XAS Air-sampling Smoke Detection System

A Cost-efficient, High-quality Solution for HVAC Ducts and Other Areas that are Difficult to Access

The XAS-1-US and XAS-2-US Air-sampling Smoke Detectors (ASDs) are a reliable smoke detection solution for challenging spot detection applications. Challenges include HVAC duct smoke detection, restricted areas such as prison cells, transformer vaults and elevator shaft ceilings (when required). The system utilizes a high-performance aspirator and programmable flow monitoring circuitry. It is the preferred solution in traditionally difficult to access applications in commercial properties, institutional settings and industrial sites.

Duct Smoke Detection

In a fire event, ventilation duct systems can carry smoke and toxic gases from one area of the building to another. Duct systems may also supply air to a fire, fueling its growth. System designers must meet the challenge of developing solutions that effectively detect and control smoke and airflow through the use of devices such as duct smoke detectors and smoke dampers.

Smoke detection within ducts does not replace open-area smoke detection systems; it provides greater control over the flow of smoke from one area to another. If smoke is detected within a duct, that duct can be closed and the corresponding HVAC unit shut down to prevent further spread of smoke, thus helping to protect life and property, and avoid business disruption.
Detection Challenges

Smoke sensors placed in HVAC ducts can determine if smoke is present near a protected area as air travels through the duct. However, the location of HVAC ducts themselves can create challenges for system service providers and become problematic and create a nuisance to end users.

Traditional duct detectors are sometimes installed in difficult-to-reach areas that occasionally require the use of lifts to perform service – a costly proposition and many times over looked activity.

As a result, duct detection devices are often not serviced on a timely basis and even forgotten by end users as they are “out of sight - out of mind”. The lack of service can cause unwanted alarm conditions and lead to a lack of protection in critical areas of the building all leading to compromised effectiveness of the life safety system - a most undesirable situation.

Solution: XAS Duct Detector

Utilizing a high-performance aspirator and configurable flow monitoring circuitry, the XAS detector actively draws air from a difficult-to-reach HVAC duct up to 80 feet away, allowing simplified access for service. The sampled air is filtered before being analyzed by a smoke sensor that is incorporated into the system. Air flow level is displayed on a ten-element bar graph that can be adjusted for high and low flow thresholds, and flow fault is reported as a device trouble via relays to the monitoring system.

Unlike other duct detectors, flexible tubes can be used for installing the XAS duct detector in places where typical piping cannot be installed easily. In a duct application, two flexible tubes are installed. The inlet tube is used to sample air from the duct and the second tube exhausts the air back into the duct.

When using the XAS device in an “open area protection” arrangement the detection device can be mounted outside the protected area and accessed without the use of lifts or ladders, bringing tangible cost savings to end users. As the service for the XAS detector can be performed from floor level, it is well suited for the following types of applications:

- where duct detectors are difficult to maintain and service;
- where an aerial lift device must be used to service duct detectors; and
- where unobtrusive smoke detection is required.

In addition to duct applications, the XAS detection system can be applied in other challenging protection areas. This includes the top of elevator shafts, prison cells, transformer vaults and the exterior of MRI rooms, where conventional detectors can be hard to access and maintain or where the device can be adversely affected by the environment of the area it is protecting.

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