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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 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

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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 concept 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.

This Month's Useful Links:

Sound Alert (www.soundalert.com) promotes this new audible alarming life safety technology.

System Sensor (www.systemsensor.com) is one of the largest manufacturers of fire detection and notification products.

The American Council of the Blind (www.acb.org) is the nation's leading organization for the blind and visually impaired

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.

Do you have any questions about Facility Technology Convergence? If so, please send an e-mail with your thoughts to schwartz@groupc.com.

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