to meet the GWTC's changing fire-protection requirements when needed.

The NFS-3030 is located in the security room and supervised by trained profes-

sionals 24 hours a day, seven days a week. The panel interfaces with a wide array of ancillary devices, including a number of fire detectors, many of which are incorporated into the system directly from the premises of GWTC's business tenants. These tenants can connect their offices to the central panel and interface with other systems as well as being monitored within the central system year-round.

A key element of the system is the Network Control Annunciator (NCA), an intuitive 640-character display that presents event information from the network. Whether an event is in progress, or sys-

fire-protection system."

The subjective benefits are not to be understated, according to Cuburu. "Based on this installation, our tenants are very confident that the GWTC is as safe as humanly possible," he said. "It gives them a good feeling to have this system in place. You can't quantify that kind of security."

"It also demonstrates our commitment to maintaining GWTC's position as an extremely sophisticated, intelligent corporate office building. That's a reputation that will attract other high-quality tenants."

Facility managers are already looking to install NOTIFIER's NOTI•FIRE•NET™ (NFN) Web Server. NFN Web Server uses a secure password and user access record so operators can immediately connect to either a single alarm control panel or network of fire alarm panels. Through the NFN Web Server's user-friendly web pages, user's continuously monitor the entire facility, quickly interrogate systems both on-site and off, and most importantly, quickly obtain and analyze the data needed to make quick decisions in the event of an alarm.

GWTC facility managers and their tenants know they have one of the best fire protection systems.

"Their products have exhibited the reliability, extended guarantee and lower cost of maintenance that we wanted. More importantly, their products have reduced emergency response times which, in my mind, are the most critical aspect of a

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fire-alarm panel. The panel views several sensor values simultaneously to accurately identify whether a true fire condition exists. This is not detector voting, cross-zoning or double-knock technology. This new technology actually uses statistical analysis of data collected from several different points-again, employing the element of distance-to identify whether a true fire condition exists. Whereas older technologies require more than one sensor to be at 100% of their alarm sensitivity levels in order to read true fire conditions, this information can now be ascertained before any individual sensor approaches its alarm threshold.

Uniform smoke spread

With cooperative multi-sensing and uniform smoke spread, the combined alarm threshold can be as low as 58% sensitivity at each device. The algorithm in the fire-alarm panel software uses values from several different sensors in a group to generate a distinctly new signal. Some panels can accommodate as many as 1,000 such analysis while checking for uniform smoke spread.

This type of system permits the creation of very sophisticated methods for detecting fire schemes that are more complex than one could create with traditional multi-criteria sensors. For example, consider four physical sensors spaced and reporting normally in a room. Theoretically, the fire-alarm panel could be programmed to run a combination of several different data interrogations from those devices to search for incipient signs of fire. This is a significant breakthrough that can lead directly to more reliable, faster fire detection. In addition, by adjusting the alarm thresholds for the individual sensors, manufacturers can lower the overall susceptibility of their equipment to nuisance alarms while maintaining a faster response. Since the devices are single-technology sensors, they still respond individually-at the normal rate of response-to a fire alarm situation when smoke spread is restricted. In other words, any device reaching the designated alarm threshold will still initiate an alarm.

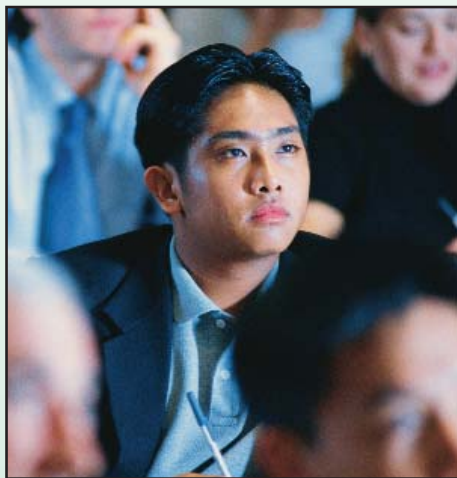
Cooperative multi-sensor detection is ideally suited for many environmental situations. For example, a hotel elevator lobby often presents a significant fire detection problem related to single-source transient smoke such as cigarette smoke. Through the use of selectable sensitivity settings and this technology, the protection around the elevator can be designed to be less susceptible to nuisance smoke, but still capable of responding rapidly to uniform smoke distribution.

Ultimately, cooperative multi-sensor technology offers three advantages:

- Faster reaction to uniform smoke distribution, a reliable signature of real fires.
- More intelligent alarm decisions that can be less susceptible to nuisance alarms, thanks to the dimension of distance.
- The capability to combine mixed-sensor technology with single-technology sensors so as not to increase the price of the system.

A vote for sensors

So which is better-detectors or sensors? Detectors include the electronics to make the fire/no-fire decision in the smoke head and report the fire decision to the alarm panel. Sensors, on the other hand, do not make the fire/no-fire decision in the smoke head. Instead, they report an ambient value to the fire-alarm panel where the decision is made. Detectors are not capable of providing cooperative multi-sensing, because they process and make the fire decision at the initiating device level, not at the system level. Each detector makes decisions independent from other detectors in the immediate area. Only systems employing the use of multiple types of fire sensors, each reporting values to the control panel for processing, can achieve the advantages offered through cooperative, multi-sensing technologies.



NOTIFIER Continues Its Commitment to Training at Hong Kong Facility

Since its founding more than 50 years ago, NOTIFIER has been unwavering in its commitment to develop the most sophisticated and best performing products in the fire protection industry. The brand's recently renovated training facility in Hong Kong, built to provide accessible training options for distributors and employees in the Hong Kong and Asia Pacific region, exemplifies that commitment.

The renovated facility offers a direct, hands-on experience with the latest equipment and product configurations.

In 2003, 63 training sessions were completed and, in 2004, the number increased to more than 90. With this new training facility, and a highly dedicated and qualified training staff, NOTIFIER is planning at least 130 training classes this year on a bi-weekly basis.

Thanks to this new training center, distributors in Hong Kong and the entire Asia Pacific region are now able to receive the training and support needed to effectively and efficiently install the most reliable and requested name in fire protection: NOTIFIER.

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