



Power Generation

ASD 535 Application Report



For your safety

■ Application Drivers

- Early Detection
- Serviceability
- Stratification
- Dilution
- Obstruction
- Congestion
- Pollution
- Serviceability

■ Power Generation

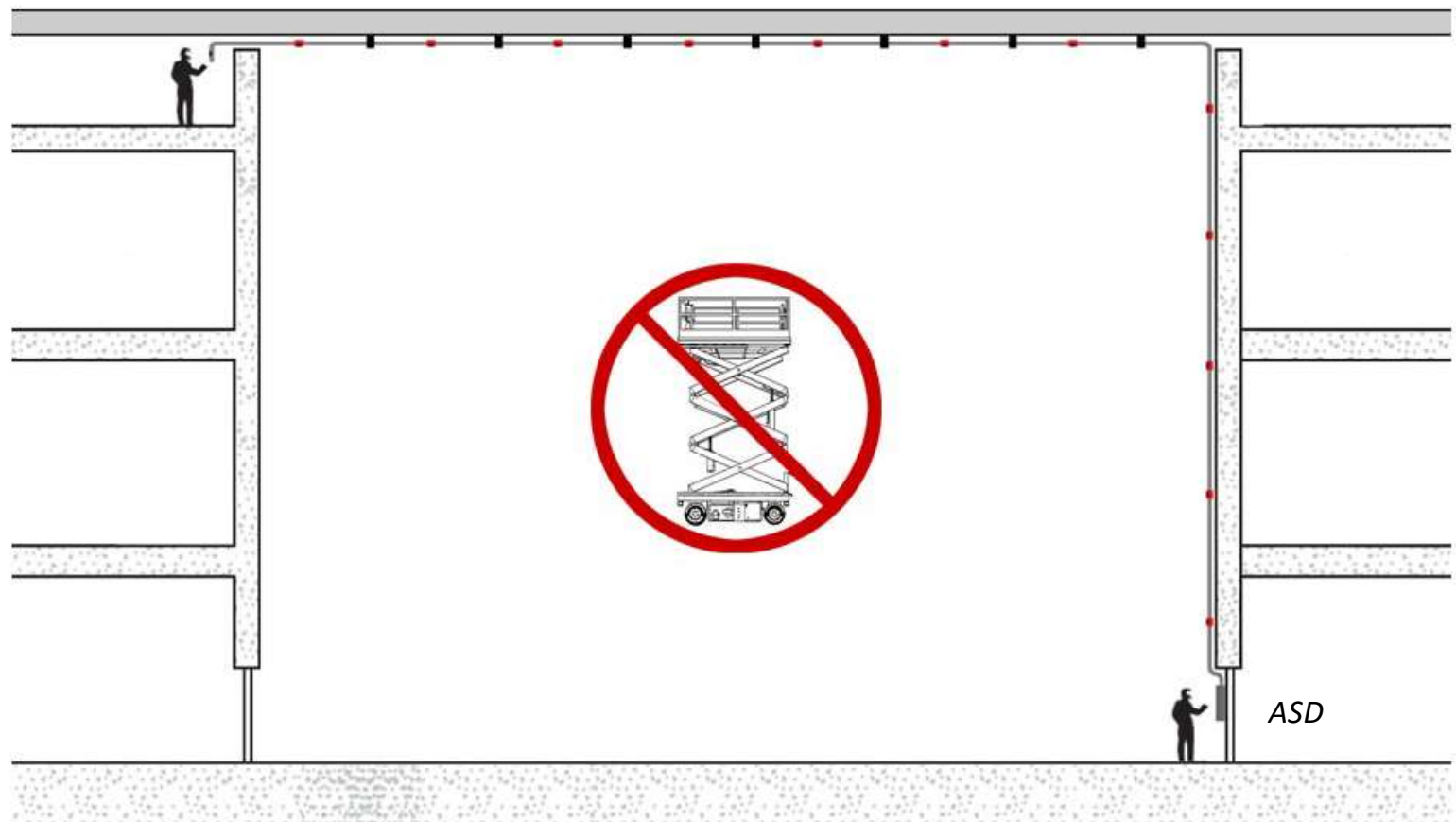
- Risks, Cause & Damage
- Challenges
- Application Scenarios
- Benefits

Attractive ROI in Maintenance

- Reduced number of test points
- Test points are easy accessible

Test points can be allocated where conveniently accessible

Only the most distant point needs to be tested



ROI on Serviceability

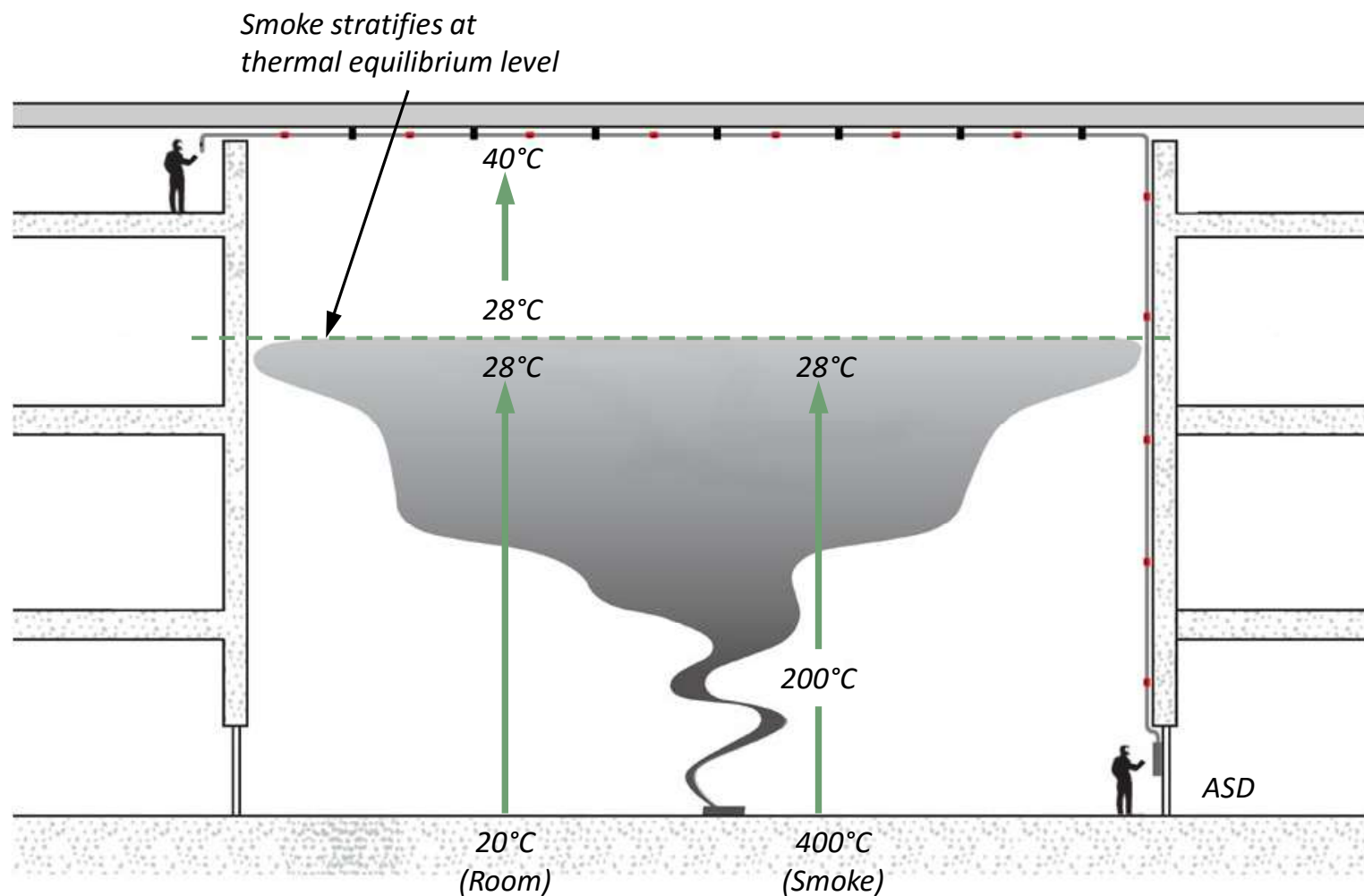
Spot detectors

- 500 detectors tested one by one
- 15 minutes per detector
- Rate: EUR 100 per hour
- Total cost: **EUR 12'500**

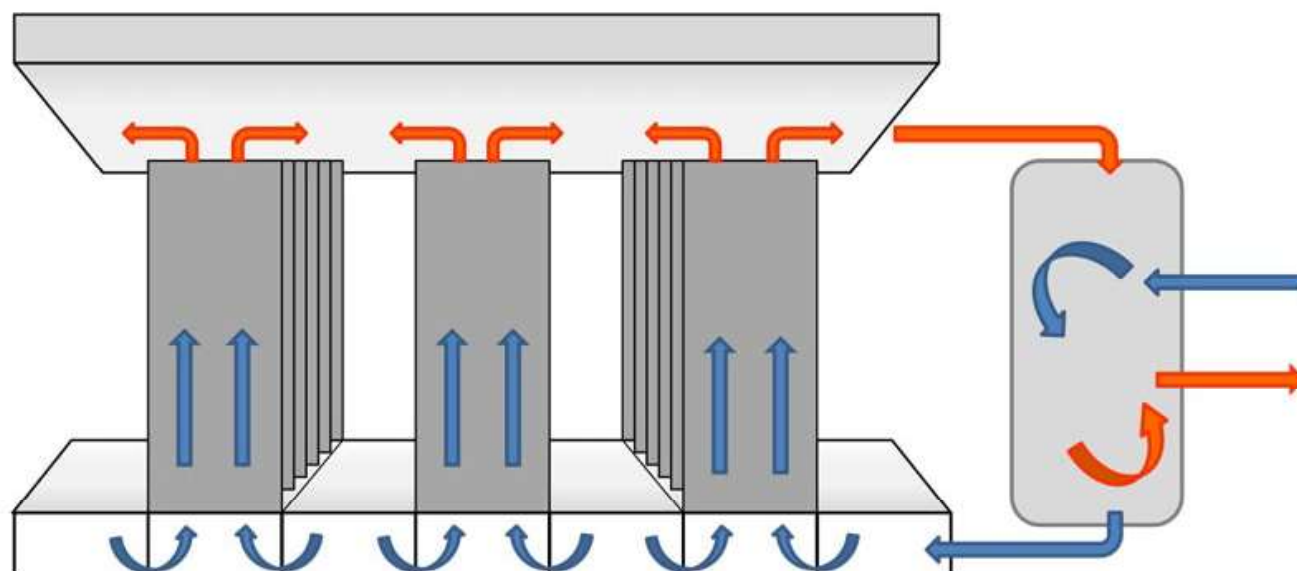
Aspirating system

- 500 sampling points but only
 - 18 branches / test points
- 60 minutes per test point
- Rate: EUR 100 per hour
- Total cost: **EUR 1'800**

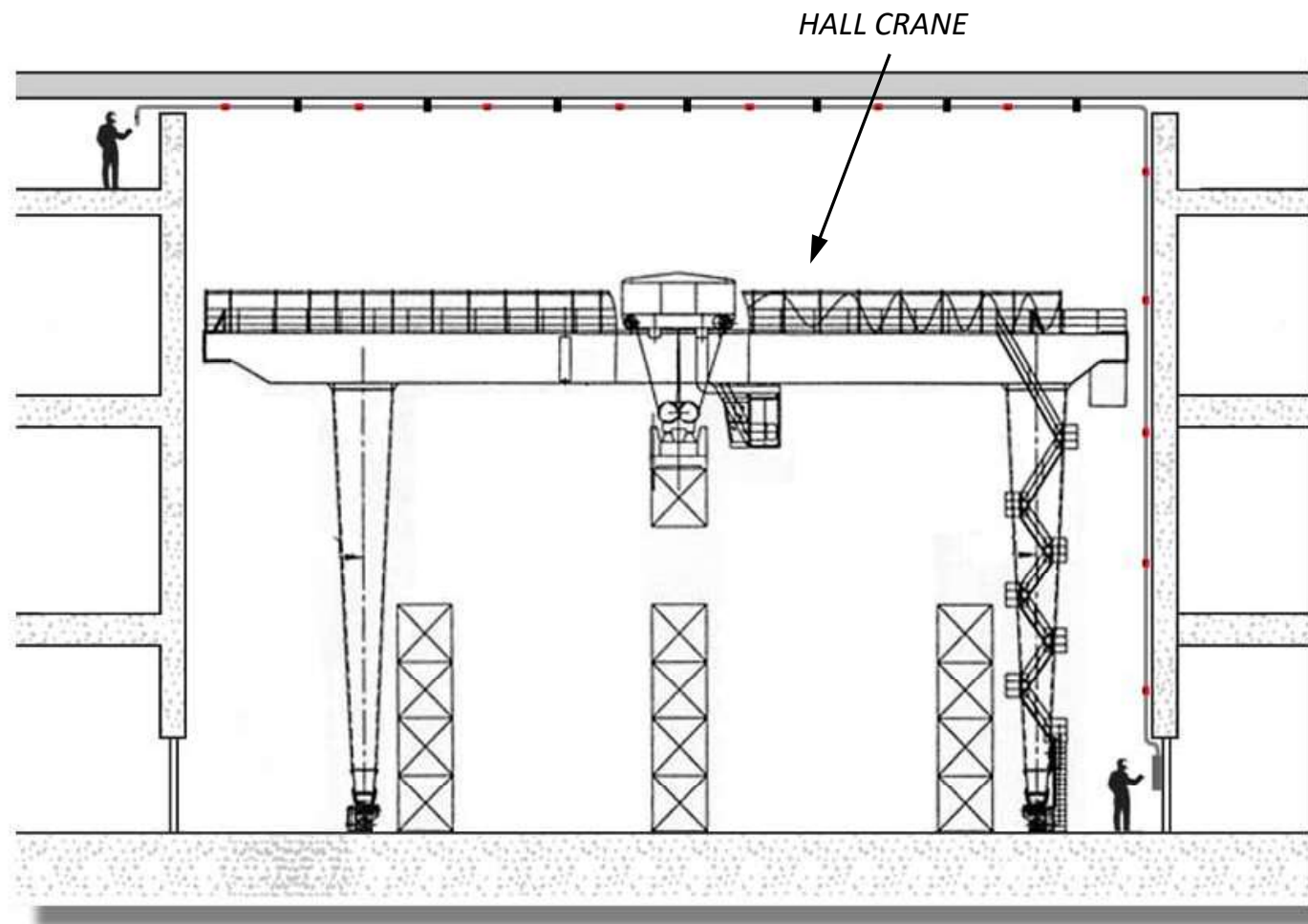
The smaller a fire the lower the level of stratification.



Rapid air circulation with fresh air added will dilute the smoke to a level way below the alarm level of a point detector.



Cranes or moving forklifts make use of beam detectors impossible.



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Congested spaces make use of point detectors impossible.



Dusty environment

- Performance
 - Nuisance alarms
 - Short life cycle



WOOD PROCESSING PLANT

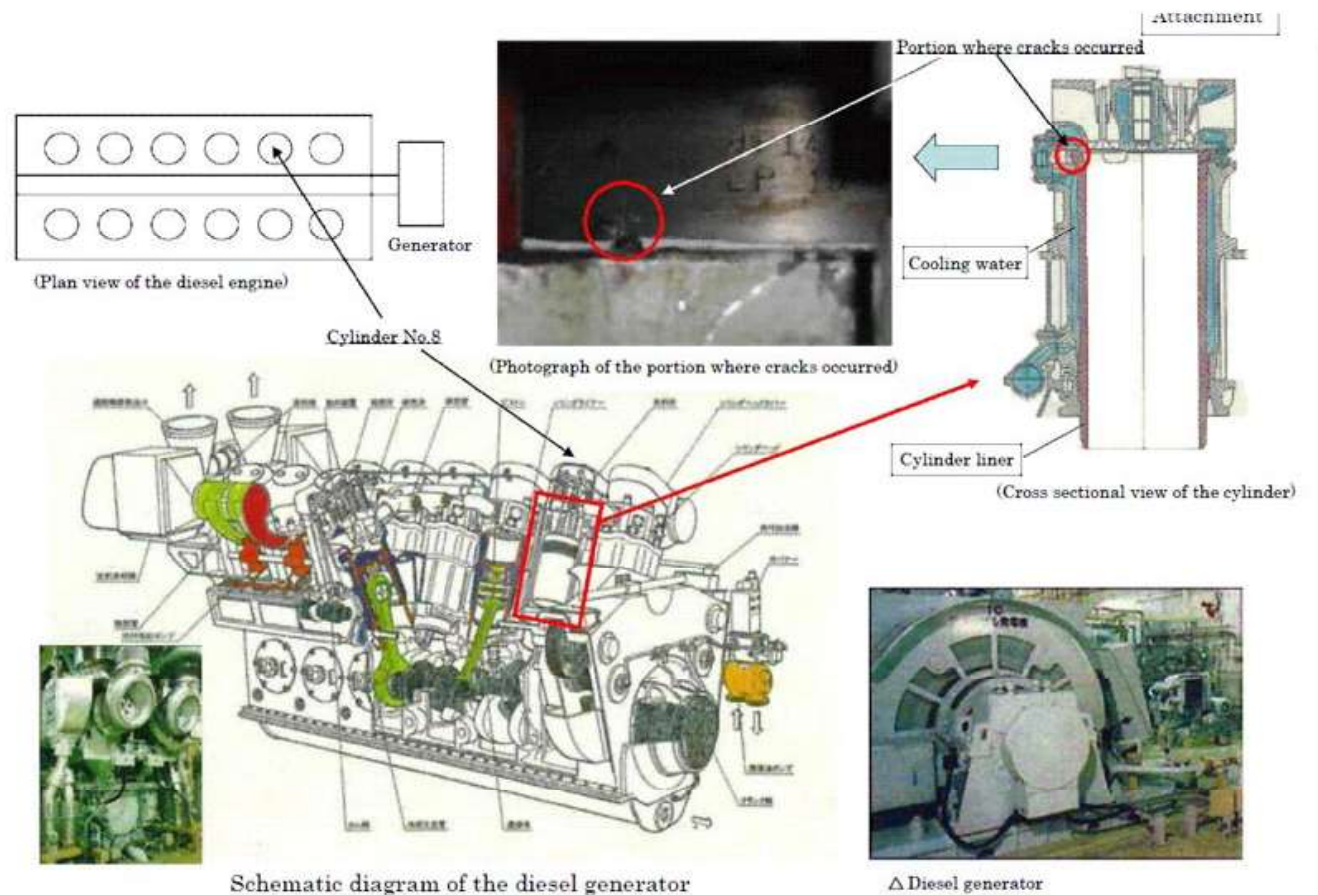
The leading cause of fires:

- High Energy Arcing Faults (HEAF) in high voltage equipment such as circuit breakers and switchgears
- Faults in electrical equipment
- Faults in mechanical equipment
- Ignition of fuel or combustible liquids
- Human error causing overheated parts



Emergency Equipment

Exhaust gas (smoke) produced because of flaws (cracks) in the cylinder liner of diesel generators.



Large Open Spaces

- Stratification
- Serviceability



Dusty large open space

- Performance
 - Obstruction by moving crane
 - Nuisance alarms caused by dust
 - Stratification of smoke
- Serviceability
 - Short lifespan of point detectors



Furnace of a coal power station

Turbine Monitoring

- Early warning



Shutdown of a plant due to a generator fire incident

Control Rooms

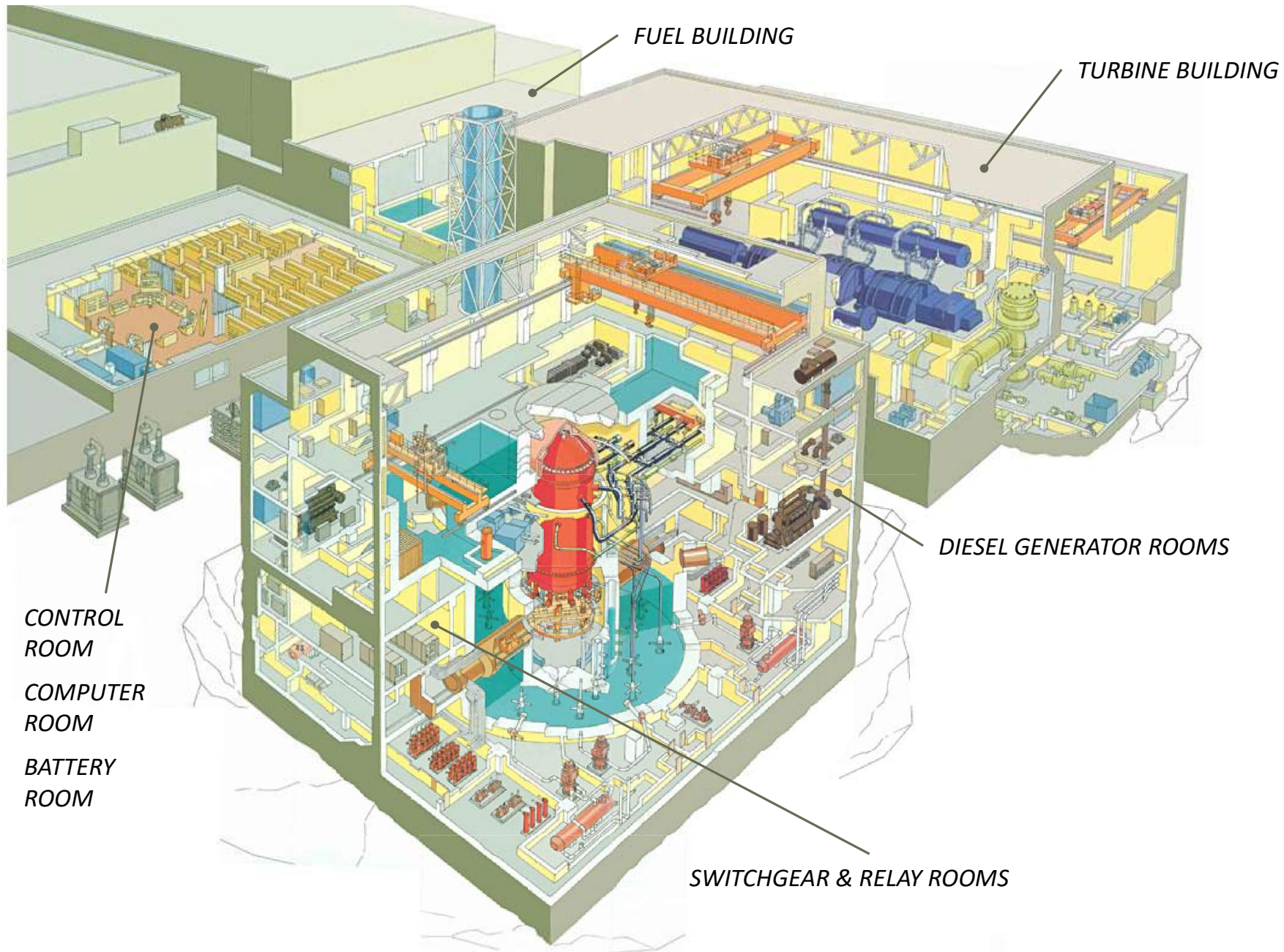
- Get alerted of a potential fire thread as early as possible
 - Verification
 - Corrective actions



Switch Rooms

- Early Warning to gain crucial time for:
 - Verification
 - Timely shutdown







Control Room and Computer Room

Typical challenges are the air circulation and associated dilution of smoke. Very early warning requires that the sampling points are placed near the possible source of ignition:



- At the ceiling and in the ceiling voids
- In the floor void
- At the return air grille of air handling units
- Inside or above computer equipment cabinets
- Inside or above containments or collars
- Inside or above power distribution cabinets





Emergency Power Installations

Diesel Generators: Early warning requires that the sampling points are placed near the possible source of ignition:

- Near the diesel generators
- Inside or above switching cabinets
- At the ceiling

Battery Rooms: Because of the hydrogen generated, battery rooms need to be vented at a minimum rate of two air changes per hour. Challenges are the fresh air added and the related dilution of smoke. The sampling points are typically placed:

- Near the air outlet grille
- At the ceiling



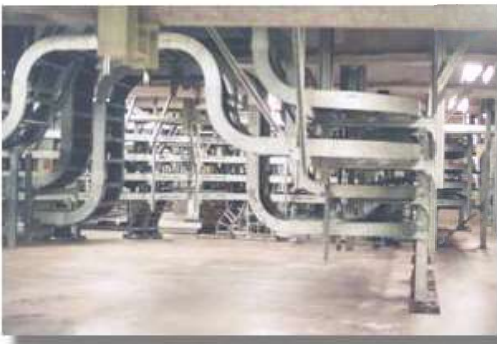
Generator Building

- At the ceiling and the side of the generator hall
- Near the generators
- Above or within electrical equipment / cabinets



Fuel Building

- At the ceiling and the side of the hall
- Above or within electrical equipment / cabinets



Cable Spreading Installations

- Above cable trays
- Along the ceiling

Claim	Benefit	Proof
Reliable detection despite stratification and dilution	<ul style="list-style-type: none">• Detects smoke at different levels• Compensating for air circulation by actively sampling the air• Adapts the sensitivity to the environmental conditions	High aspiration power combined with high detection sensitivity
Most efficiently serviceable system	<ul style="list-style-type: none">• No need to access restricted areas for doing maintenance• High returns during maintenance	<ul style="list-style-type: none">• Unit and test points are both placed outside restricted areas• The low number and better accessibility of the test points results in lower maintenance cost
Allows for a staged approach	<ul style="list-style-type: none">• Early warning without the risk of unwanted extinguishing	Four alarm levels allowing for Alert, Action, Alarm and Extinguishing Release

Thank you for your attention!



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