



Data Centers

ASD 535 Application Report

■ Application Drivers

- Early Detection
- Dilution
- Congestion
- Serviceability
- Stratification

■ Risks, Cause & Damage

■ Challenges

■ Application Scenarios

■ Regulations & Codes

■ Benefits

Gain extra time for a staged response:

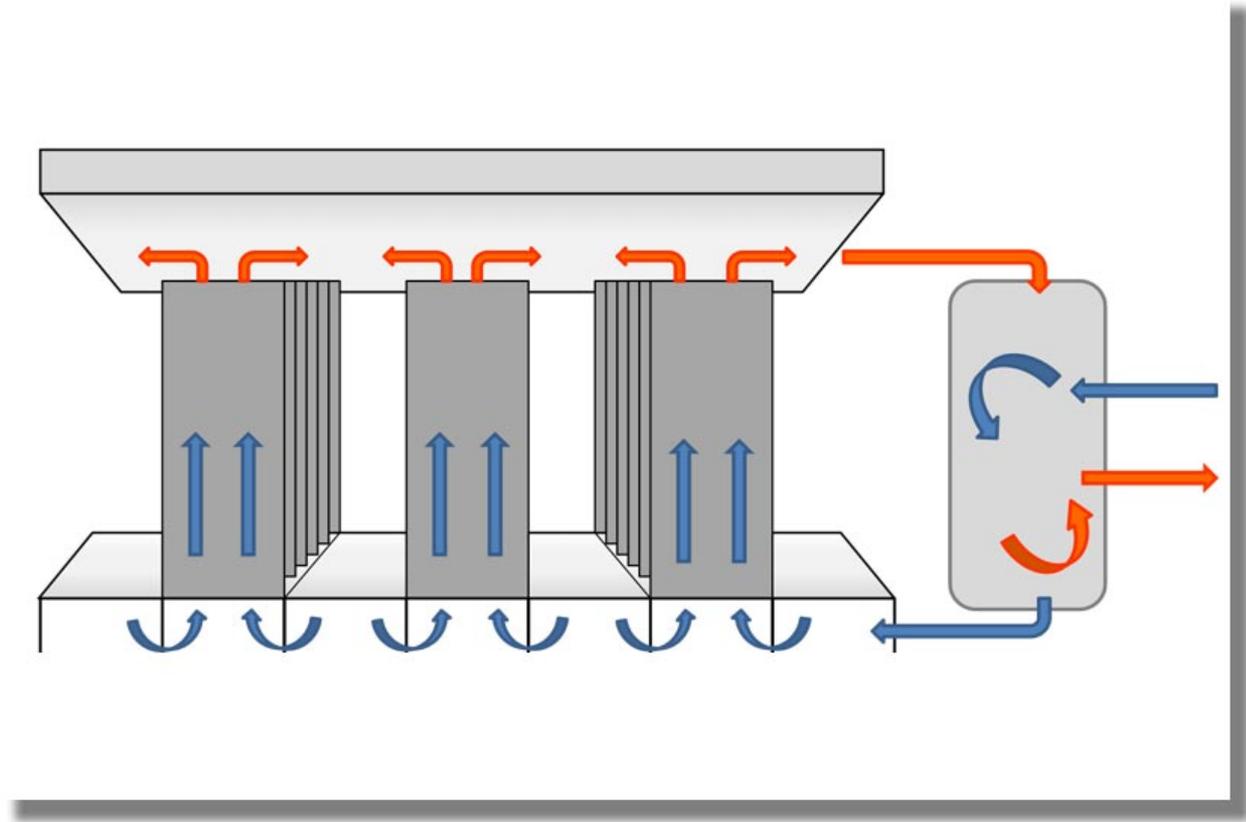
- **Alert:** Verify the alarm condition
- **Action:** Initiate precautions action
 - **Data relocation** of a data center
 - **Call emergency team**
- **Fire 1:** Initiate fire alarm to building
- **Evacuate the scene**
 - Activate fire doors / dampers
- **Fire 2:** Initiate suppression



Buying more time for evacuation can be priceless in saving lives.



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



Congested spaces make use of point detectors impossible or expensive for maintenance.

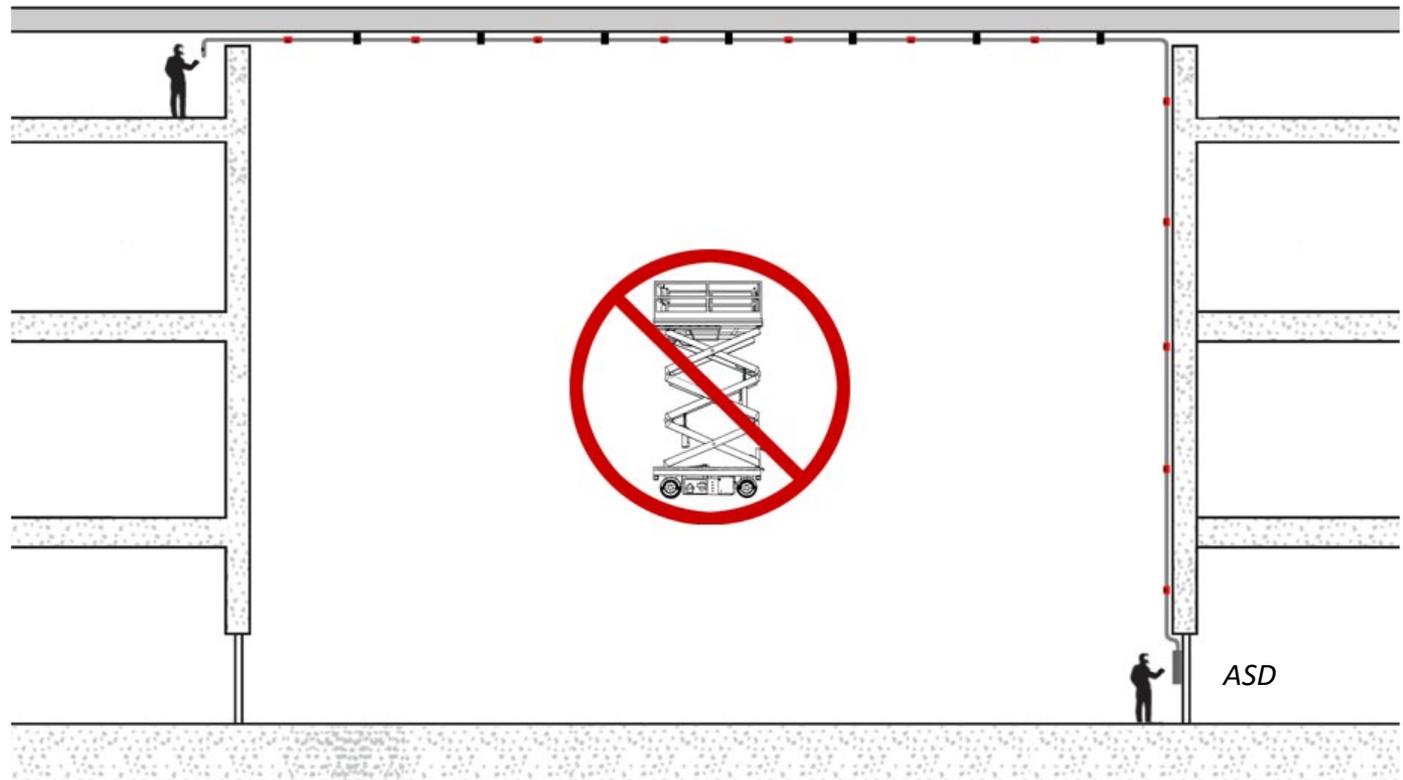


Attractive ROI in Maintenance

- 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



Attractive ROI in Maintenance

Spot detectors

- 510 detectors
 - tested one by one
- 15 minutes per detector
- Rate: EUR 50 per hour
- Total cost: **EUR 6'375**

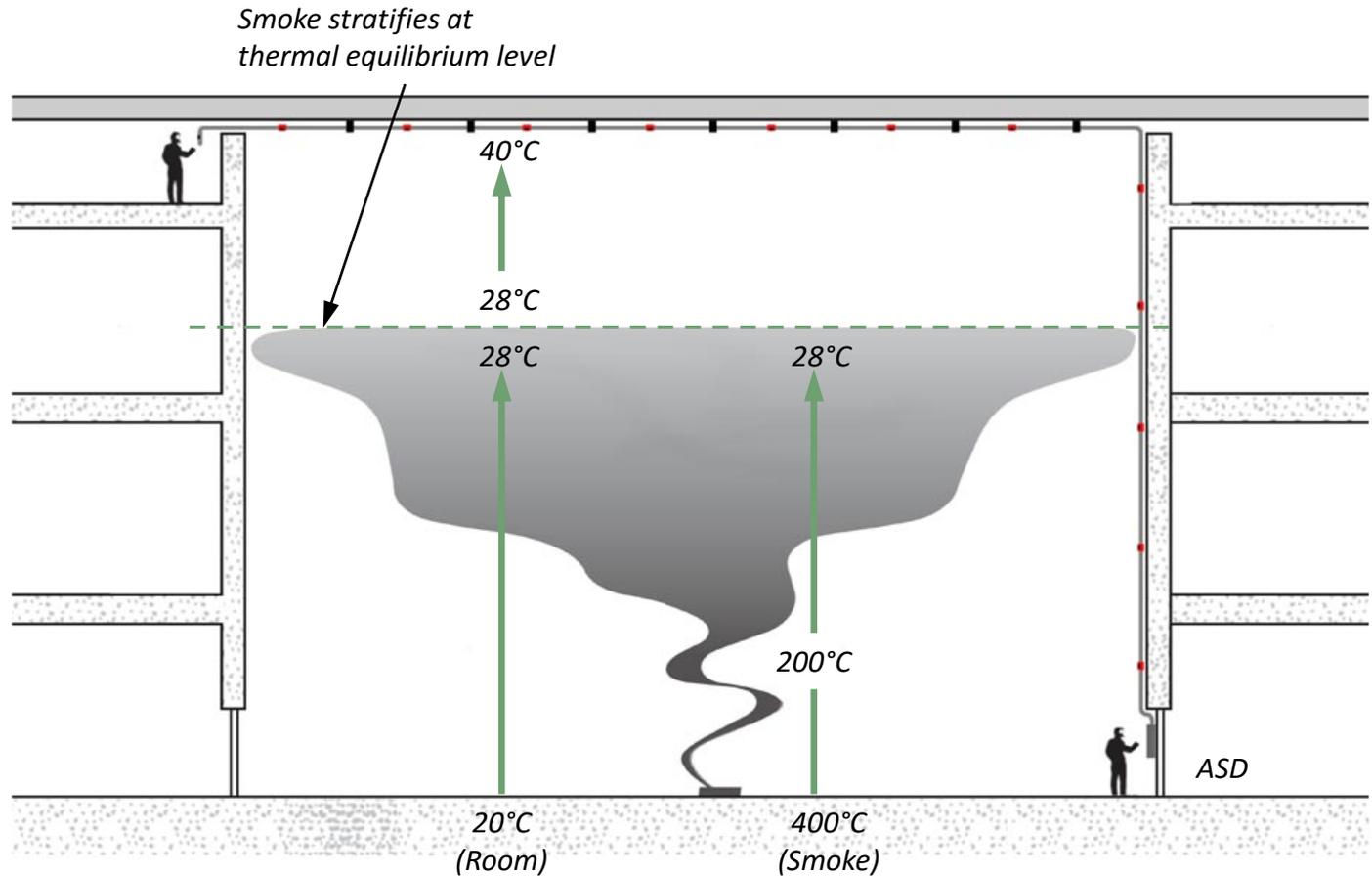
Aspirating system

- 510 sampling points but only
 - 30 test points (branches)
- 15 minutes per test point
- Rate: EUR 50 per hour
- Total cost: **EUR 375**

Repeated* Savings: EUR 6'375 – EUR 375 = **EUR 6'000**

*Not only at commissioning, but also at each and every maintenance testing.

The smaller a fire the lower the level of stratification.



- 93 percent of companies that suffer a significant data loss are out of business within five years (U.S. Bureau of Labor)
- 43 percent of U.S. businesses never reopen after a disaster, and 29 percent (more) close within two years (University of Wisconsin)
- Two out of five companies that experience a catastrophe or an extended system outage never resume operations, and of those that do, one third goes out of business within two years (Gartner Group)

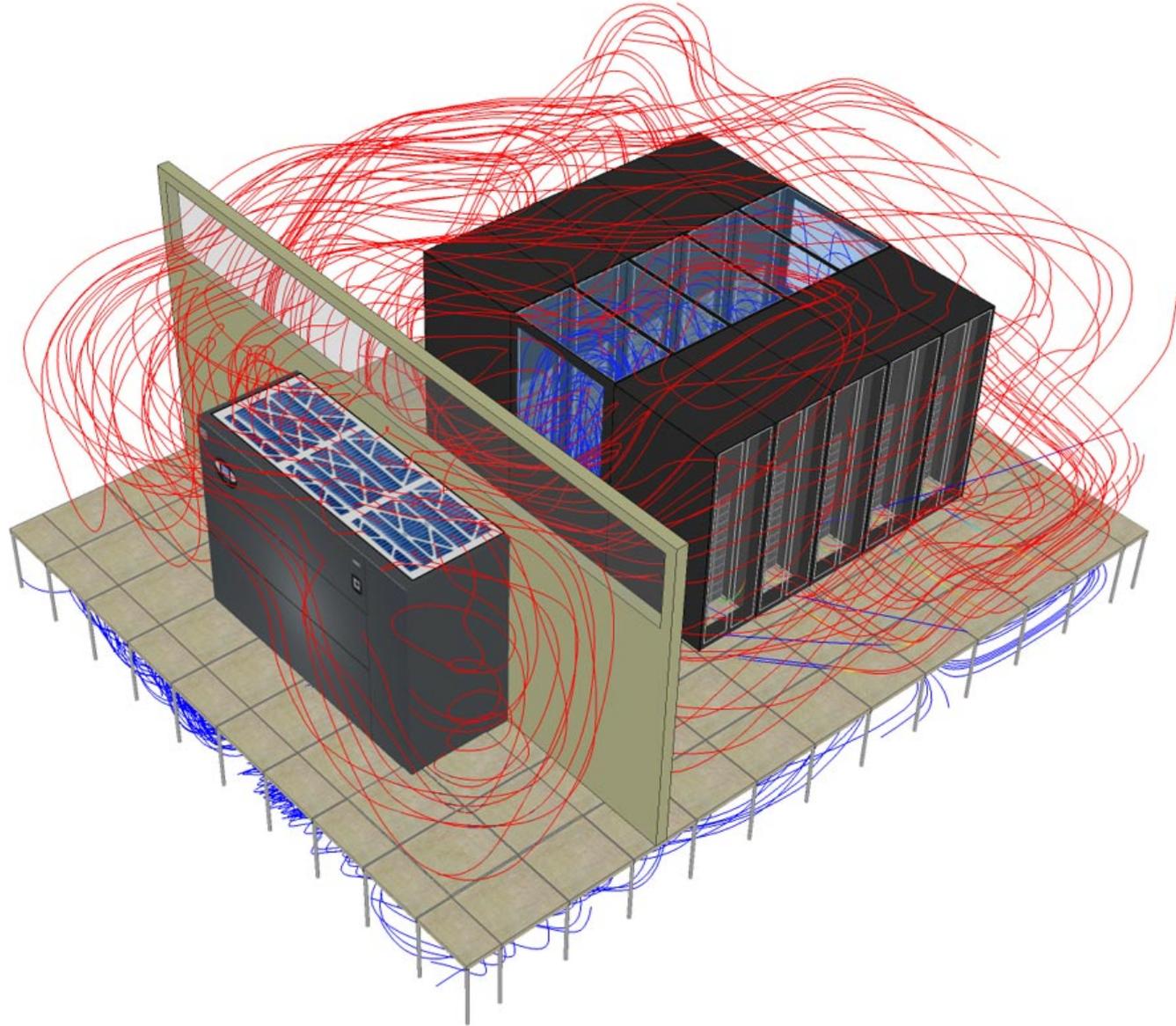
Protecting mission critical assets is not simply for protecting the building or equipment – it is for ***protecting the business***.

The leading cause of fires involves electrical distribution equipment (e.g. wiring, cables, cord, plugs, outlets, overcurrent protection devices), but not electronic equipment.

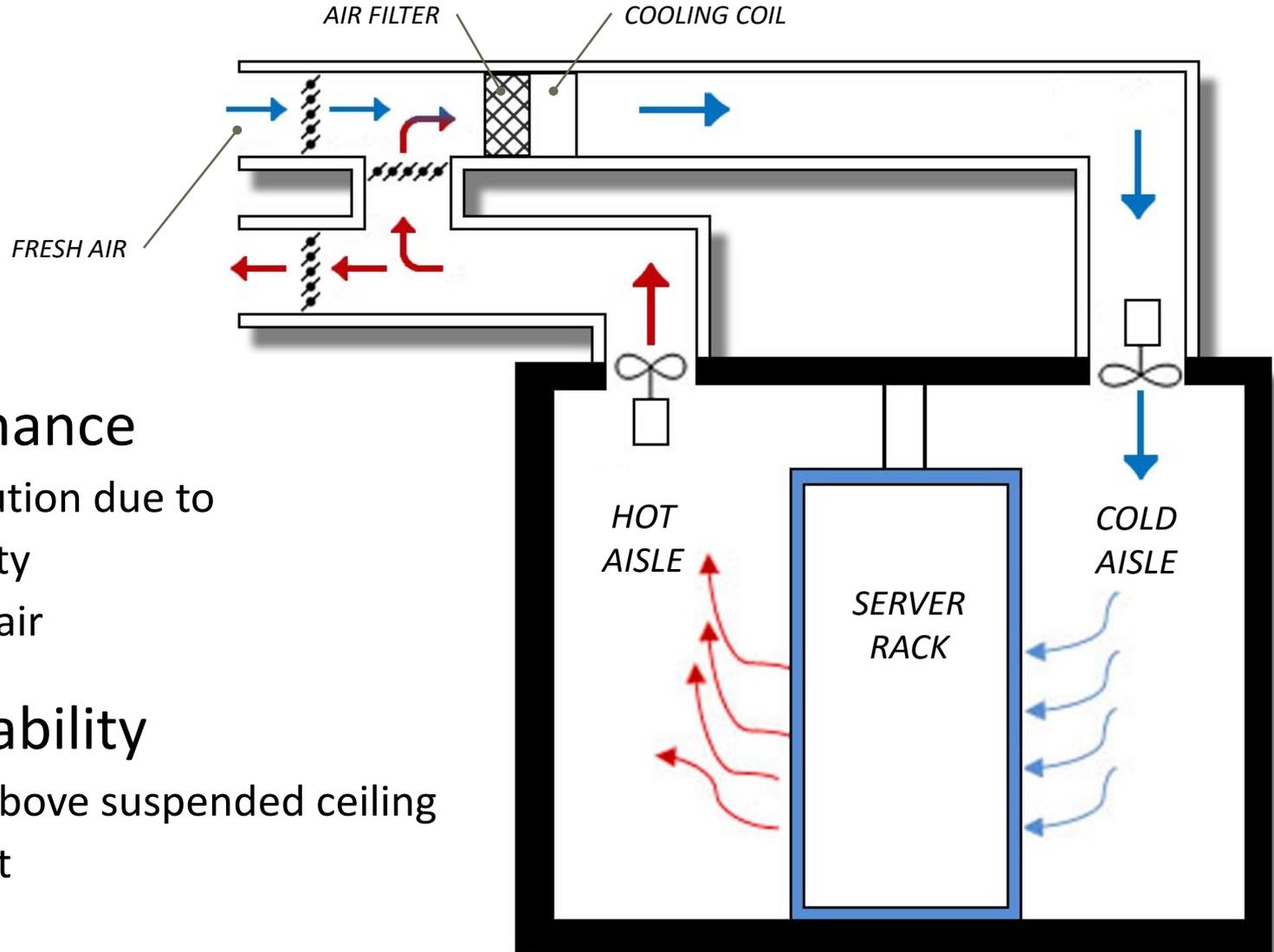
Primary **damage to electronic equipment** is caused by smoke that contains ***corrosive chloride*** and ***sulfur*** combustion by-products.

Airflow Pattern

- Performance due to Smoke Dilution



Circulation Dynamics



■ Performance

Smoke Dilution due to

- Velocity
- Fresh air

■ Serviceability

- Void above suspended ceiling
- In duct

Congested Spaces

- Performance
- Serviceability
 - Difficult access



Hidden / Covered Spaces

- Performance
- Serviceability
 - Difficult access



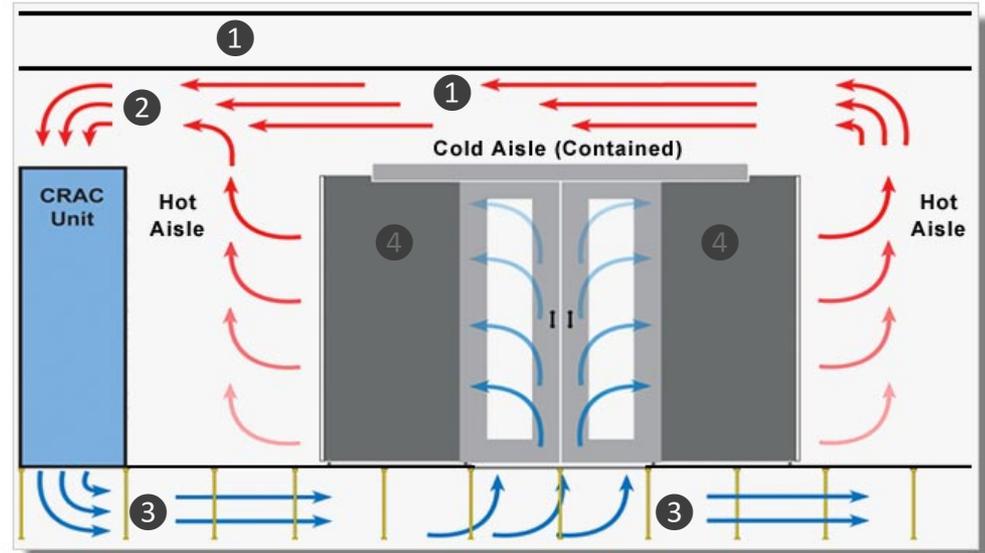
Large Open Spaces

- Stratification
- Serviceability

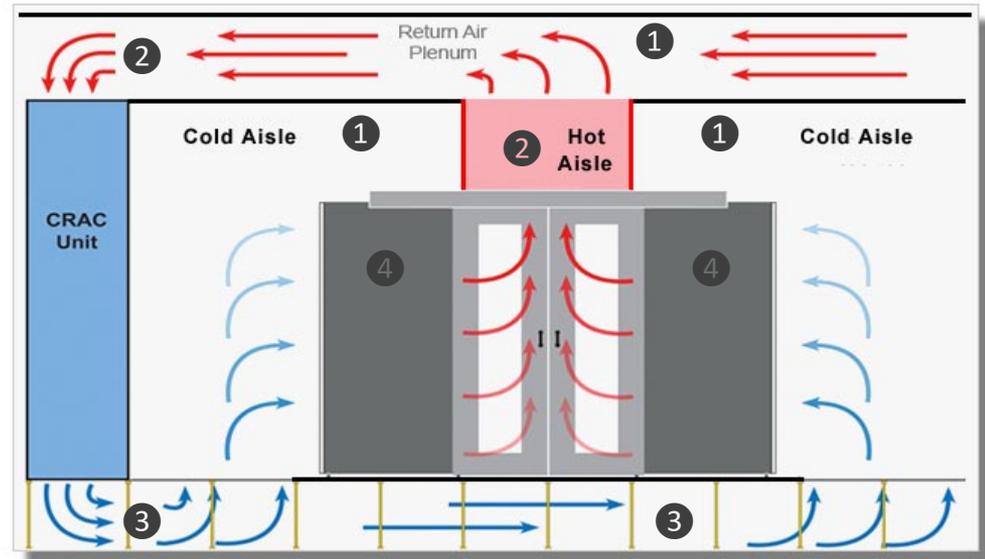


Cold aisle containment system

- 1 Area Monitoring
 - Void above suspended ceiling
 - Below suspended ceiling
- 2 Return Air Monitoring
 - Within hot aisle containment / collar
 - At the CRAC air intake grille
- 3 Supply Air Monitoring
 - At the CRAC air outlet
 - Below the raised floor
- 4 Cabinet Detection
 - On the cabinet
 - Within the cabinet (capillary)



Hot aisle containment system



EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 54-20

June 2006

ICS 13.220.20

English Version

Fire detection and fire alarm systems - Part 20: Aspirating
smoke detectors

Systèmes de détection et d'alarme incendie - Partie 20 :
DéTECTEURS DE FUMÉE PAR ASPIRATION

Brandmeldeanlagen - Teil 20: Ansaugrauchmelder

This European Standard was approved by CEN on 18 May 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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EN 54-20

European Standard for

“Aspirating Smoke Detectors”

This is a standard for assuring

- the **quality** of an ASD equipment
- the **performance criteria** of system

It is the only **product standard** for ASD existing.

There's a separate presentation available covering EN 54-20.



**Code of Practice
for
Design,
Installation, Commissioning
& Maintenance
of
Aspirating Smoke Detector
(ASD) Systems**

| | |
|-------------------|--------------|
| FIA COP for ASD's | June , 2006 |
| Issue 2 | Page 1 of 72 |

FIA Code of Practice

It is the only Code of Practice for ASD application reflecting EN54-20.

It is the only Code getting specific regarding **SENSITIVITY** and **RESPONSE TIME** of an Aspirating System.



US American Codes

Are talking about **Early Warning** or even **Very Early Warning** leaving it up to the engineer what it means in terms of sensitivity.

Consequence: To design an aspirating system according to standards means «according to manufacturer's instruction».

| Claim | Benefit | Proof |
|---|---|---|
| Most reliable and very early detection | <ul style="list-style-type: none">• Early or even Very Early Warning in high airflow environment | <ul style="list-style-type: none">• Actively sampling the air• Adjustable sensitivity• Adjustable aspiration power |
| Most efficiently serviceable system | <ul style="list-style-type: none">• High returns during maintenance | Avoiding the need to test every sampling point with smoke has tremendous cost savings, especially in areas of difficult access. |
| Only way to a staged a incident control | <ul style="list-style-type: none">• Earliest possible warning without the risk of unwanted release of extinguishing | Four sensitivity levels allowing for Alert, Action, Alarm and Extinguishing Release |
| Most efficient engineering support | You'll complete a design in minutes – not hours! All you need is drawing the pipe network and place the sampling points using the 3D drawing tool provided by PipeFlow. | PipeFlow is the only tool which is optimizing your design in a fully automated manner. Basically, You'll draw the tubes and place the sampling points – the rest is done by PipeFlow. |
| | | |

Thank you for your attention!



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