Intelligent means of water mist

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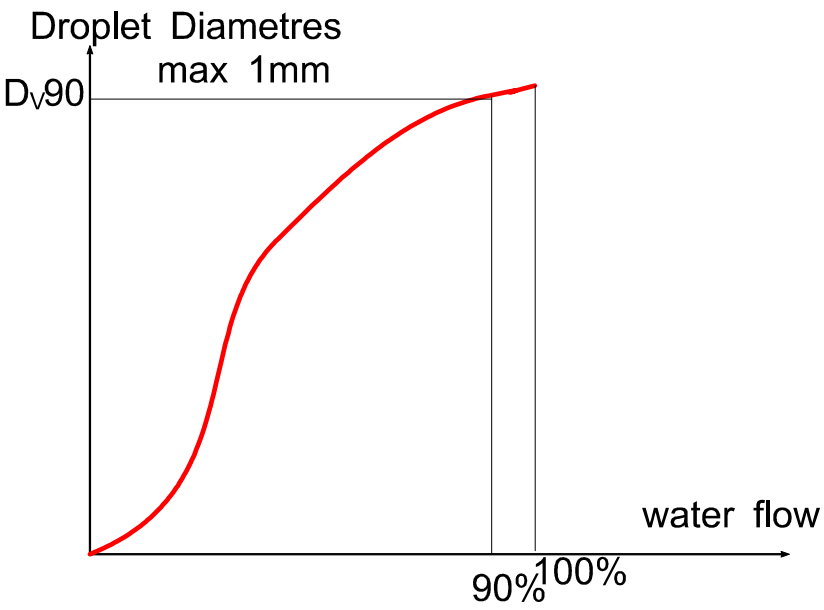
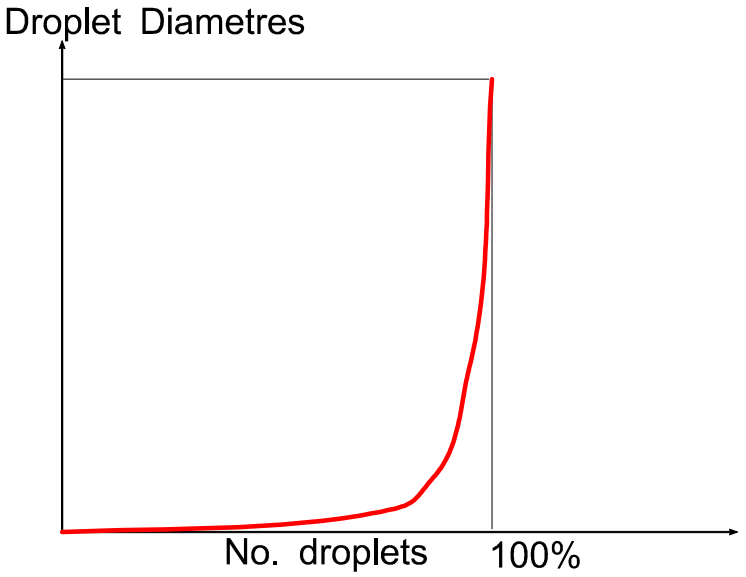
Agenda

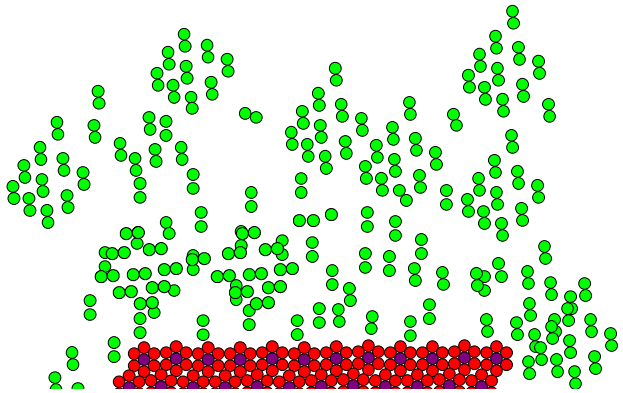
- What is Water Mist?
- What is a fire?
- How to apply water mist for fire protection?
- What and where to apply water mist?
- Glimpse into future system designs?

What is a water mist?

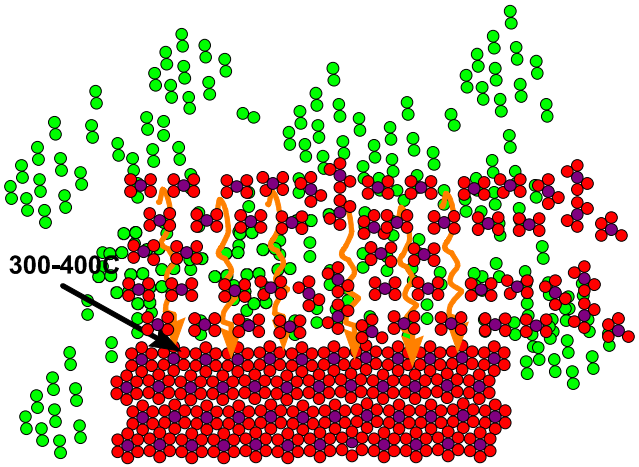


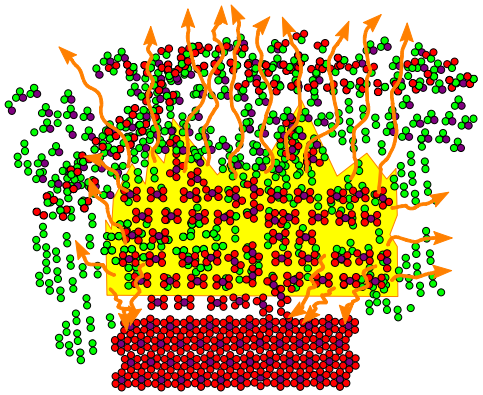


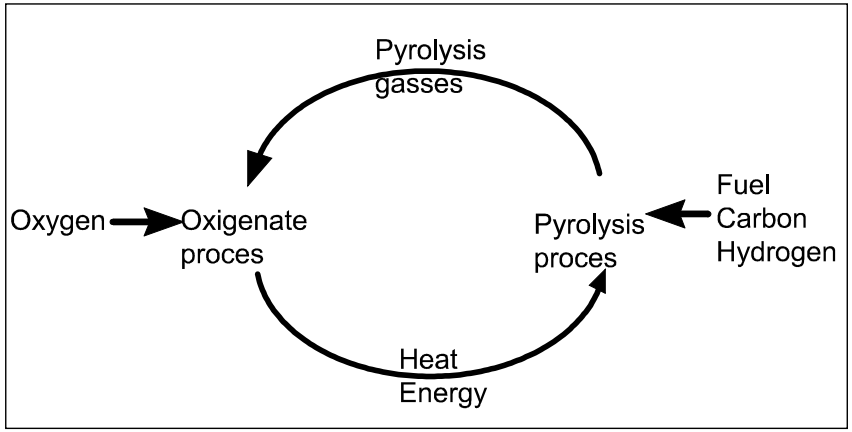
What is a fire?



Fire

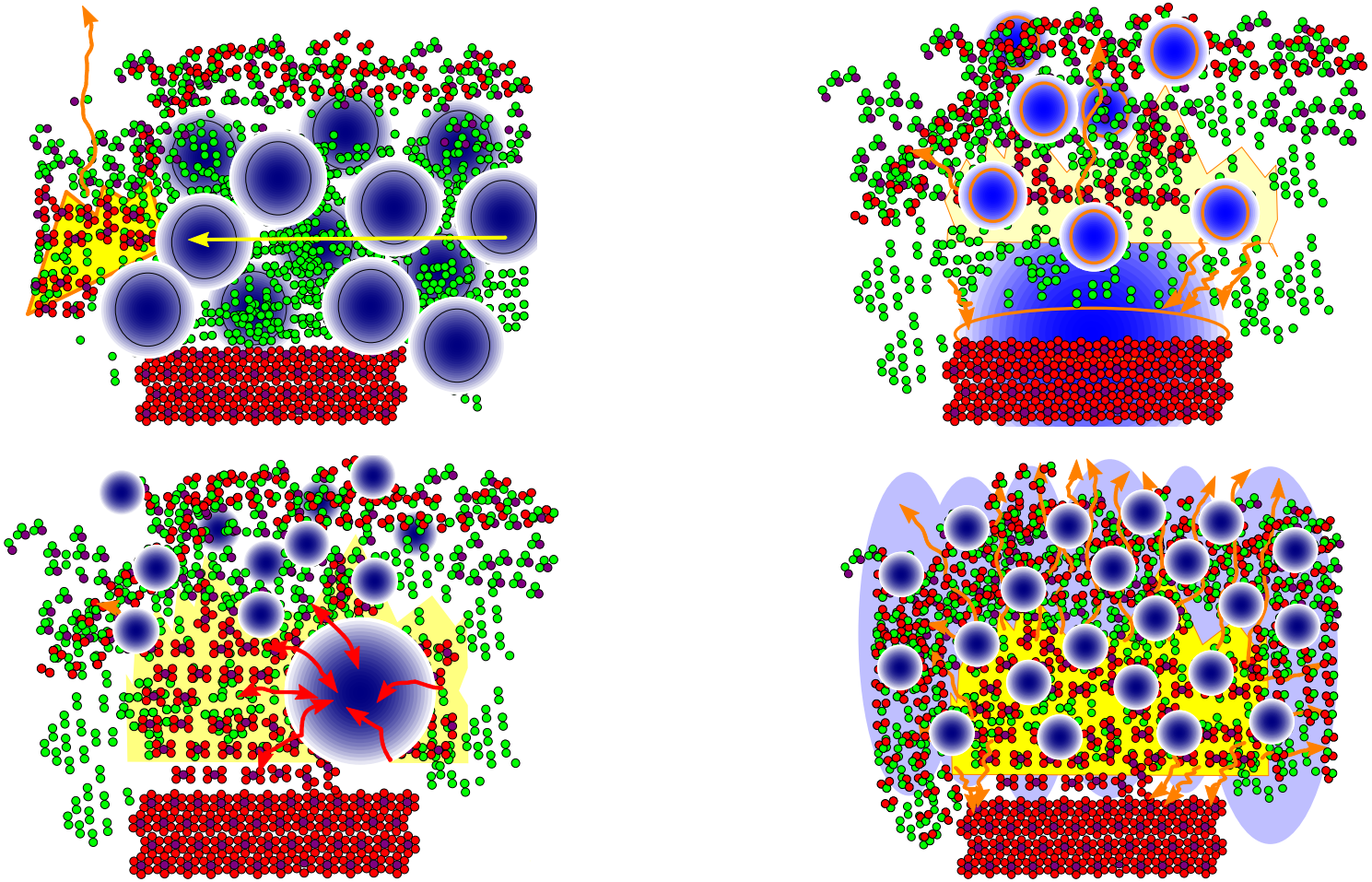




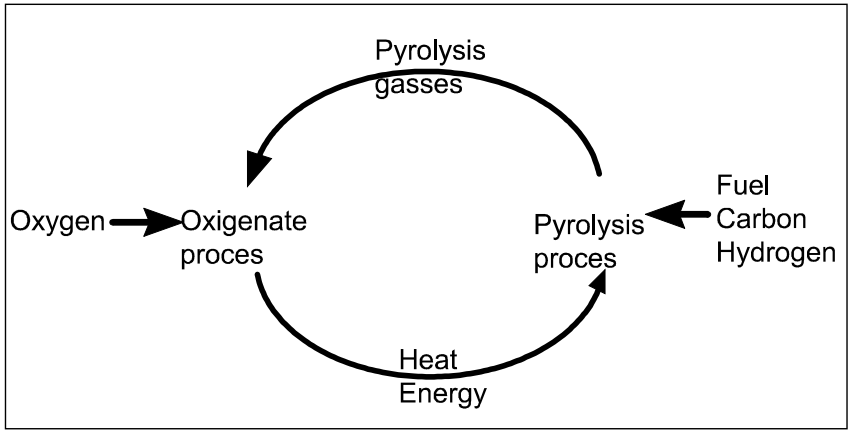


Water mist applied to fires

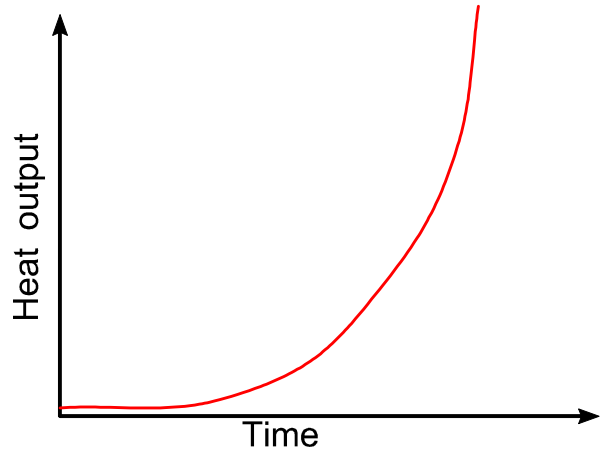
Blow away Pyrolysis gasses, Cooling the fuels, Cooling the oxidation, reducing the oxygen concentration in fire zone.



•Glimpse into future system designs?



- **Little water?**
- **Little damages from water?**

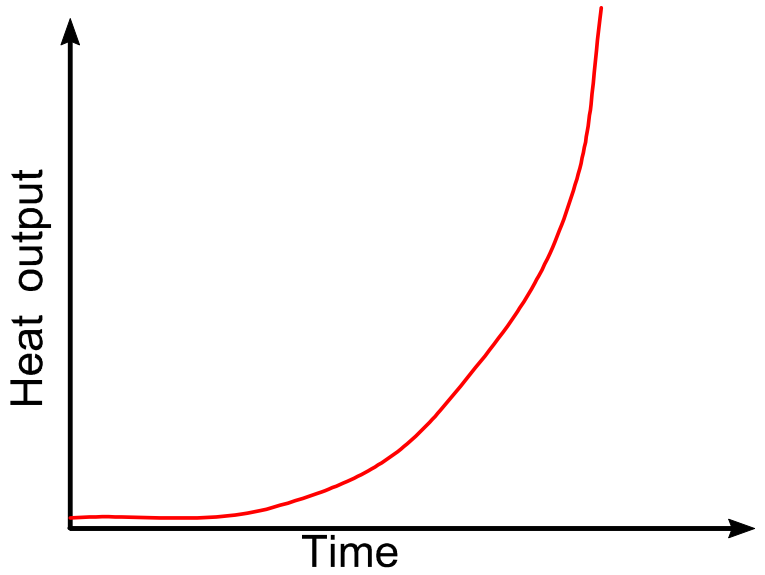


- Good cooling?
- Little damages from Heat of fire?

Cooling fires

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: 2,4moles/sec/MW

N2: 20,4moles/sec/MW

Fire output:

O2 + Fuels =>

Inert gasses

Co + CO2 + H2O + soot ++

N2 => N2

From Cooling w. water

H2O(g) 21,3mole/MW/S

Enclosures => inert gasses stays in atmosphere to solute

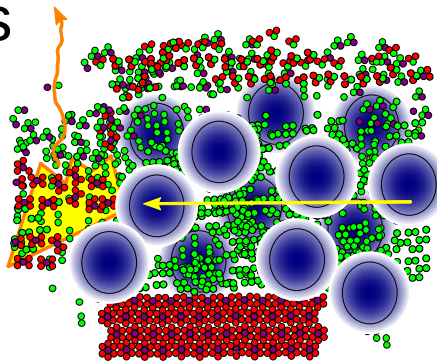
oxygen concentration

Open areas => inert

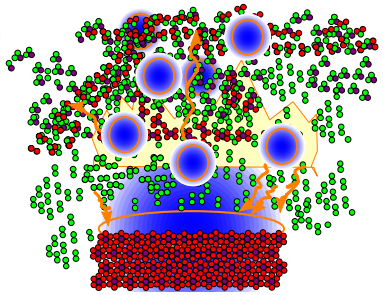
Gasses vanish

where to apply water mist

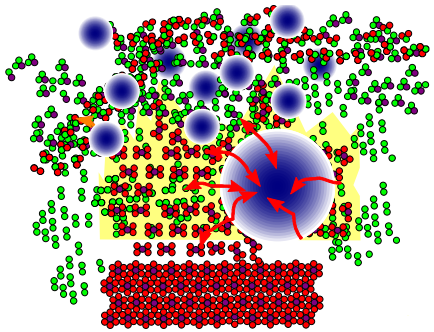
Flammable liquid spills, sprays & pools



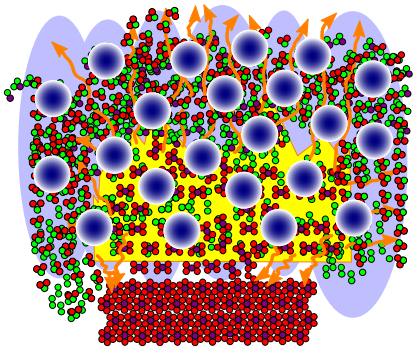
Solid fuels in large open locations,



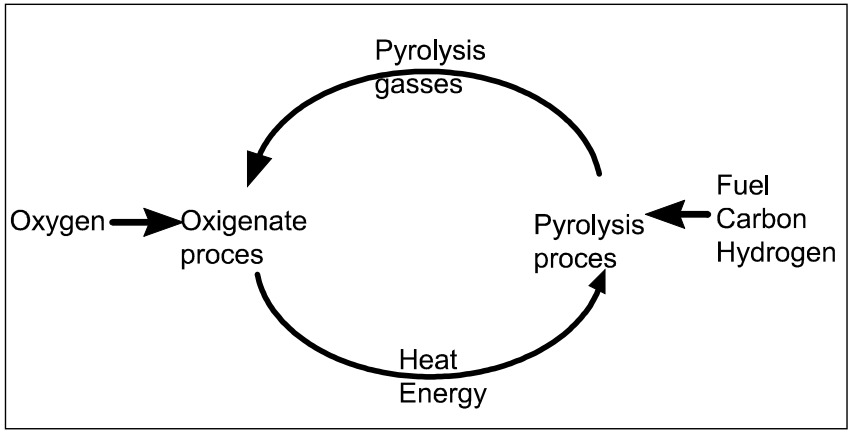
Flammable liquids & solid fuels

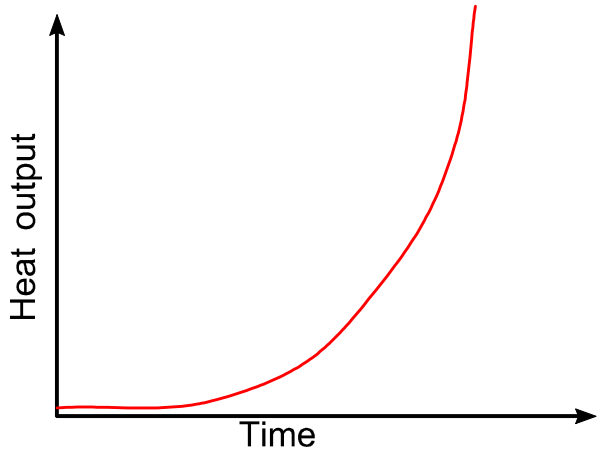


Flamable liquids and solid fuels mainly in enclosures



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

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Alarms

Electrical faults

Minimum temperature T1

Boarder temperature T2

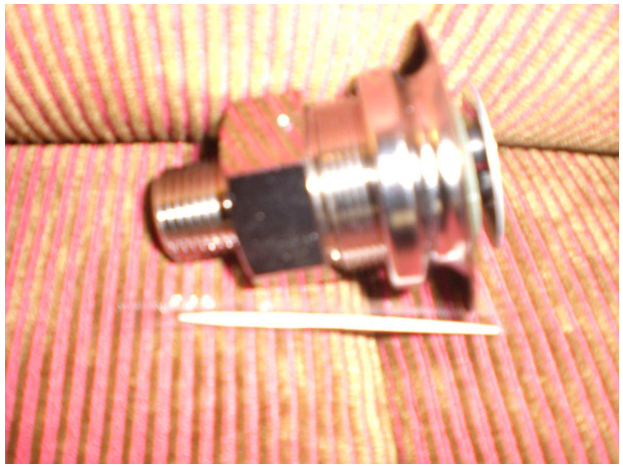
Rise of heat

Performances

Early fire warning

Rise of heat activation

Glas bulb backup



Intelligent sprinklers OH-I