Intelligent means of water mist

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Agenda

• What is Water Mist?
• What is a fire?
• How to apply water mist for fire protection?
• What and where to apply water mist?
• Glimpse into future system designs?
What is a water mist?

Droplet Diameters
max 1mm

water flow

90% 100%

No. droplets 100%
What is a fire?
Water mist applied to fires

Blow away Pyrolysis gasses, Cooling the fuels, Cooling the oxidation, reducing the oxygen concentration in fire zone.
• Glimpse into future system designs?

- Little water?
- Little damages from water?

- Good cooling?
- Little damages from Heat of fire?
Cooling from evaporation
H2O Face change from liquid to gas face.
47000J/mole
=>
1MW => 21,3 mole/sec
1MW => 0,38kg/sec
=> 22,8 l/min/MW.

Output: Steam = inert gas
Inert the atmosphere

21% O₂
78.5% N₂
0.5% other gases

Air consumption
O₂: 77g/MW
O₂: 2.4 moles/sec/MW
N₂: 20.4 moles/sec/MW

From Cooling w. water
H₂O(g) 21.3 mole/MW/S

Enclosures => inert gases
stays in atmosphere to solute oxygen concentration

Open areas => inert
Gasses vanish

Fire output:
O₂ + Fuels =>
Inert gases
Co + CO₂ + H₂O + soot ++
N₂ => N₂
where to apply water mist

- Flammable liquid spills, sprays & pools
- Flammable liquids & solid fuels
- Solid fuels in large open locations,
- Flammable liquids and solid fuels mainly in enclosures
Why use water mist?

- Little water?
- Little damages from water?
- Good cooling?
- Little damages from Heat of fire?
- **Fast response to fire**
- **In very local areas**
Glimpse into future system designs?

- More pre-action systems to prevent water damages
- Small very local area protection
- Very fast response to fires
Intelligent sprinkler VID Fire-Kill OH-I

Alarms
- Electrical faults
- Minimum temperature T1
- Boarder temperature T2
- Rise of heat

Performances
- Early fire warning
- Rise of heat activation
- Glas bulb backup
Intelligent sprinklers OH-I

Heat output

- Fire is detected (flame og aspiration etc) alarm & water in pipes
- Sprinkler detects minimum temperature sprinkler and provides alarm
  Sprinkler detects rise of heat
  Sprinkler activates
- Fire is controlled and suppressed