VESDA

ASD ENGINEERING

TECHNICAL TRAINING Trainer Jim Galvin

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Course Objectives

At the end of the course, you will be able to:

- Describe air-sampling techniques and the benefits of an air-sampling detection system
- Learn the principles of designing Air Sampling Detection (ASD) system
- Installation, commissioning, and maintenance VESDA system

Agenda

CONTENTS

- **Introduction to Aspirating Smoke Detection (ASD) and Main Applications**
- Product Overview
- Designing Details
- Installation Details
- Commissioning, Testing and Maintenance

To receive Accreditation there is a test at the end of the course. A score of 72% or better is required to pass.

Module Objectives

Intro to Aspirating Smoke Detection (ASD) and Main Applications

Things you will learn:

- What is ASD system
- How ASD systems work
- Main features for ASD vs. Spot type technology
- Where, When & Why to use ASD (Main Applications)

Notable notes:

* Smoke does not follow code, smoke follows airflow!

* The ID of the VESDA pipe is .874”, NOT .75”

* Most of VESDA maintenance involves cleaning the pipes – bring your vacuum cleaner

* All VESDA units run on 24vdc

* All current VESDA detectors are VESDAnet ready

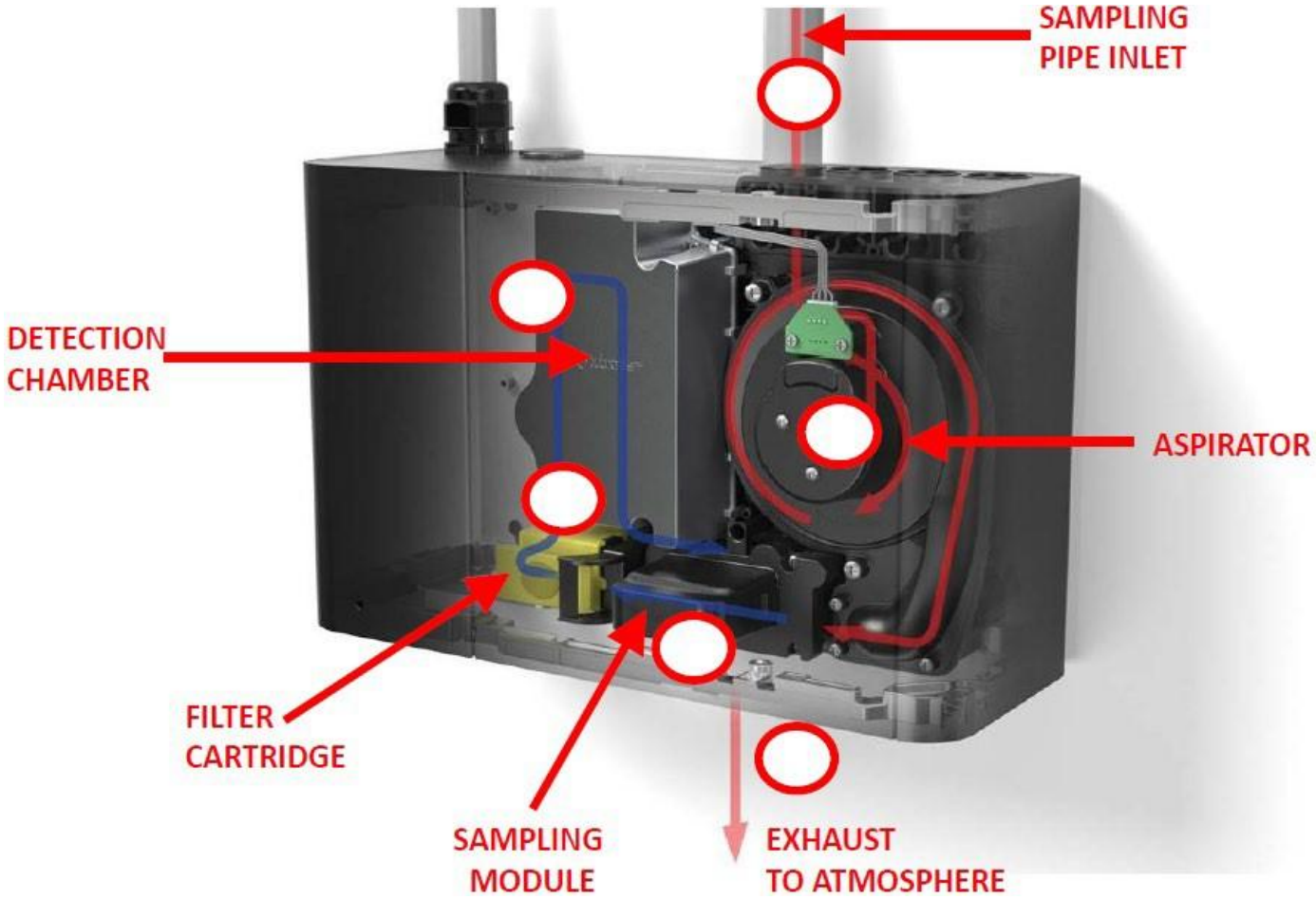
How Does VESDA Work?

- A detection system that actively draws air from a fire zone to a centrally mounted detector

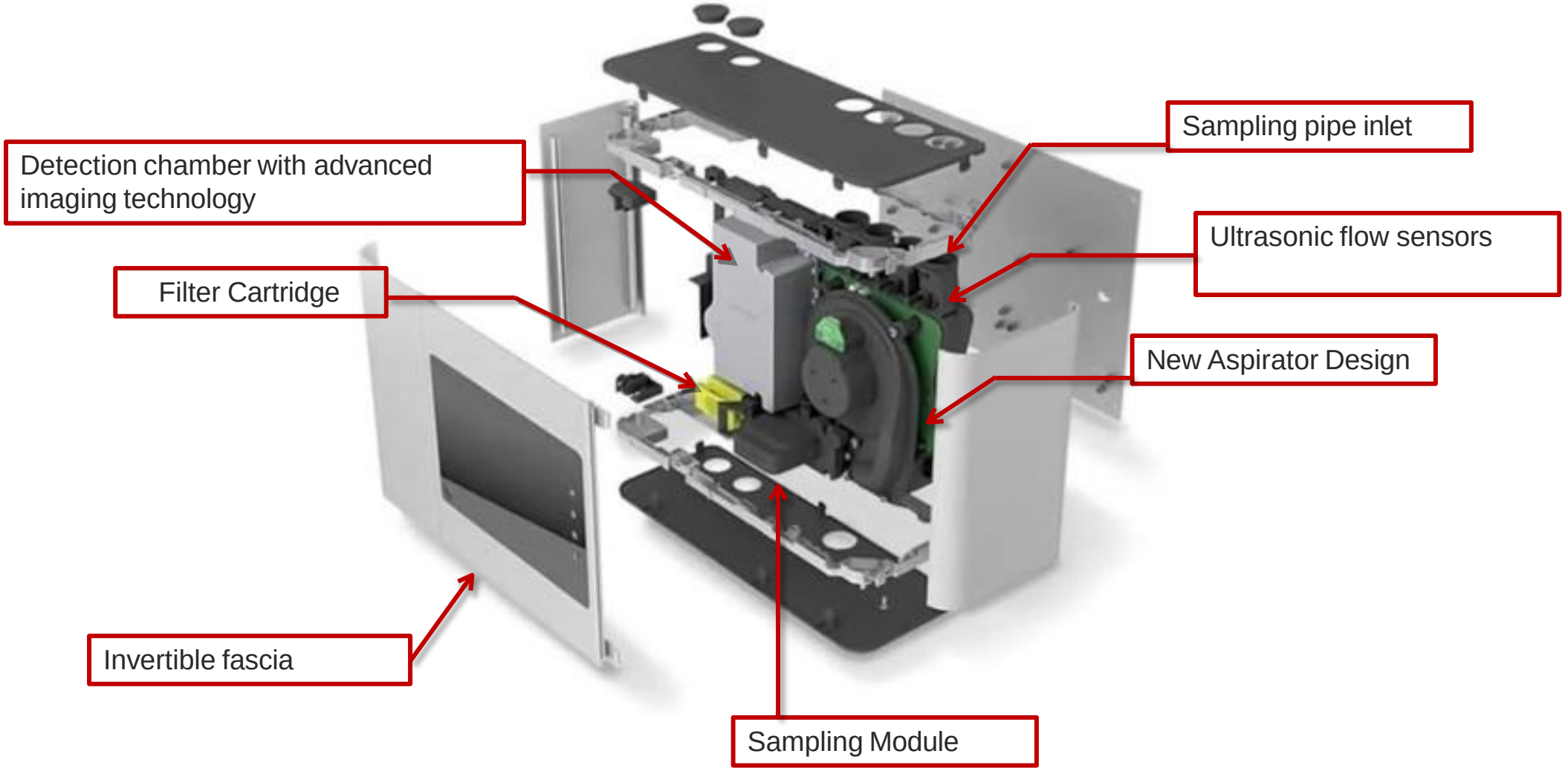
(Aspirator used inside detector)

Air Flow Thru Detector (VESDA)

- Only **about 10% of the air is drawn through the filter**, 90% of the air is directly exhausted, which results in a longer lasting filter.



General Internal Components (VESDA-E)

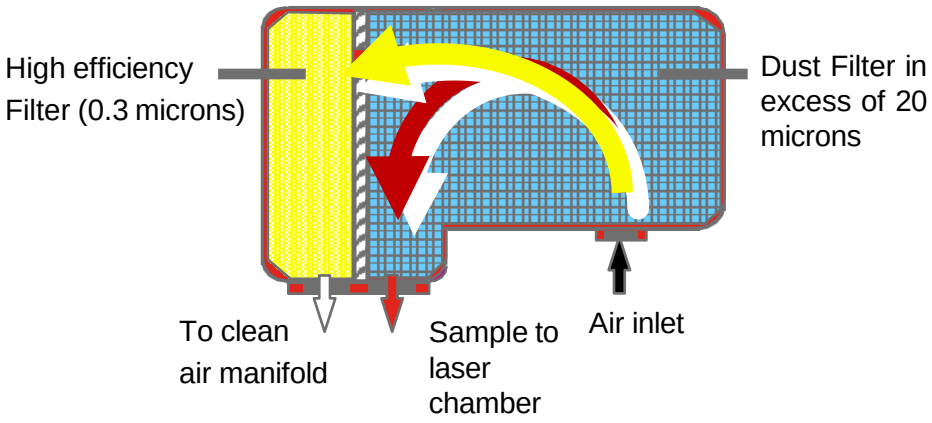


VESDA Internal Filter*

Most VESDA filters are 2-stage filters

*** More filtration details to be discussed within product range module**

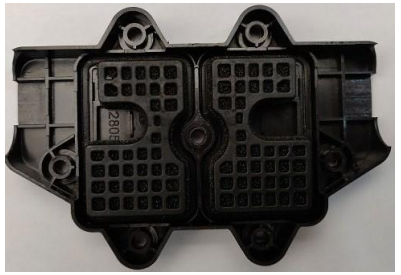
Two-Stage Filter (VLC, VLF, VLP, VLS)



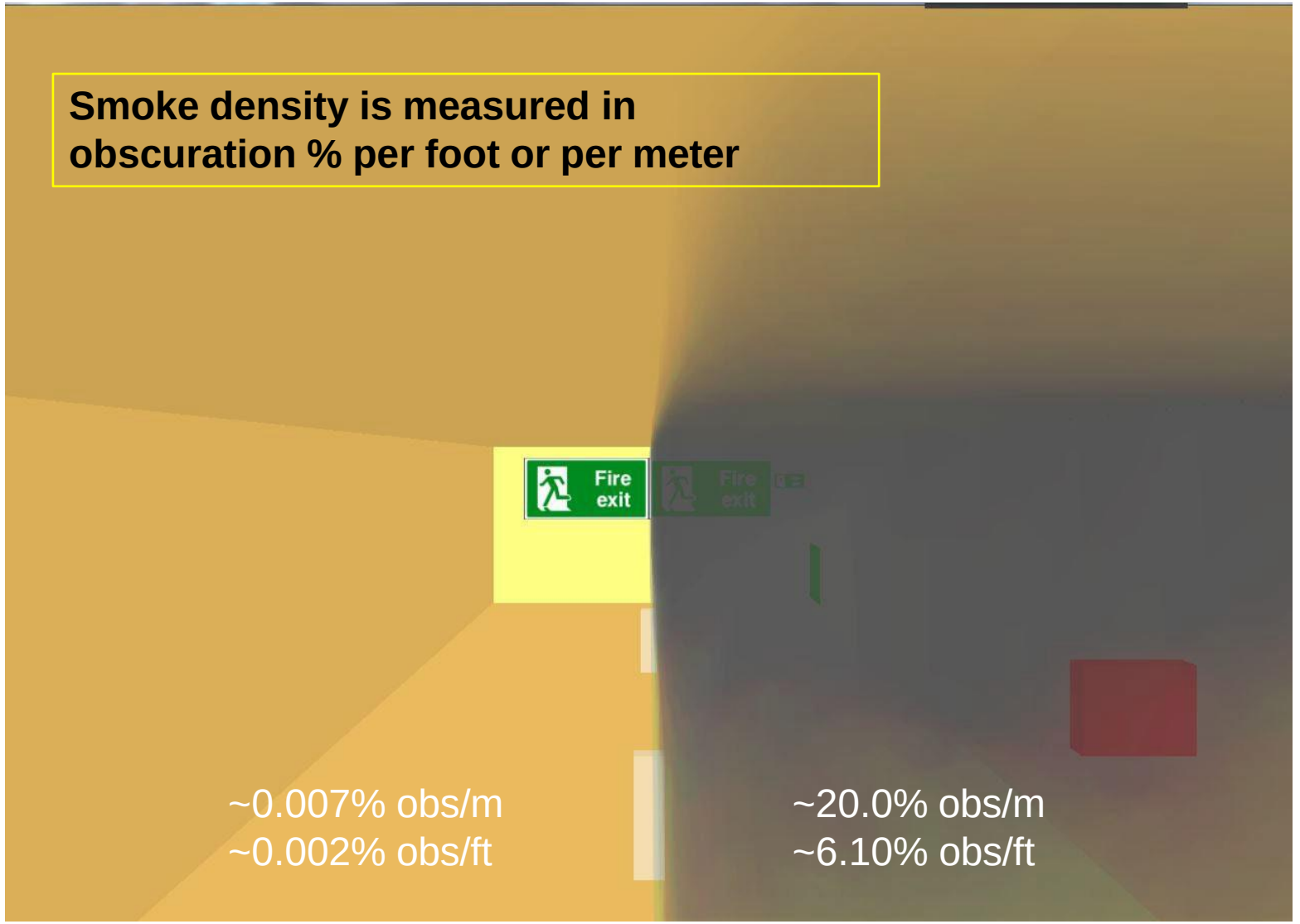
New Filter Design VEU, VEP & VES

VLI Intelligent and Secondary Filters

New Filter Design VEA (Two-Stage Filter)



Measurement by % Obscuration



VESDA Sampling Detection Principles

NFPA 72 17.7.3.6.1.1

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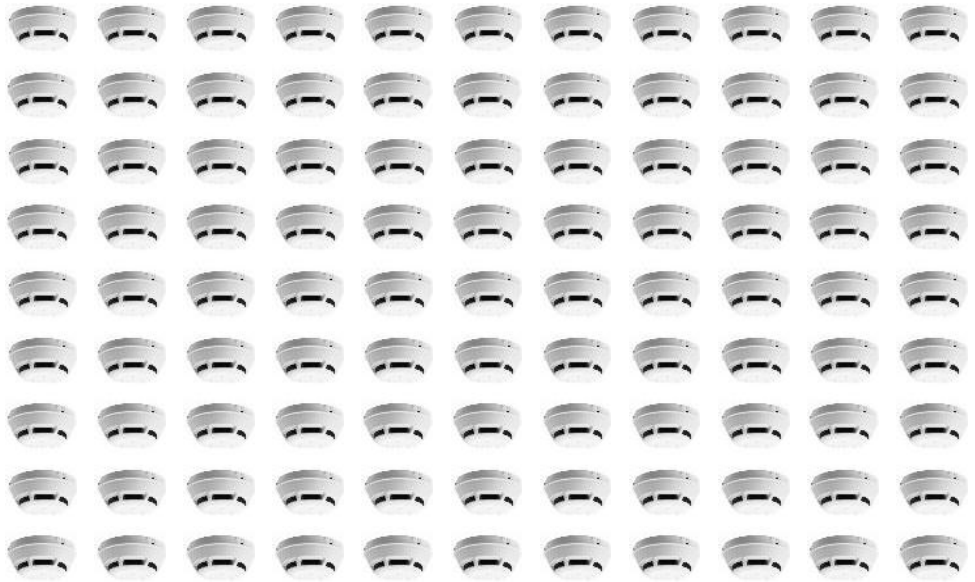
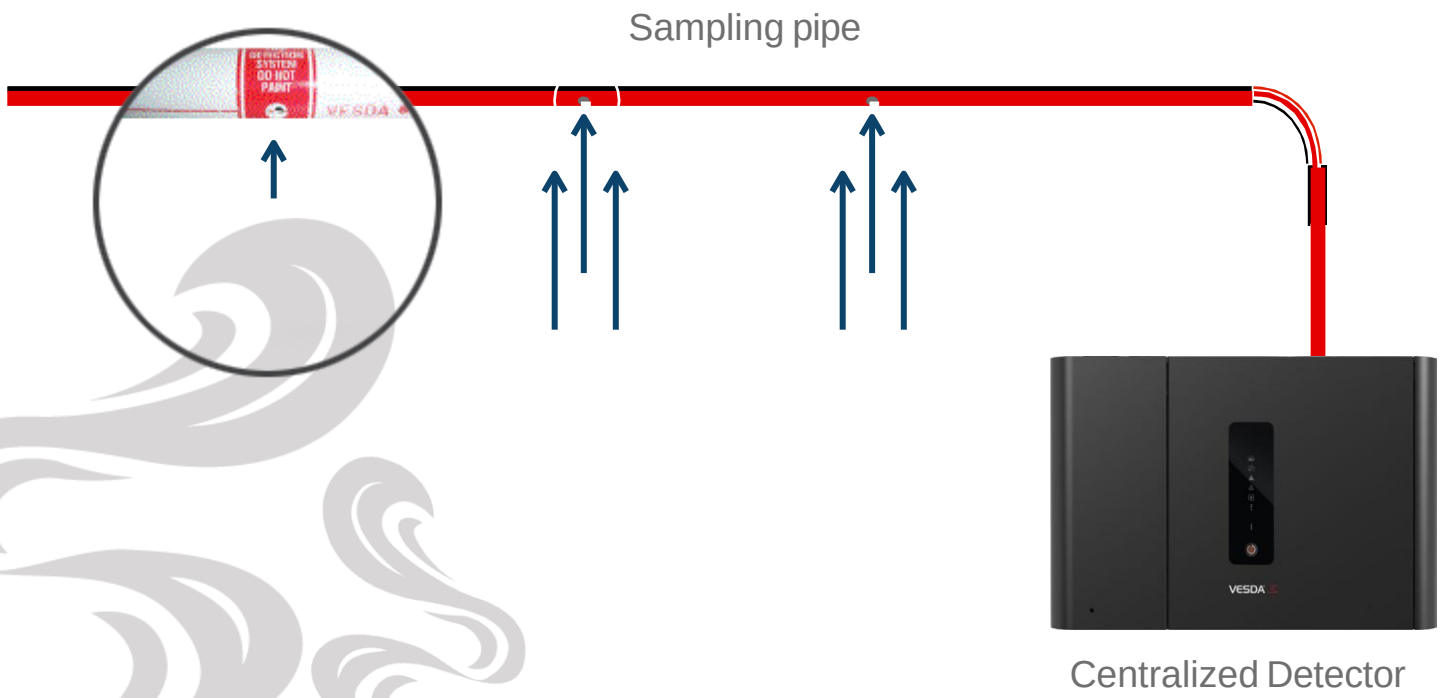


Benefits of ASD

- ASD actively draws air samples to a central detector



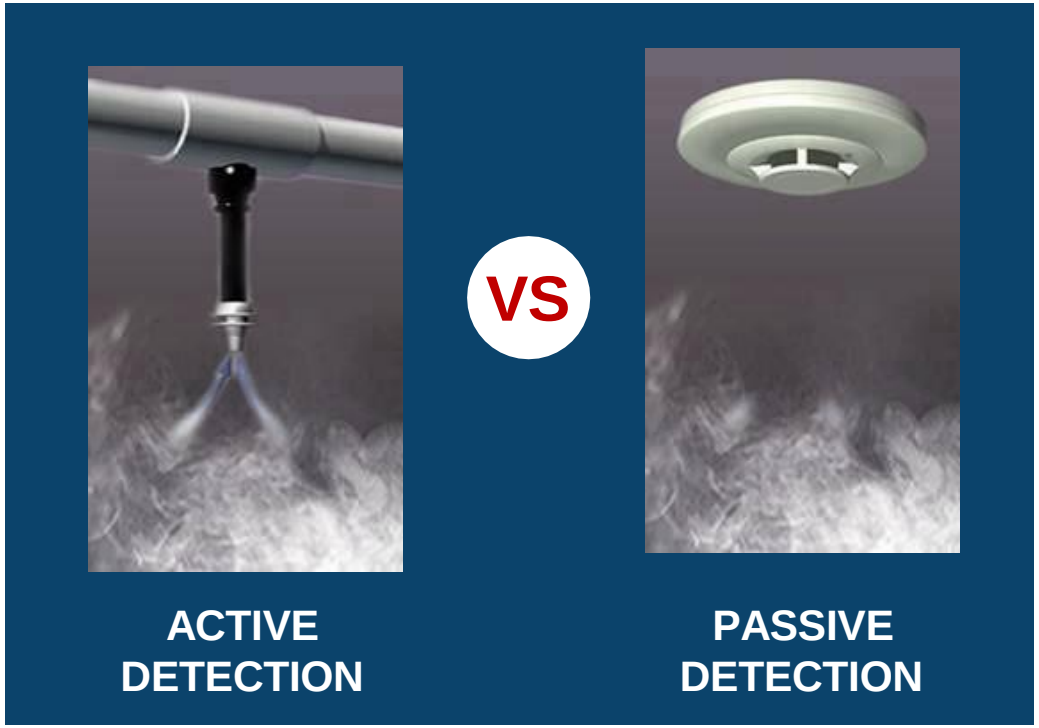
Active vs. Passive Detection

VESDA (Active Detection)

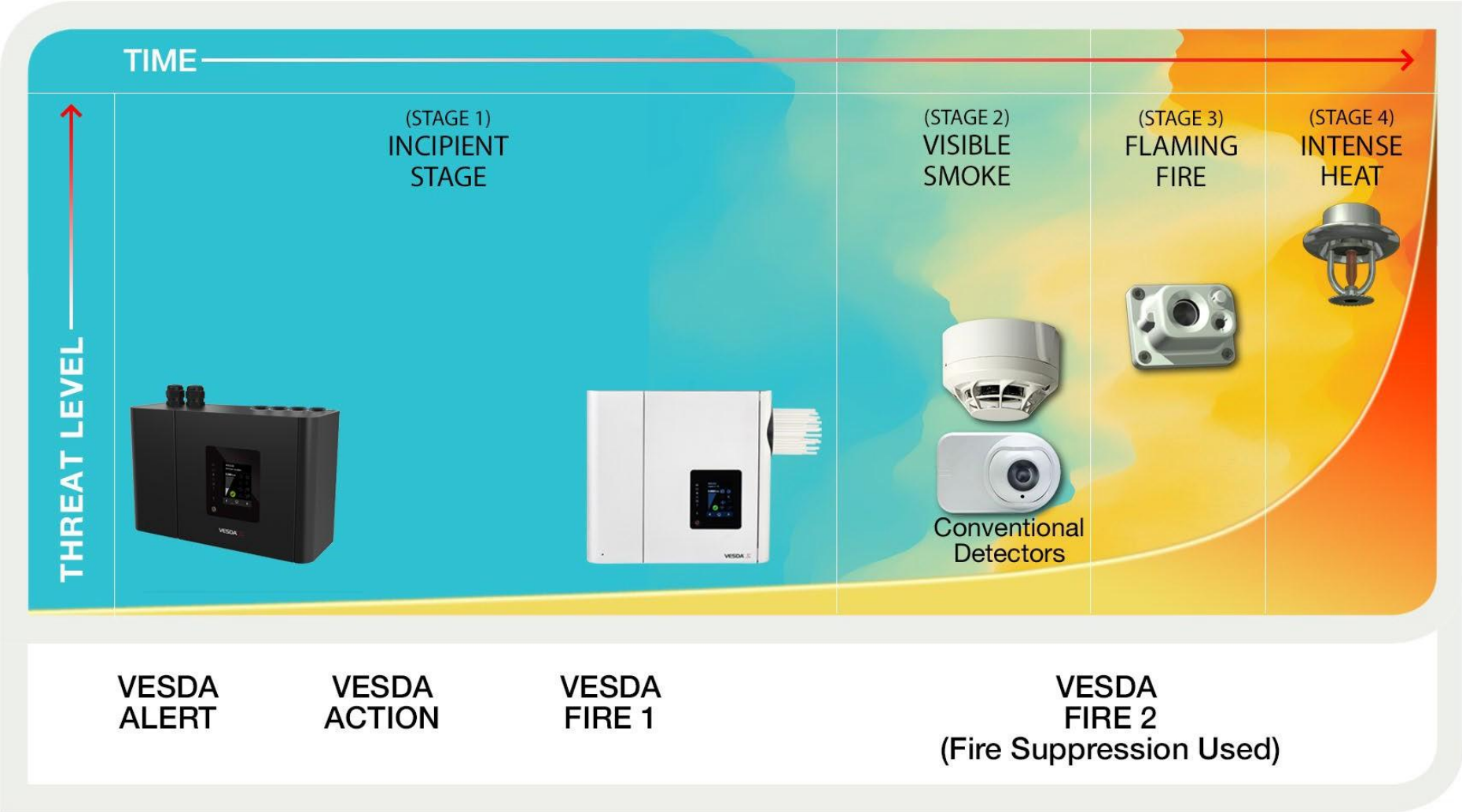
- Functions effectively in a wide range of environments from high airflow to still air

Spot and Beam (Passive Detection)

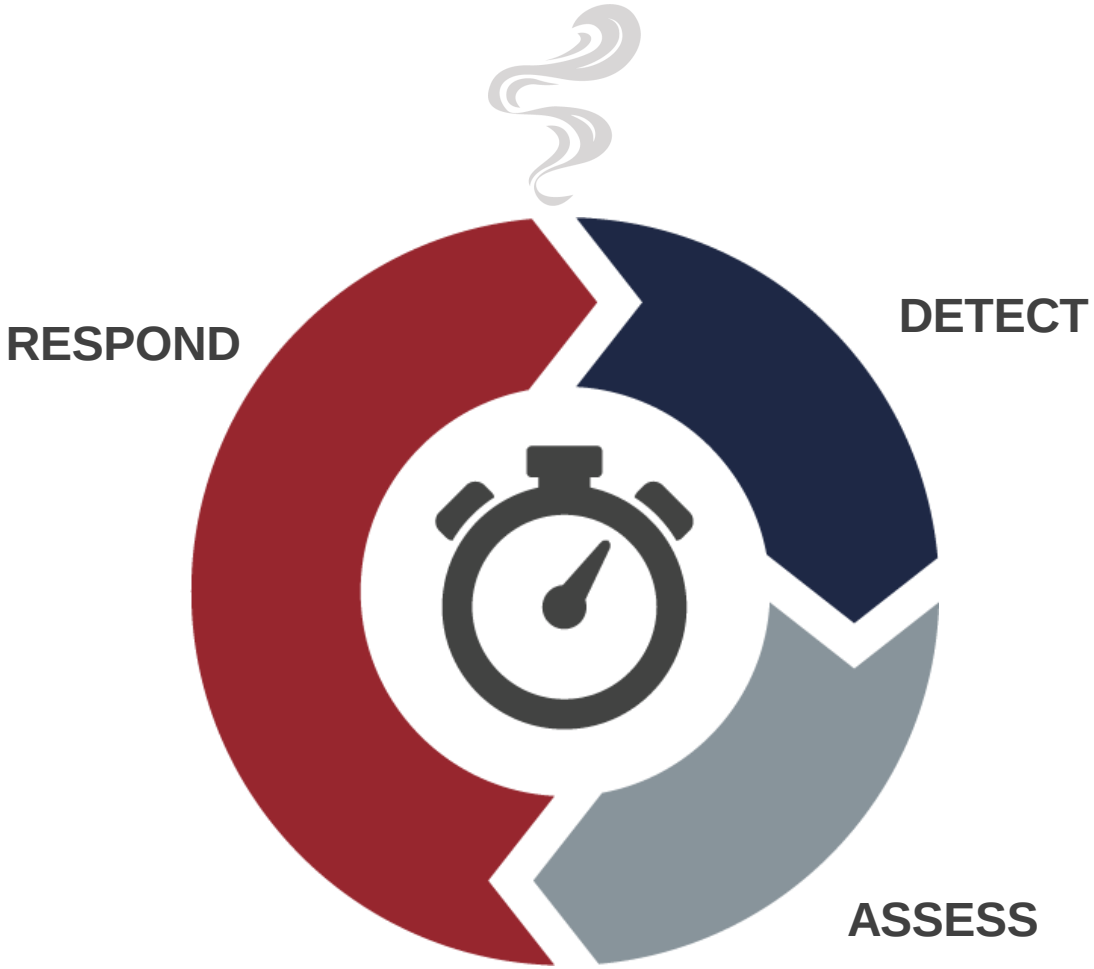
- Detectors rely on thermal lift to deliver smoke to detection chamber



Fire Threat Progression



Fire & Smoke Early Warning Detection



Early detection leaves maximum time for assessment & control

“In the unlikely event that a fire prevails, there is time to respond appropriately”

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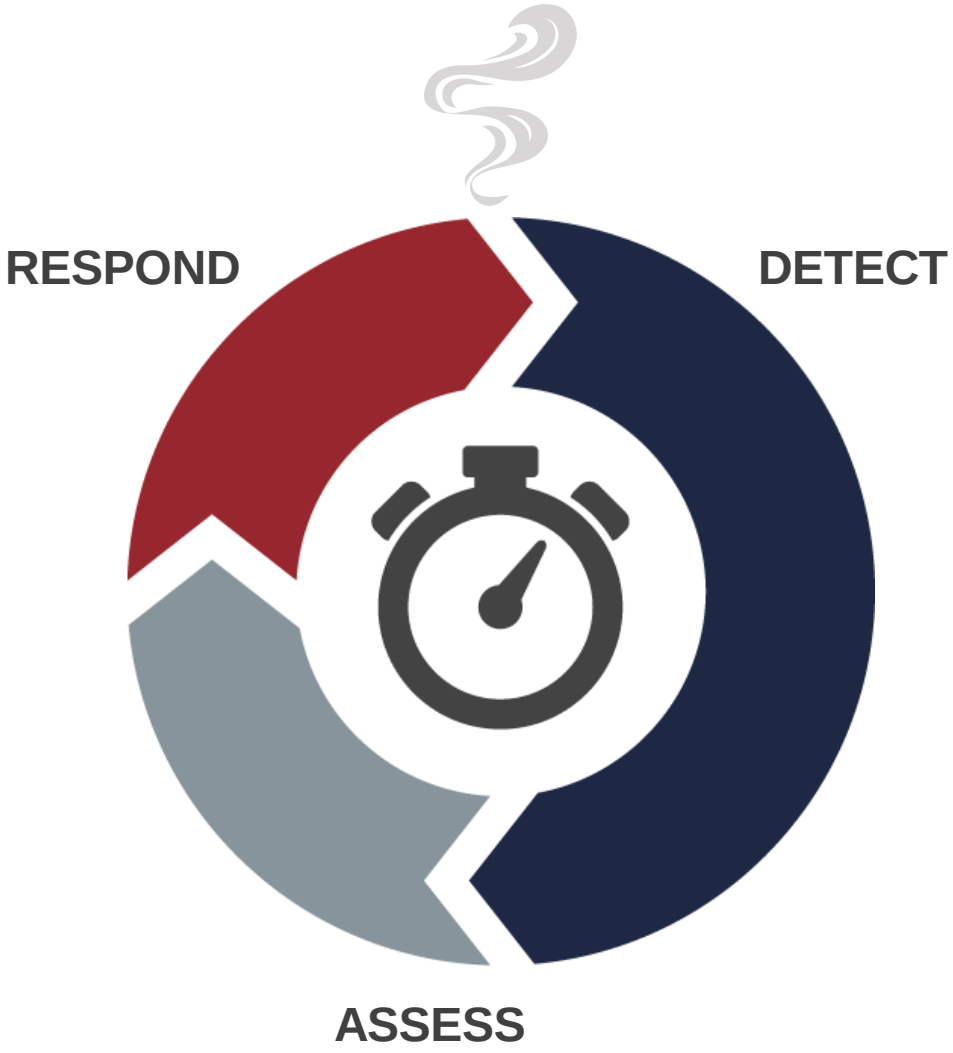
Fire & Smoke Conventional Detection



Late detection leaves minimal time to assess and control the fire

Fixed Sensitivity – The Benefits

- ✓The calibration of the unit is factory set
- ✓Fire thresholds are configured by the engineer according to local codes, standards and application requirements
- ✓External pollution can be compensated for by utilising and additional VESDA detector as a reference detector

- ×Relative obscuration means that unit is constantly changing its fire thresholds
- ×This could lead to parameter changes due to an incipient fire developing
- ×Detector performance can be affected by degradation of the optical surfaces by smoke or dust

- ✓FIXED SENSIVITY has to be preferable!

Widest Sensitivity Range

- VESDA provides fire detection solutions for a diverse range of environments

Clean Rooms

Offices

Heavy Industry

VESDA Solutions/ Main Applications

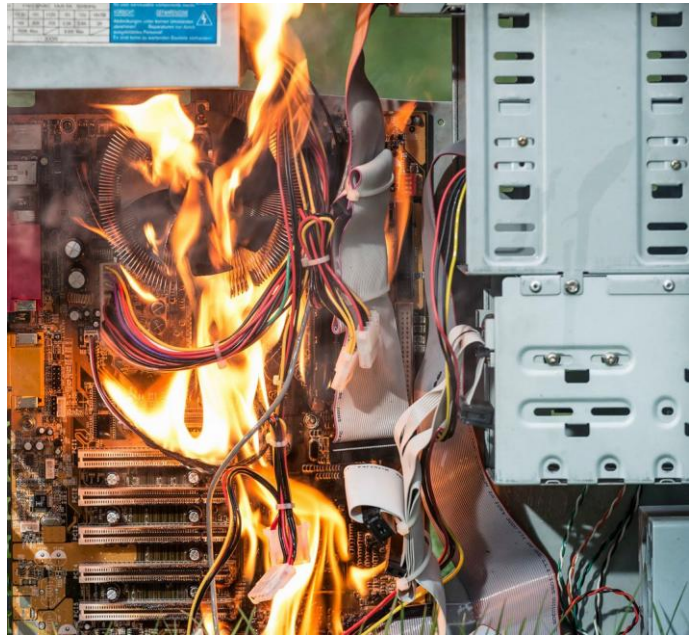
Where, When and why to use ASD

7 Reasons to Use the Xtralis Solution for Fire Prevention

1. Business continuity is paramount
2. Smoke is difficult to detect
3. Maintenance access is difficult
4. Unobtrusive detection is required
5. Evacuation is a challenge
6. Environmental conditions are difficult
7. Suppression systems are present

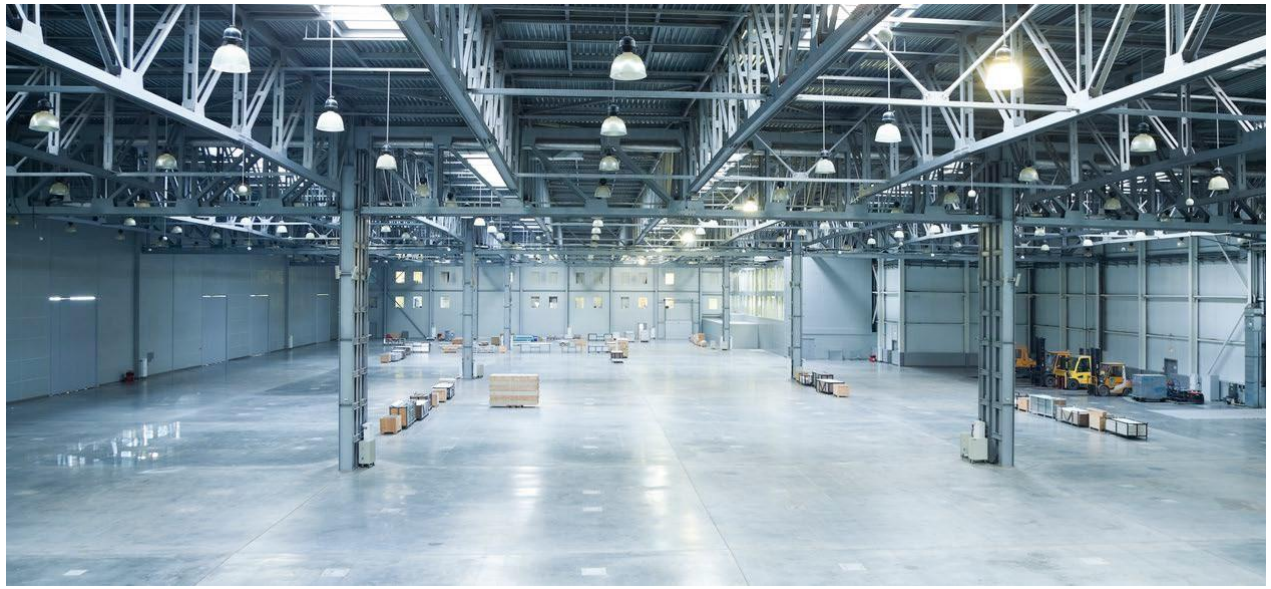
1 When Business Continuity is Paramount

- When fire is a major threat to lives and business
- Very early warning ensures early interventions



2 When Smoke is Difficult to Detect

- Smoke is diluted by the high air movement of air conditioning systems
- Smoke is diluted and stratifies into layers in spaces with high ceilings & large volumes



3 When Maintenance Access is Difficult

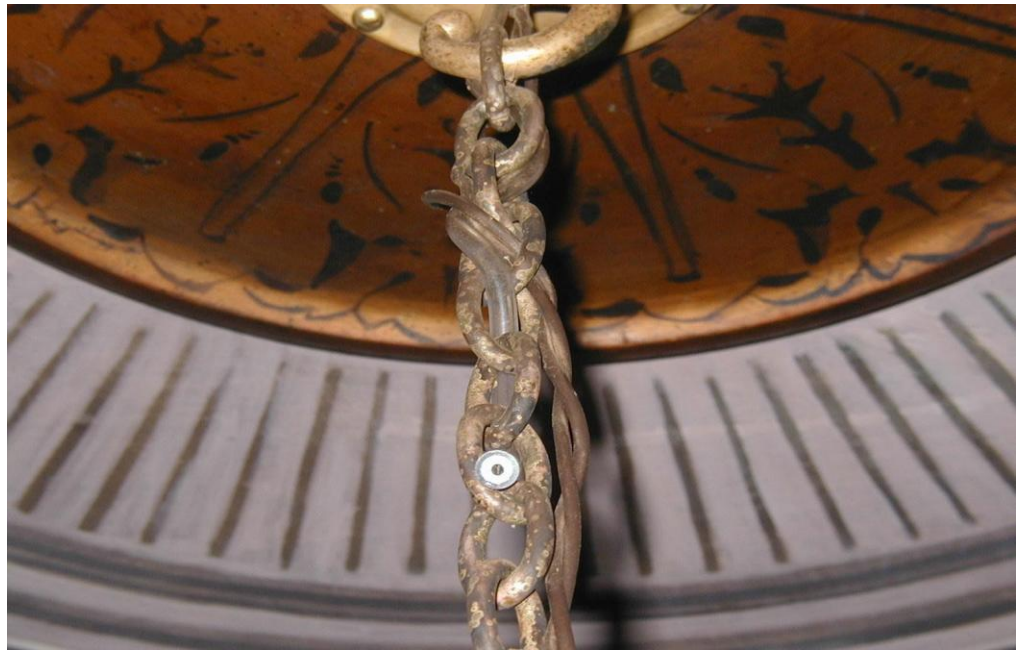
Servicing Smoke Detectors Installed:

- On high ceilings
- In roof spaces or under floors
- Above equipment racks
- Above production areas
- Inside ducts
- In elevator shafts

… is difficult!

4 When Unobtrusive Detection is Required

- Cathedrals
- Museums
- Modern architecture
- Prisons



Application Drivers – Vandalism

- Where damage to conventional systems is a problem
- Sampling network used in the return air system
- Detector located in a centralized safe area
- Safe and easy to service/maintain
- Typical installations
  - Prisons
  - Changing rooms
  - Any public areas

5 When Evacuation is a Challenge

ASD provides very early warning to have maximum time for evacuation

- Where large numbers of people are concentrated in one area
- Where the exit paths are restricted
- When occupants need extra help

Railway stations

Airports

Stadiums

Hospitals

6 When Environmental Conditions are Difficult

Aggressive environments with high levels of pollution or extreme temperature conditions can be effectively protected with VESDA

- Cold storage facilities
- Production areas
- Paper mills
- Industrial plants
- Underground tunnels
- Mines

7 When Suppression Systems are Present

Early warning gives time to investigate and avoid unnecessary suppression release

Suppression Actuation

Avoid unnecessary suppression release

- With multiple levels of alarm and very early warning, you can detect smoke at its incipient stage
- Providing valuable time to avoid the costly use of suppression systems

Comparison Between ASD and Spot-Type Detectors

Aspirating Smoke Detectors	Spot-Type Detectors
Sensitivity Range 0.0003 – 6.25% per ft. (0.001 – 20% per meter)	Sensitivity Range 1.0 – 3.5% per ft. (3.28 – 11.5% per meter)
1000 X more sensitive	1000 x less sensitive
If some holes get clogged a fault is output (adjustable)	No method to determine that the spot is active (cannot tell if the protective cover is on)
Absolute smoke measurement – does NOT drift compensate	Will drift-compensate when dirty – becoming less sensitive
Easy to retrofit with GAS detection	Required additional GAS detectors