



EFFECTIVE RESPONSE TO A FIRE – CODE REQUIREMENTS TO BEST PRACTICE PART 1

When it comes to fire safety, knowledge of the location of a fire in a building is paramount to responding fire brigade services for effective search/rescue and targeted operation of the building’s fire safety systems

i.e. ventilation, pressurization, annunciation, etc. It can be argued, that targeted manual and automated system intervention delivered in the early stages of fire will enable an effective response to a fire event and prevent escalation to a threatening condition.

While alerting to a fire event in its early stages can be achieved with high sensitivity smoke detection systems; effective response – especially where business continuity and asset protection is desired – can only be achieved through reduced detection zones to assist with timely and targeted intervention.

This article provides an overview of standards, current practices and system design options for the implementation of effective response with aspirating smoke detection (ASD) systems.

FROM CODE REQUIREMENTS TO BEST PRACTICE

Codes and standards stipulate the minimum requirements when designing fire detection systems:

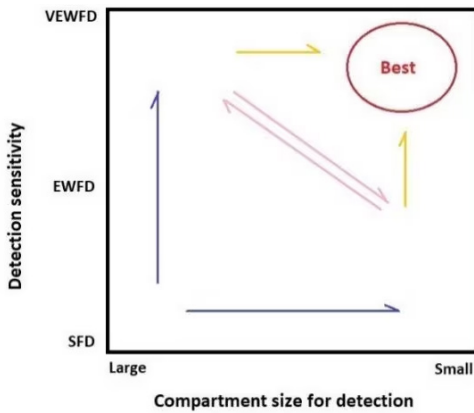
Detection Sensitivity

While fire detection systems designed to prescriptive standards address occupant safety, they may not provide the performance required to protect critical assets or maintain business continuity. These cases can be addressed by performance-based standards, i.e. NFPA 76 recognises the importance of protecting data processing equipment and stipulates higher sensitivity settings for smoke detection systems to deliver protection and safeguard against thermal and smoke damage: VEWFD very early warning fire detection and EWFD early warning fire detection.

Detection Zones

A system designer can consider reducing the detection (and alarm annunciation) zones to smaller compartments for timely and targeted fire mitigation activities to the area of fire interest. For example:

- Targeted power isolation of cabinets in an electrical switch room, server racks in data centres, etc.
- Targeted suppression in the aisle of fire origin in warehouses.
- Targeted deployment of active (smoke fans, pressurization zones) and passive (curtains) smoke control measures to prevent the wider spread of smoke.
- Controlled and orderly evacuation of occupants especially in cases where mobilization can be restricted or difficult: hospitals, conference centers, sports arenas, correctional facilities etc.



As shown in the graph on the left, designs vary from the basic SFD (standard fire detection) and detection zone coverage compliant to most building codes, to higher levels of protection with enhanced detection sensitivity and reduced detection zone sizes.

Improved response that allows the earliest possible and effective intervention - often required by end users where business continuity or asset protection are critical - requires system designs in the top right corner; i.e. designing compartment sizes as small as possible with very early warning smoke detection.

We will continue to discuss more of the ASD Solutions for an Effective Response to a fire event and Project Examples in the next blog.

If you have projects needing detection addressability from small compartments and VEWFd/EWFD, please contact us here

For more information

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