

# HOW TO OPTIMIZE SMOKE DETECTION AND MINIMIZE DISRUPTION IN LARGE, BUSY BUILDINGS



## INTRODUCTION

Large facilities with multiple rooms present various challenges to traditional fire detection, particularly when it comes to installation and maintenance. Managing detection devices can be even trickier in buildings with restricted or inaccessible areas, such as hospitals or correctional facilities. How can you provide effective smoke detection in these busy settings without causing unnecessary disruption?

Having an effective smoke detection system that is designed to address these challenges is vital to the safety of the people and the smooth running of the facility. This guide will inspect common obstacles multi-room buildings present to smoke detection and explain how to overcome them with addressable aspirating smoke detection technology.



## CHALLENGES TO EFFECTIVE SMOKE DETECTION

Large buildings often contain multiple rooms on different floors, which may be occupied at different times and serve various purposes. Finding a smoke detection solution that meets these requirements in terms of accuracy, addressability, and aesthetics, can be difficult. In facilities with restricted areas, inspecting and maintaining the detectors can be even more challenging.

An ideal smoke detection strategy not only protects lives and business but also is simple to test and maintain throughout its service life, minimizing disruption to normal operations that can be costly and time-consuming. While it has been common practice to carefully manage individual areas from a health and safety perspective during regular service and maintenance activities, now there is an alternative that not only delivers detection performance but also allows for faster centralized smoke testing.



## MANAGING SMOKE DETECTION IN RESTRICTED AREAS

In some facilities, room access may be restricted for a variety of reasons, with different entry requirements and arrangements. In hospitals, for example, restrictions may be in place to protect patients with compromised immune systems or rooms with sensitive specialist equipment. In correctional facilities, access to certain areas is often restricted for security reasons. The installation, testing and maintenance of smoke detectors may involve moving prisoners, resulting in additional security considerations or even the lockdown of entire areas.

Increasing cybersecurity concerns may place sensitive business areas out of bounds for regular third-party maintenance staff. Fire installers will often need to obtain special access to enter a restricted area, and the facility staff may be required to attend and oversee the work. Clearly this practice is inefficient both for the installer and the facility manager, leading to unnecessary downtime and disruption. As buildings need to comply with fire safety regulations, including annual testing of detectors, the work needs to be carried out on schedule.

## PREPARING FOR UNPRECEDENTED EVENTS

Accessibility can be further restricted by unprecedented events, such as epidemics, biohazard threats, and environmental factors, which can make attending detectors impossible. This highlights the need for a centralized smoke detection strategy that can be managed with minimal time on site to reduce the risk to installers as well as residents, staff and other people within the facility.

## ELIMINATING DISRUPTION WITH ADDRESSABLE ASPIRATING SMOKE DETECTION

Effective fire detection in large, busy buildings calls for a solution that combines ease of installation, maintenance and testing with optimal accuracy. Traditional optical spot smoke detectors, though able to deliver an addressable response, still require direct physical access for the mandatory smoke test.

The trend towards remote connectivity and reduced contact is likely to further limit the time installers can spend on site. The ability to carry out most of the critical tasks from a centralized location will offer a range of benefits that can help businesses future-proof their operation and accommodate new and unforeseen challenges.

Point-addressable aspirating smoke detection such as Xtralis' VESDA-E VEA uses innovative early-warning technology to overcome these limitations. It draws air in through patented air sampling points and a network of multi-channel microbore tubes to a central detector for analysis using sophisticated laser-based technology. The system can pinpoint fire risks to a specific sampling point, instead of a larger zone, to enable a targeted response. With full-system-integrity monitoring, smoke testing can be conducted at the central detector. This removes the need to unnecessarily enter the protected area, making it ideal for restricted or difficult access areas. Another benefit of using VESDA-E VEA is the small footprint of its sampling points. This enables installation across a range of locations where a smaller ceiling footprint is valued.



LET'S NOW TAKE A CLOSER LOOK AT EACH OF THESE BENEFITS AND HOW THEY CAN HELP IMPROVE DETECTION ACCURACY AND REDUCE DISRUPTION TO NORMAL OPERATION.

1.

### SIMPLIFIED INSTALLATION

Easy installation will help reduce the time installers will have to spend in the facility or restricted areas. The VESDA-E VEA detectors feature flexible microbore tubes with push-fit connections and passive sampling points. This means they don't need to comply with electrical codes and can be installed wherever it's convenient. Unique tube serial numbers and tube length markings enable pre-engineered installation, speeding up the process.

3.

### REDUCED TIME ON SITE

The more time fire systems and service engineers spend on site, the more they disrupt daily operations. The centralized testing and maintenance capacity helps reduce time on site, allowing the essential tasks to be carried out as quickly as possible with most of the activity controlled remotely. Thanks to connectivity options such as WAN and wireless, engineers can gain real-time and remote access to the detector via an app, enabling advance service preparation for optimal safety and uptime.

2.

### CENTRALIZED TEST AND MAINTENANCE

Centralizing test and maintenance will deliver better control over the facility eliminating the need to access individual sampling locations for annual testing. It enables service engineers to test multiple sampling points and perform maintenance from one, central location. Depending on the facility, the time spent carrying out smoke tests can be reduced by up to 90 percent compared to traditional spot smoke detectors, and the need to attend restricted areas minimized. Quicker and simpler testing and maintenance can deliver more than 50% Total Cost of Ownership savings.

4.

### IMPROVED AESTHETICS

Traditional smoke detectors might be unsuitable for some locations, such as commercial buildings, due to their appearance. Xtralis' VESDA-E VEA detectors offer a less obtrusive alternative: the sampling points are low-profile, have a small footprint, and are available in either black or white, making them a fit for a range of environments.

## REAL-LIFE EXAMPLES

Switching to addressable aspirating smoke detection can help revolutionize how fire safety is managed and enhance safety. These examples show how large facilities, each with their inherent challenges, use the technology to improve operation.



### PROTECTING PATIENTS IN HEALTHCARE

Sonora Behavioral Health, a psychiatric facility in Tucson, Arizona, wanted to reduce the disruption caused by the annual inspection of its existing traditional spot smoke detection system. The process was time consuming and arranging access to patient rooms required careful planning as vulnerable patients had to be protected from the stress of the visitors and the loud noise from the testing. Changing to VESDA-E VEA has transformed the process as the centralized maintenance, inspection and servicing means that patient rooms no longer need to be accessed for routine maintenance. The detection points can also be fully concealed, reducing the risk of patients tampering with them.

### CUTTING ALARM MAINTENANCE COSTS IN A CORRECTIONAL FACILITY

Corcoran State Prison in California replaced its traditional smoke detection systems with VESDA-E VEA aspirating smoke detection to eliminate recurring nuisance alarms and reduce the time on site. With many prisons in California located on dusty plains or in the desert, dirt build-up presents a serious problem to smoke detection. The detectors require constant cleaning to ensure reliable operation but accessing them is costly and time consuming. It is estimated that cleaning all the smoke detectors in a prison can cost up to \$120,000 per year. Switching to VESDA-E VEA helped the facility overcome the issue since the detector provides automated end-to-end system integrity monitoring (sampling points, tube networks), automated maintenance (cleaning) of sampling tube networks and centralized smoke testing at the detector unit without the need to access through the restricted areas or air ducts. The system also simplified monitoring and reduced maintenance costs to just five percent of those of a traditional smoke detection system.



### GUARDING EXPENSIVE MEDICAL EQUIPMENT

Central Diagnostics, a medical practice in La Romana, Dominican Republic, has invested in the latest medical equipment across all disciplines to offer the best care for its patients. It needed an advanced smoke detection system with the fastest detection available to protect its staff, patients and the significant investment in the equipment. It chose Xtralis VESDA-E VEA because of its proven track record and detection accuracy which facilitated quick responses to threats. Additionally, with medical equipment taking up the majority of the clinic's roofline, electrical equipment, such as smoke detectors, could not be installed in the area. This was no longer an issue with VESDA-E VEA. The flexible plastic tubing made sampling points quick and straightforward to install, and they could be placed away from the medical equipment, without needing to use valuable ceiling space.

## CONCLUSION

Point-addressable aspirating smoke detection can offer several advantages compared to traditional smoke detection, especially in large buildings with multiple compartments and restricted areas. Xtralis' VESDA-E VEA provides unrivaled reliability, thanks to the full supervision of tubing and sampling detection, enabling better control over fire safety across a facility. By centralizing testing and maintenance, facilities managers can effectively reduce disruption to normal operation, as there is no need to access individual sampling locations. Limiting time on site is crucial for safe operation in many demanding applications and when additional restrictions are enforced, for example when limiting contact to prevent contamination.

You can find out more about using point-addressable aspirating smoke detection to improve operations [here](#).



## ABOUT XTRALIS



Xtralis is the leading global provider of powerful solutions for the very-early and reliable detection of smoke, fire and gas threats. Our technologies help prevent disasters by giving users time to respond before life, critical infrastructure or business continuity is compromised.

We protect highly valued assets and infrastructure belonging to the world's top governments and businesses.

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