unica installatiegroep





WATERMIST Fire protection in DATACENTERS

IWMA Amsterdam

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Unica Automatic Sprinkler

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samen maken we de toekomst

Programme

- Introduction…
- Watermist, how does it work….?
- Watermist, what are the possibilleties….?
- Watermist in Datacenters
- Watermist testing for datacenters by FM
- Basic rules fire safety in datacenters

Unica technical installations

- 14 departments in the Netherlands
- 3 regions
- 1550 FTE's
- Anual turnover € 235 mio
- 8 special business units

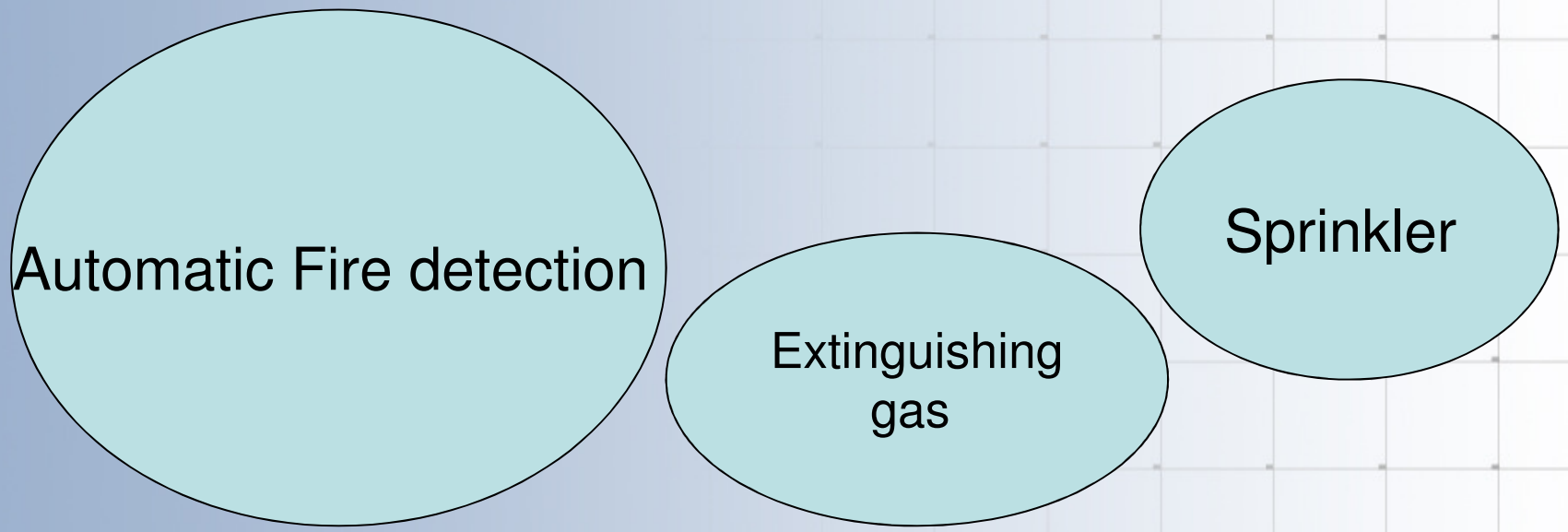
samen maken we de toekomst

Unica fire protection

- Fire detection systems
- Extinguishing gas systems
- Watermist
- Sprinkler systems
- Manual extinguishers
- Dry risers

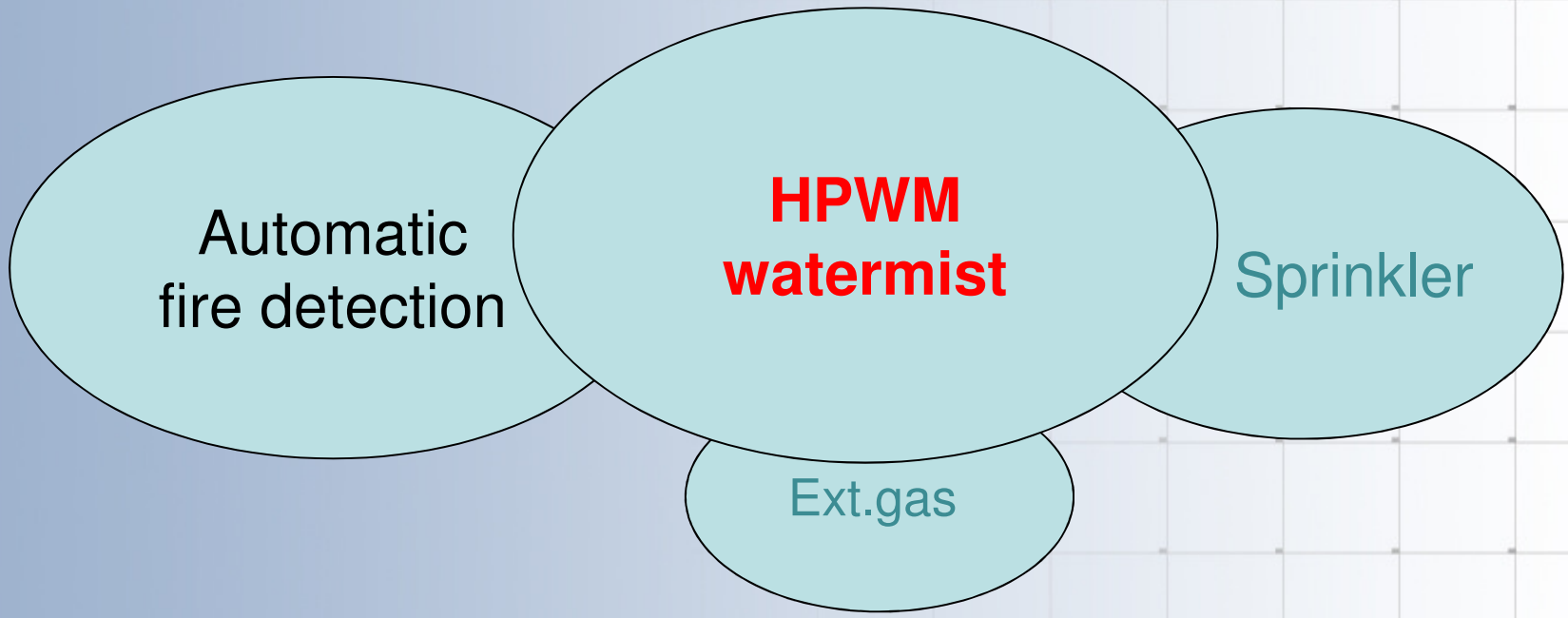
samen maken we de toekomst

Conventional fire protection solutions in Datacenter …….



Datacenters now

Next generation fire protection for datacenter…

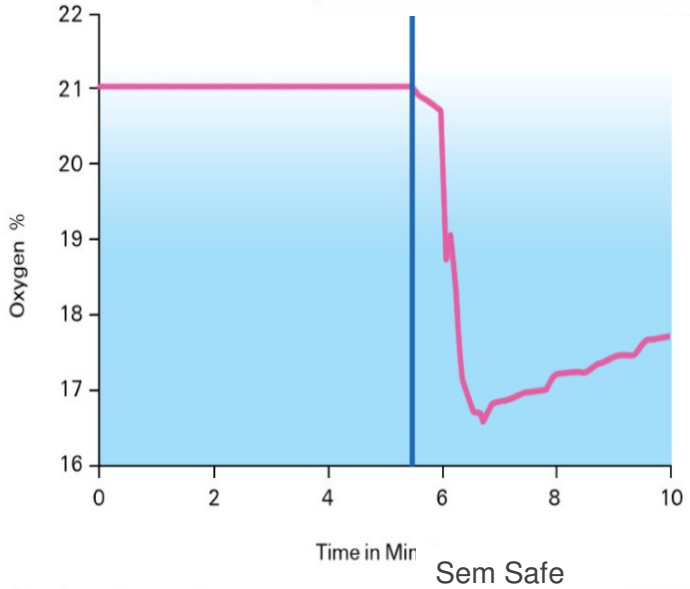


Water (mist) in datacenters ?

- What about the impact of water on vulnerable apparatus?
- What about the impact of air velocity in data rooms caused by cooling systems?
- What about the relatively slow response of the heat triggered watermist system compared to smoke detector triggered gas systems?

Watermist …..How does it work ?

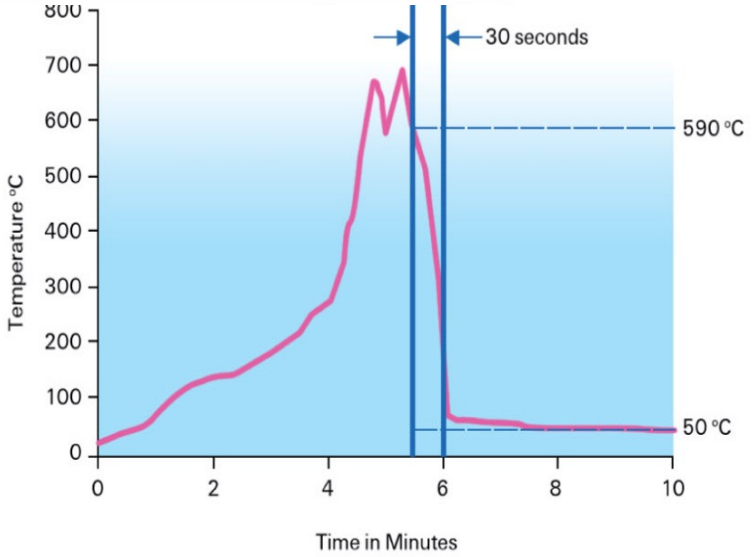
Oxygen displacement benefits



Sem Safe

Reduction of oxygen concentration from 21% to 16.8% at the flame front during MicroDrop® discharge

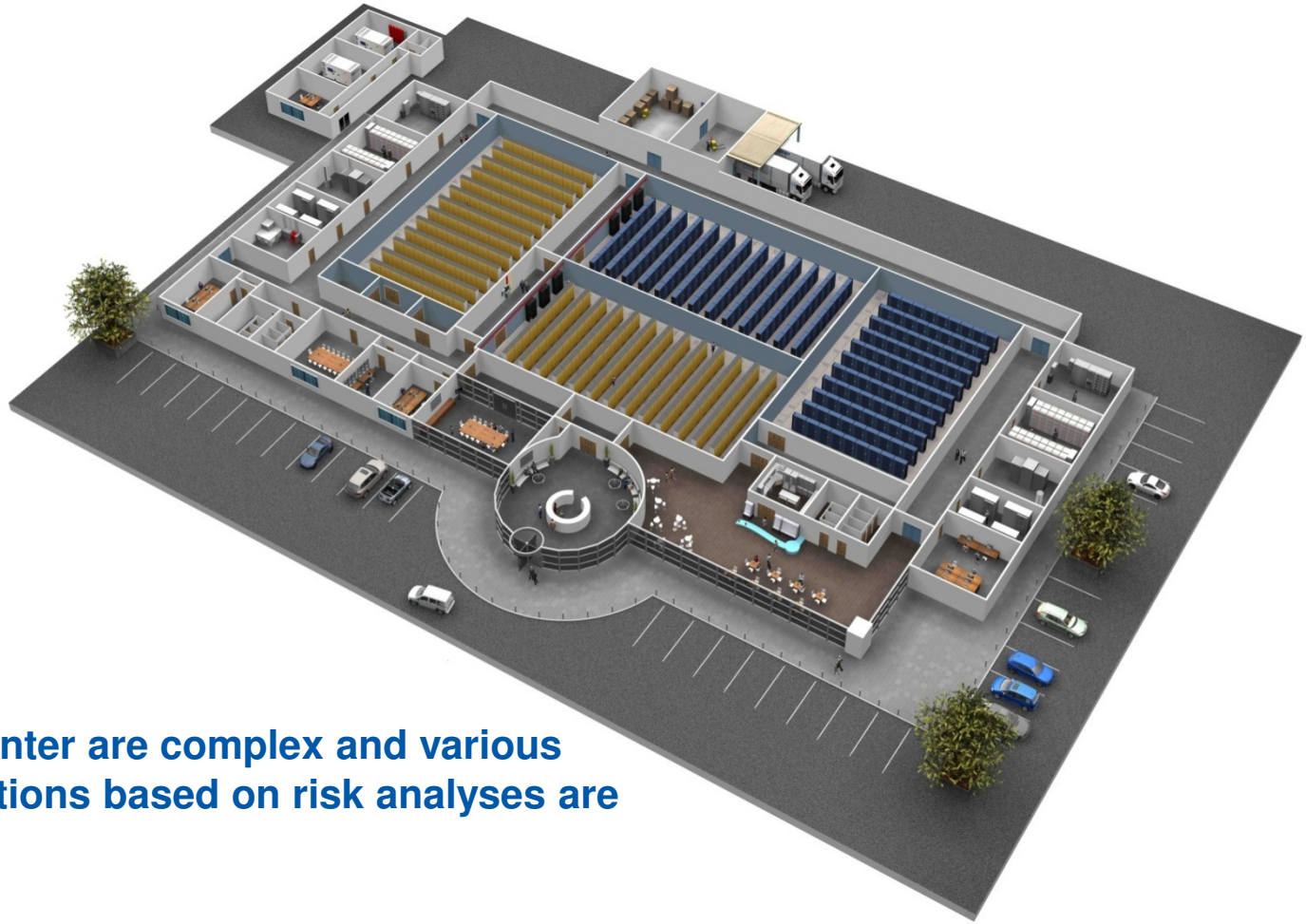
Cooling benefits



Reduction in temperature during initial 30 seconds of discharge from 590°C to 50°C

Watermist in Datacenter

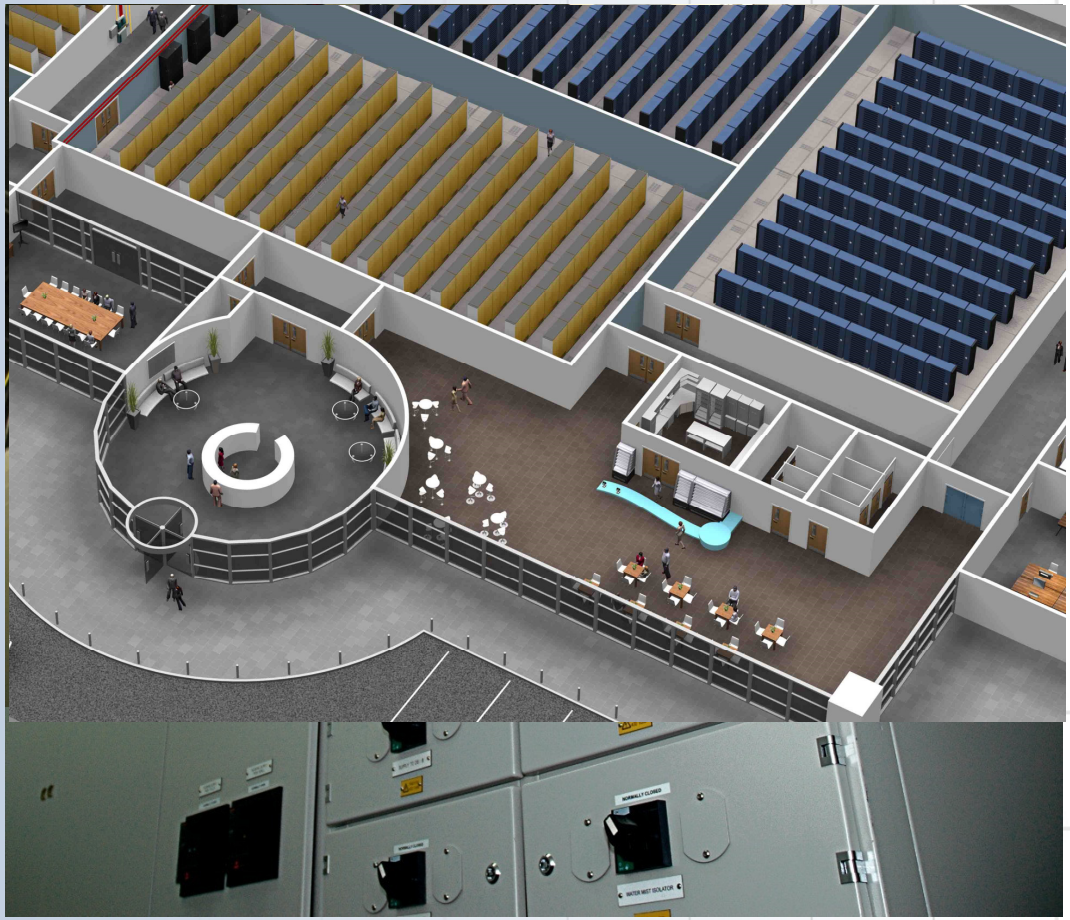
Design criteria for Data Centers



Fire risks in datacenter are complex and various
Custom made solutions based on risk analyses are required

Where can we apply watermist?

- Transformer rooms
- Generator rooms
- CRAC Units
- Data floors
- Raised floors
- Switsh rooms
- Battery rooms
- UPS rooms
- Offices



Watermist in Data Center

The challenge….

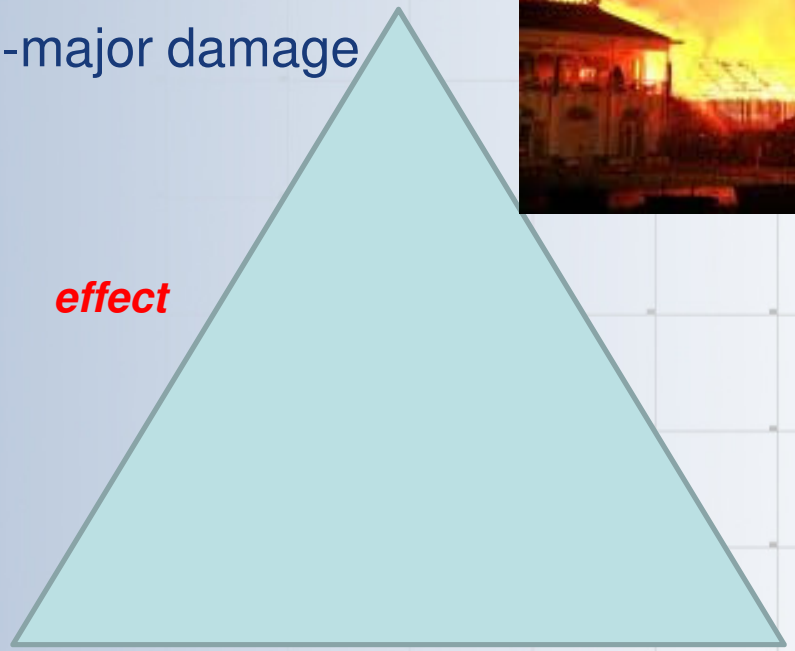
Data room risk analyses

Fire in datacenter

risk pyramid

risk = chance X effect

- Total loss----------major damage

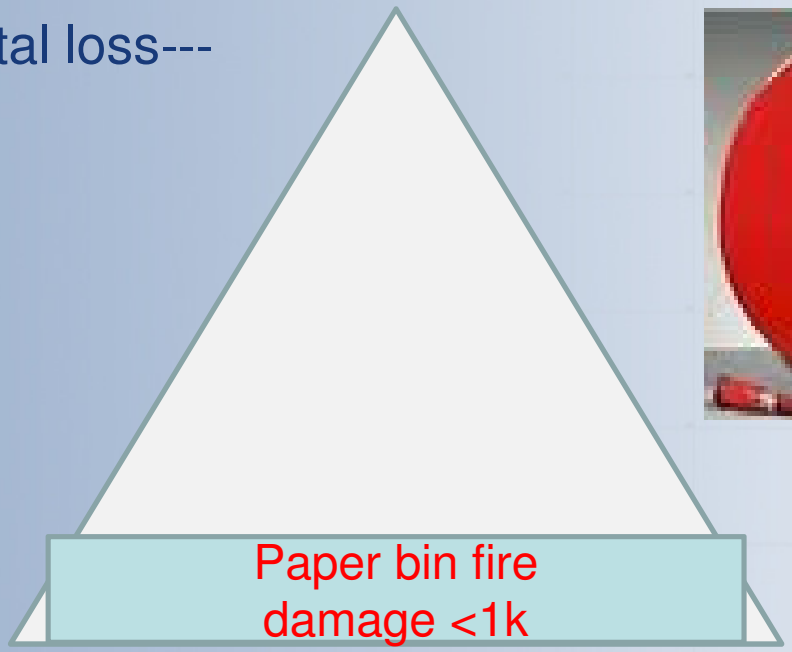


- small incident---------- minor damage

Fire in datacenter

L.O.D 's = Lines Of Defence

- Total loss---

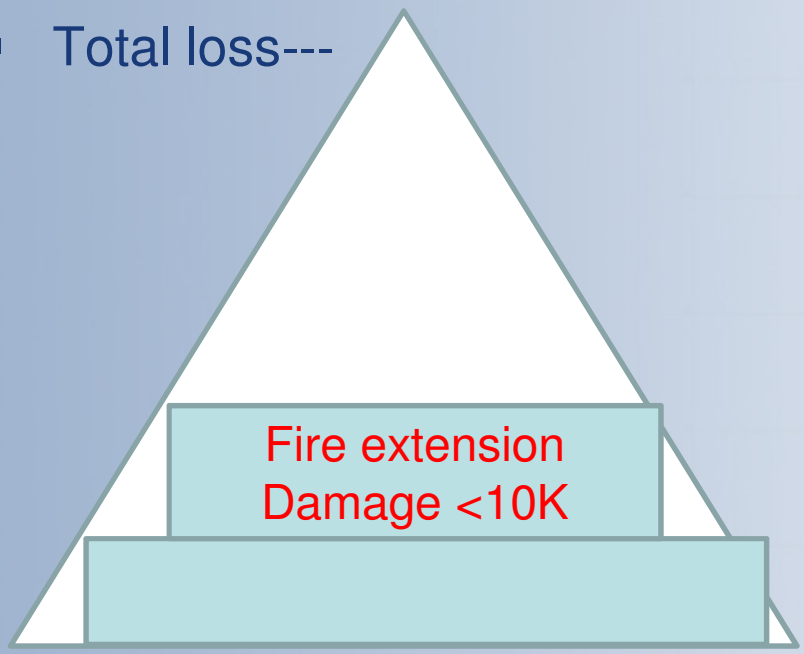


- Small incident

Action by staff;
Manual extinguishers

Fire in datacenter
L.O.D 's Lines Of Defence
unmanned situation

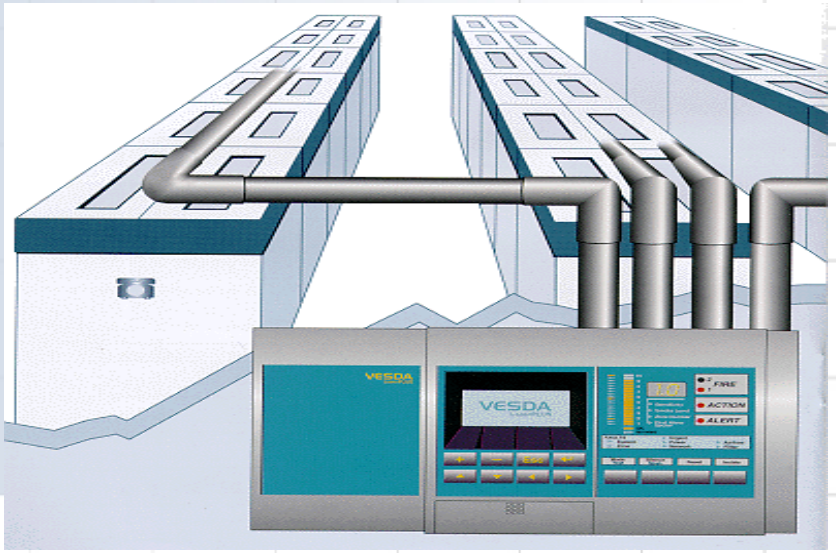
- Total loss---



- Small incident

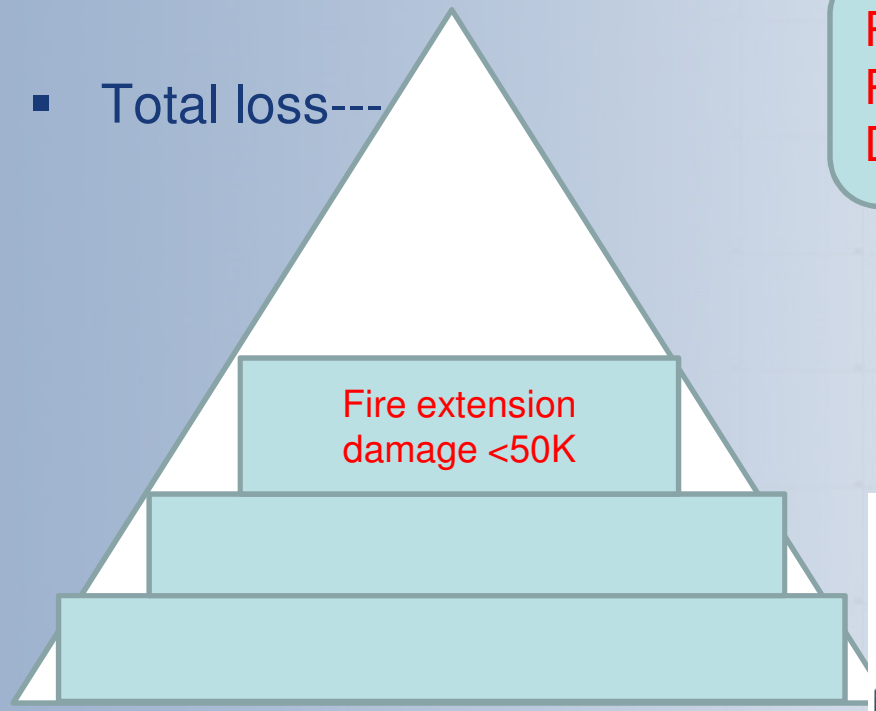
Action by staff on site
Manual extinguishers

1st automatic fire detection
alarm by aspiration system



Fire in datacenter
L.O.D 's Lines Of Defence

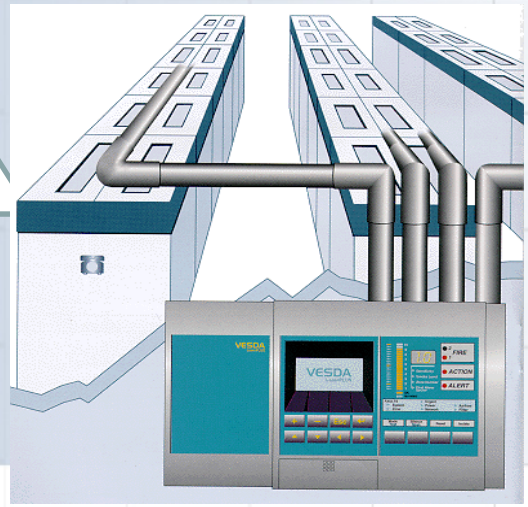
- Total loss---



- Small incident

Proces trip: ventilation : turn lower.
Power shut down
Data will be saved to safe area

2nd automatic fire alarm



OPTICAL DETECTOR

Fire in datacenter
L.O.D ‘s Lines Of Defence

- Total loss---

- Klein incident

Watermistsystem will be filled with water, glasbulb in nozzle will be activated on temperature Watermist will attack the fire localy

Pro and contra's

	Extinguishing gas	HP Watermist
System price	High	Low
Footprint	Big	Small
Air tight enclosures	Y	N
Door fan testing	Y	N
Over pressure relief device	Y	N
System refill costs after discharge	Y	N
Cylinder approval	Y	N
Forced ventilation	Y	N
Availability extinguishing medium	limited	Endless
Material damage by thermo shock	Y	n.a.
Water damage	n.a.	< IP22
Environmental impact	N	Y

NFPA 15

Table 6.1.2.2 Electrical Clearance from Water Spray Equipment to Live Uninsulated Electrical Components

Nominal System Voltage (kV)	Maximum System Voltage (kV)	Design BIL (kV)	Minimum* Clearance	
			in.	mm
To 13.8	14.5	110	7	178
23.0	24.3	150	10	254
34.5	36.5	200	13	330
46.0	48.3	250	17	432
69.0	72.5	350	25	635
115.0	121.0	550	42	1067
138.0	145.0	650	50	1270
161.0	169.0	750	58	1473

Compact pump units : plug and play

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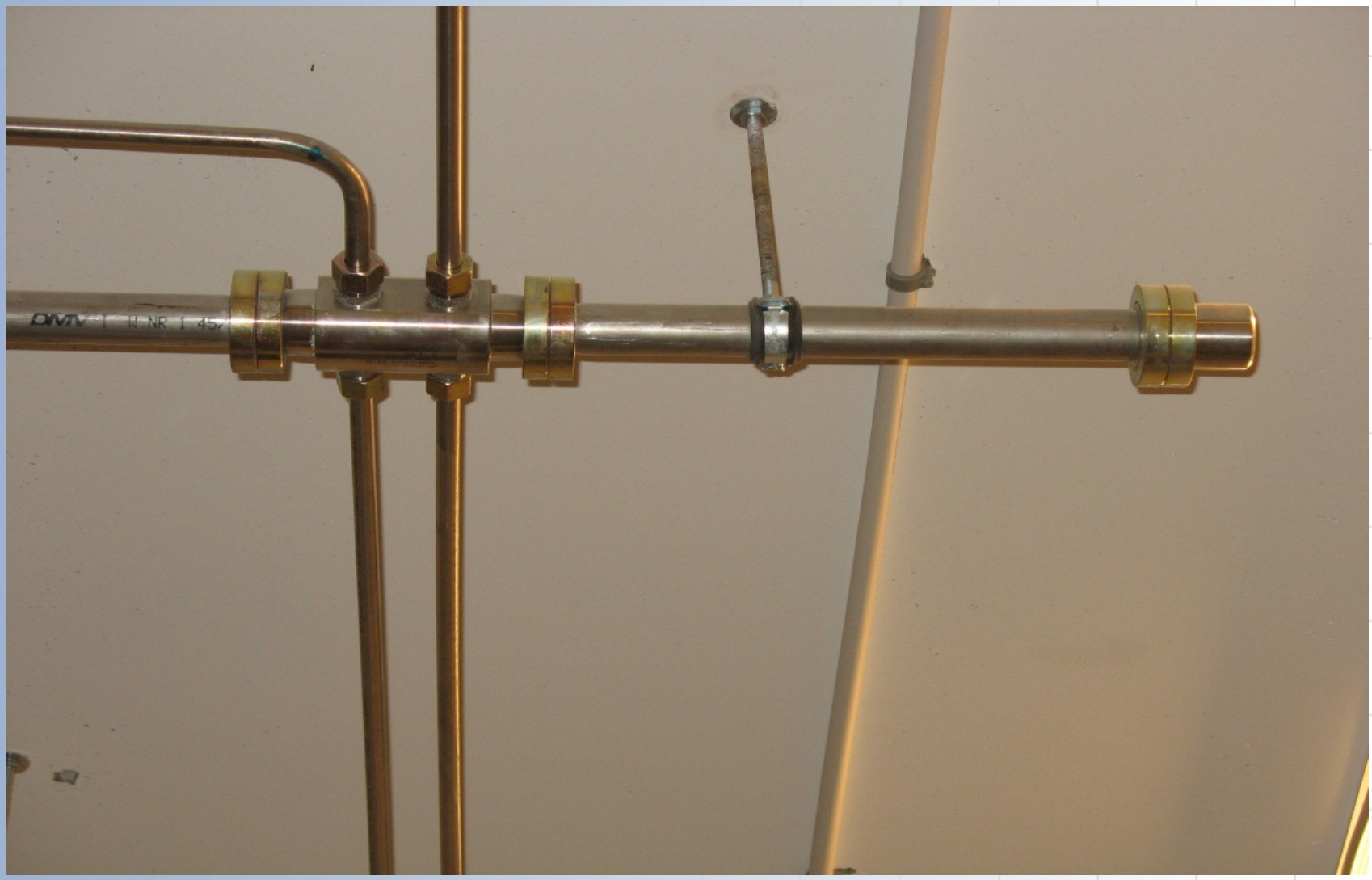
Manifold with 14 section valves



Fire test HP France

FM test for HPWM in datacenter

1. Active forced ventilation,
2. Single and double-tier cable tray fires,
3. Interlocked dry pipe/preaction configurations

European technology and American test standards…
Is this a happy marriage ?


MEANWHILE AT VW'S EMISSIONS TEST CENTER
THATS ANOTHER PASS ✅

Basic rules for fireprotection in datacenters

- Good housekeeping
- Early warning fire detection (aspiration system)
- Implementation of a ,, how to handle'' procedure in case of fire and adequate training of staff
- Implementation of a proces trip procedure
- Pre-action watermist system in data rooms
- The watermist system must be adjusted to the Inventory of the fire load .

Thank you for your attention

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