

## SUCCESS STORY

# ASPIRATING, ADDRESSABLE SMOKE DETECTION TECHNOLOGY TRANSFORMS APPROACH TO SMOKE DETECTION WHILE PROMISING LESS DISRUPTION TO PATIENTS

## THE CHALLENGE

### Traditional Smoke Detectors

Traditional smoke detectors are installed in each room or space and connected to a central fire alarm panel by low voltage electrical wiring. When significant amount smoke accumulates in the chamber of one of these smoke detectors, the alarm sounds. Although there are addressable systems on the market that can identify the specific room where such a threat occurs, many are not addressable so only identifies the zone and none are based on aspirating smoke detection technology.

While spot smoke detectors are reliable and relatively easy to install, NFPA regulations also mandate annual inspection and testing of each unit. This tedious and time-consuming process requires a fire alarm contractor to enter each room, introduce smoke directly into the detector and verify that it functions properly. This is often covered under ongoing maintenance contracts where fire alarm contractors make a significant amount of their profit.

In a healthcare environment, however, this can be extremely disruptive to patients, doctors, nurses, hospital personnel and hospital operations. The problem is exacerbated in psychiatric wards or hospitals, or for those in drug recovery, that are potentially even more sensitive to interruptions. Surgical rooms, NICUs, PICUs and emergency rooms are also an issue, given the sterile environment.

For Jeremy Robison, Facilities Director/Safety Officer at Sonora Behavioral Health, a psychiatric facility in Tucson, AZ, that is part of the larger Acadia Healthcare Group, the annual inspections required significant planning. "For our patients, anything out of the ordinary, such as loud noises, can set them off," Robison explains. Once he became aware the maintenance provider would be coming for an inspection, Robison says he would send out advanced notifications by e-mail to alert both personnel and patients, as well as to warn them of possible loud noise associated with testing.

He would then have to figure out how to ensure that staff and patients were out of the rooms at specific times – a process that often required some creativity. "One of the things I would try and do is schedule inspections for mealtimes, when the entire unit would be in the dining room," says Robison.

For decades, traditional smoke detectors have been used to protect patients and personnel at healthcare facilities from the danger of smoke and fire – protection that is mandated by the NFPA (National Fire Protection Association).

Now, however, a new approach using more sophisticated, established smoke detection technology is contributing substantial benefits for healthcare facilities: lower overall costs, earlier detection and less disruption to patients during NFPA mandated annual inspection and testing.

# VESDA<sup>®</sup> VEA



## THE SOLUTION:

### Aspirating Technology

In smoke detection, more advanced technologies that provide earlier warning detection exist. These systems work by aspirating – or drawing in air – from each room through small, flexible tubing. The air is then analyzed to identify the presence of smoke particles in a continuous process.

For almost 40 years, aspirating smoke detectors (ASD) have been used for the most sensitive applications where early detection of smoke or gas is critical, such as in cleanrooms, data centers and telecom facilities.

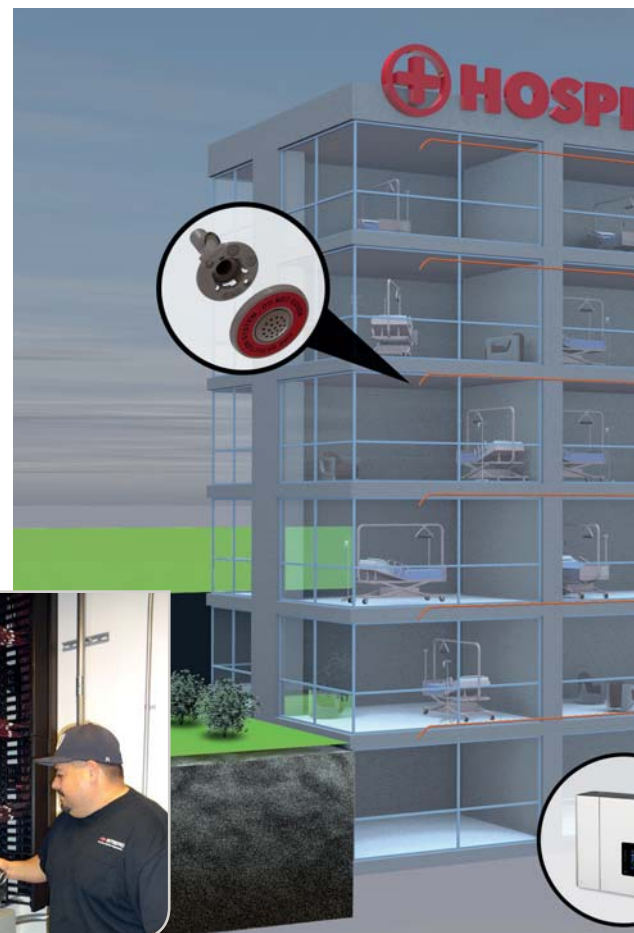
Among the pioneers in ASD technology was the VESDA (Very Early Smoke Detection Apparatus) system first introduced in the early 1980s by Xtralis. The company has since evolved the technology so it can be applied in range of application from clean to harsh environments and most recently to a system that combines the reliability and early detection of VESDA with addressability in each room.

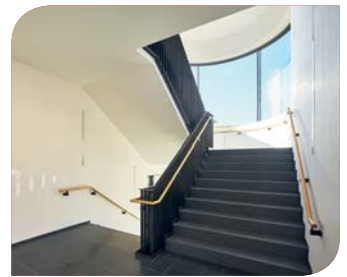
The system, called the VESDA-E VEA, consists of small, flexible microbore tubes that draw air through small, unobtrusive sample points in each room. The air is analyzed using sophisticated laser-based technology at the central unit located within 90m (300 ft).

As a multi-channel, addressable system, the VEA central unit can pinpoint the location of the alarm. A single system supports 40 sample points and can be extended up to 120.

For Robison of Sonora Behavioral Health, the addressability of the system had great appeal. He says the VEA systems was installed after it was specified by a consulting engineering firm during construction of a new building at the site in November of 2016. “I like how, if a smoke detector goes off in room 401, it tells you there is issue in room 401,” says Robison. “I don’t have to go through the entire unit, checking every one until I finally come across it.”

The system is also sophisticated enough to allow for three levels of sensitivity to differentiate a fire from a patient smoking in a room, for example. This further minimizes disruption by reducing false alarms.





Even with these benefits, one of the primary advantages of an aspirating smoke detector system is its ease of maintenance, inspection and servicing. In compliance with NFPA 72 Chapter 14 requirements, systems like VEA do not require the contractor to enter each room. Instead, servicing and testing can be performed at the central unit and only takes a few seconds per sample point. In this way, the fire alarm contractor can complete the inspection at any time without having to move patients or access restricted areas. By some estimates, this can greatly reduce maintenance and inspection costs and reduce the total cost of ownership of the fire alarm system by up to 60%.

Finally, since the VEA sample points are much smaller than regular smoke detectors, they appear less obtrusive. They can also be placed where spot smoke detectors would be difficult to reach, such as high ceilings, in restricted areas, or where new electrical wiring installation would be costly.

Tim Callander, Partner at GB Technologies, a full service limited energy contractor in Burnsville, MN, that provides low voltage design and installation of fire alarm, access control, and video surveillance systems, see several advantages to a smaller sampling point.

“As someone that works in the industry, when I walk through a building I’m looking at the all various fire alarm devices that are on the walls and ceilings,” explains Callander. “The VEA sampling points have a small footprint, you might not even notice them.” Sampling points can even be fully concealed, for instance behind ventilation covers or within fixtures, eliminating any hygiene issues.



Callander first utilized the VEA technology as part of a fire alarm system upgrade his company completed at the Courage Kenny Rehabilitation Institute at Abbott Northwestern Hospital, which provides services for people with short and long-term conditions, injuries and disabilities, and a newly renovated emergency department. The project involved installing five total VEA systems: two each on two separate floors and one in the behavioral health section of the new emergency department.

“Instead of replacing existing smoke detectors with new smoke detectors in the patient rooms, the engineer of record specified the VEA system to eliminate ligature possibilities from spot type smoke detector protective covers,” says Callander.

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**Jeremy Robison  
Facilities Director/Safety Officer  
Sonora Behavioral Health**

# VESDA® VEA



“The VEA system is a new technology for us, but the aspirating early detection technology has been around for years,” adds Callander. “The VEA will detect a few particles of combustion faster than a spot smoke detector. It is also harder to tamper with the sampling points, which can be important for behavioral units.”

He also adds that smaller sampling units are more hygienic because they have less surface area than smoke detectors. “Traditional spot smoke detectors in surgical rooms offer a larger surface area where germs and bacteria can hang on,” Callander explains.

Because of the ease of installation, maintenance, inspection and servicing and the reduction in a smoke detection system’s total cost of ownership, aspirating smoke detectors are an excellent alternative to spot smoke detectors. The added benefit of minimal disruption to patients and personnel make them a perfect choice for healthcare facilities.

## ABOUT VESDA-E VEA

VESDA-E VEA is the first addressable aspirating smoke detector (ASD) for standard addressable detection applications with non-intrusive servicing and interruption free operation and significantly lower maintenance time. VEA provides pinpoint addressability by using a network of microbore tubes connected to sampling points located in the protected area. VEA provides superior detection with inbuilt filters, full supervision of the microbore tubes and sampling points, along with self cleaning providing assured detection with minimum false alarms.

The VEA base detector supports up to 40 sampling points which can be expanded to 120 using VEA Expansion StaX modules. True supervision of tube network and sampling points allows centralized automated test and maintenance to provide end to end system integrity monitoring, reducing maintenance time by up to 90% while lowering TCO by up to 60%.

To learn more, please visit us at [www.xtralis.com](http://www.xtralis.com)

### Project:

Sonora Behavioral Health

### End User/Location:

Tucson, AZ - USA

### Industry:

Healthcare

### Solution:

VESDA-E VEA

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Tim Callander  
Partner at GB Technologies