(“Unconditional”) confidence in sprinkler, do we also have confidence in water mist?

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Agenda

- Introduction
- Role of the consultant
- Sprinkler = good!?, what about water mist?
- Some examples
- Conclusion

DMGR

DGMR is a independent consultancy firm in the Netherlands

We like to offer our customers the best protection, this can be:

- sprinkler
- Gaseous fire protection
- Low-pressure water mist
- High pressure water mist
- Something else…

All depends on the situation and needs of our clients.

This presentation is based on our experience with fire protection consultancy/engineering, sprinkler and water mist protection.

Building physics

Fire safety

Industry and environment

Sustainable building and energy

Vibration control

Introduction

When proposing a water mist protection system for a non-storage building always one of the first questions asked by a consultant:

'is the water mist system suitable for protecting this risk, can you proof it'?

Should they ask that question also for sprinkler? Or stop asking for water mist.

Consultants

‘task’ consultant:

- Select the best protection solution for our customers
- Select a working, durable and reliable solution for our customers

For that we need:

- Information, information, information and information
- Analyse all information so that we can advise our customers
- Possibilities to ask questions if aspects are unknown, uncertain or unclair

Accept that every system has limitations!

Sprinkler = good!?, what about water mist?

Sprinkler	Water mist
It's 'old proven technology' (since 1880's)	It's 'new' technology
Statistics says 'it's good', a lot of positive loss historyInternational	Limited codes and still in development
codes/standards are available	No real statistics yet, little loss history
All codes are 'state of the art', with recent dates.	All systems are proven with real fire tests
Based on old fire testing (50-60-70-80's)	Codes of limited use, you need special approvals, fire testing and DIOMS to design and understand a system
Codes give you all the design criteria	

The world has changed - data center (1)

1970

1986

2015

The world has changed - data center (2)

Sprinkler

General: EN 12845: OH-1 Annex A: data processing (computer room, excluding tape storage)

Below raised floor: EN 12845: OH-1 (concealed spaces)

Discussions:
- OH-1 classification still valid?
  - High amount of cables
  - Usage of plastics in computers
  - More compact set-up
- Ventilation/airspeed/circulation
- Amount of cables (in concealed) space
- Position cable trays
- Ventilation openings in sub-floors
- Ceiling height allowed up to 12 meters

Protection is not based on a modern and accepted fire test protocols but on old fire testing and loss history

Water mist

General:
<2015: FM global HC1 water mist test
>2015/2016: FM global datacenter test

Below raised floor:
<2015: FM global concealed spaces water mist test
>2015/2016: FM global datacenter raised floor test

New test protocol to address discussions, only for FM based installations for water mist not for sprinkler??

Other installations designs based on NFPA LH or EN OH-1. Discussions still exists!

Protection is based on a modern and accepted fire test protocols.

The world has changed - offices(1)

1970 1986 2015

The world has changed - offices (2)

Sprinkler

General: EN 12845: OH-1

Discussions:
- OH-1 classification still valid?
  - Usage of plastics in computers?
  - More combustible products with plastics and foams
- Applied safety factors unknown (still present?)
- Ceiling height allowed up to 12 meters
- Optimal design or overkill?

- Protection is not based on a modern and accepted fire test protocols. But accepted mainly on the principle of 'no bad evidence present'

Water mist

General: EN 12845: OH-1

Design criteria based on newly developed office fire test scenario (VdS/CEN-TS)

Tested with realistic ceiling heights

Safety factors are known

Optimum design based on risk's

Protection is based on a modern and accepted fire test protocols.

Thoughts – Sprinkler v.s. water mist (1)

If a sprinkler code says a protection is possible:

- We trust it will work
- We stop thinking if the situation corresponds to the (old) principles on which the sprinkler codes are based (office is office, shop is a shop)

For water mist:

- Consultants: keep asking!
- Suppliers: Give all the information the make our job possible
- For all: Work on strong general standards and test procedures

'Confidence is good, verification is better'

'it is necessary and fun to talk about fire safety'

Thoughts – Sprinkler v.s. water mist (2)

$$Q_{sprinkler} > Q_{watermist}$$

'plumbing vs engineering?'

Does sprinkler usually have a larger margin?

Thoughts - Sprinkler v.s. water mist (2)

Trust in water mist is developing,
but it will take some time

Questions?

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