

HOW TO DESIGN A HOSPITAL'S ADVANCED FIRE DETECTION SYSTEM IN **FIVE STEPS**



Hospitals present unique challenges to fire detection. To address these, you need to design and install your very-early-warning system effectively. Here are some useful tips to help you maximize fire detection coverage and reliability while minimizing disruption to essential operations.

BE FLEXIBLE

1.

Hospitals comprise many different areas with different building features, safety requirements, and fire hazards. Some fall outside of prescriptive fire codes and require a more bespoke approach known as Performance-Based Design (PBD).

A flexible detection system based on sampling pipes combining smoke and gas detection can be tailored to the specific characteristics of each environment. The design of the pipe network can be easily adapted for PBDs where enhanced protection is required or to accommodate building layouts outside prescriptive codes. The detectors can be mounted in easy-to-access locations.

KEEP AN EYE ON THE AIRFLOW

2.

To design an advanced detection system, you need to understand how the airflow affects smoke and gas movement. This is where HVAC systems, makeup air introduction, and supply / extract air vents come in. Smoke and gas detection should be designed around these systems. Here are some important steps you can take:

- Install sampling points in the HVAC ductwork to detect the early signs of smoke and/or gas and shut down the HVAC system immediately, preventing smoke and toxic gases from spreading to other areas.
- Place sampling points at outside air vents to monitor the intake of airborne pollutants and interrupt the air intake as soon as a safe threshold is exceeded.
- Install sampling points at return air vents where active extraction occurs of the space air.

MAKE IT ACCESSIBLE

3.

From operating theatres to ICUs, some hospital areas must avoid disruption at all costs. Access may also be restricted for safety and security reasons.

An advanced aspirating detection system allows you to install a non-intrusive, fit-and-forget sampling pipe network inside a restricted or busy area. By contrast, the detector can be installed outside the area, in a convenient location. This way, you can easily access the device for maintenance, and service the pipework remotely, without interrupting critical operations inside the room.

PREVENT INTERFERENCE

4.

MRI rooms present unique challenges to smoke and gas detection systems. Ferromagnetic devices, including smoke detectors, must be avoided inside the MRI room to prevent the magnetic field interfering with the reliable operation of the detection devices. Luckily there's a way to overcome this challenge.

A sampling non-ferromagnetic pipe network installed inside the room combined with a detector outside the room will eliminate the risk of magnetic interference.

LOOK OUT FOR PRESSURE

5.

In a hospital, rooms are kept under different air pressures depending on their cleanliness. For example, an operating theatre must be kept under positive pressure (in relation to the adjacent rooms). This isolates the room from the surrounding areas preventing the infiltration of contaminants.

Differences in rooms' cleanliness are a key consideration when designing an advanced aspirating multi-hole detection system. The air is transported from remote areas to the detector for analysis and then released into the detector environment. Unless the detector exhaust is installed in the right location, it may cause cross-contamination.

To learn more about how to design an advanced detection system correctly in hospital applications download our [Design Guide](#).