How does Water Mist work?

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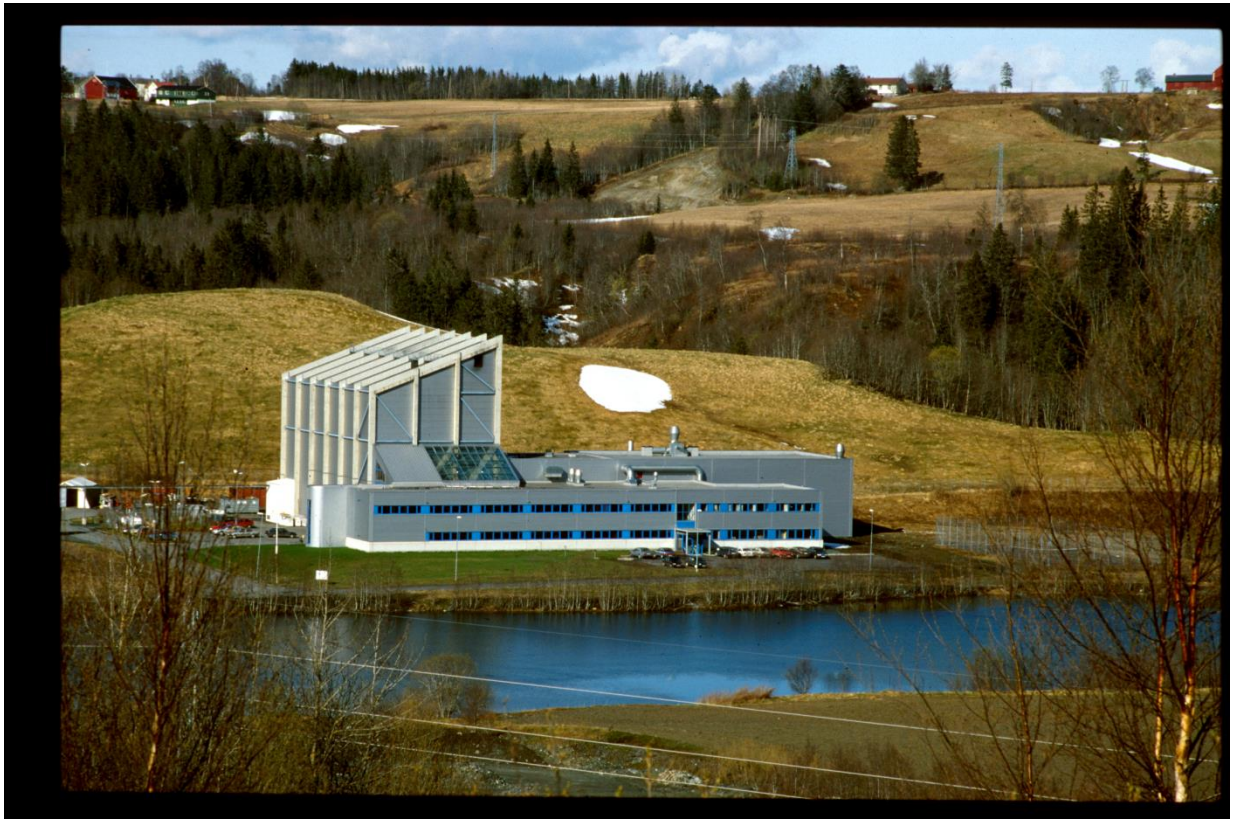


Water as extinguishing means

1. Remove heat, cooling

- Large heat of evaporation (2257 kJ/kg)
- Large specific heatcapasity (4,2 kJ/kg °C)

If water is heated from 10 °C beyond the boiling point and superheated to 300 °C it will absorb approximately 3000 kJ/litre. If this happens within 1 sec it will consume an effect of 3000 kW.

2. Reduce oxygen concentration

•Large expansion when evaporated

When water evaporate it has a volume expansion of approximately 1700 times, this means that 1 liter of water expands to occupied a volume of 1,7 m^3 which displace oxygen rich air in this volume.

3. Limit accessible fuel

•Reduce the ignitability of combustible materials.

By wetting materials the energy needed to ignite the material increases and thereby reducing the possibility of the fire to spread.

Water needed to create an inert atmosphere

- The amount of water needed to create 30% inert gas is given by the equation:

$$L = \frac{W \times D \times H}{5.6}(liter)$$

Where W, D and H is width, depth and height respectively.

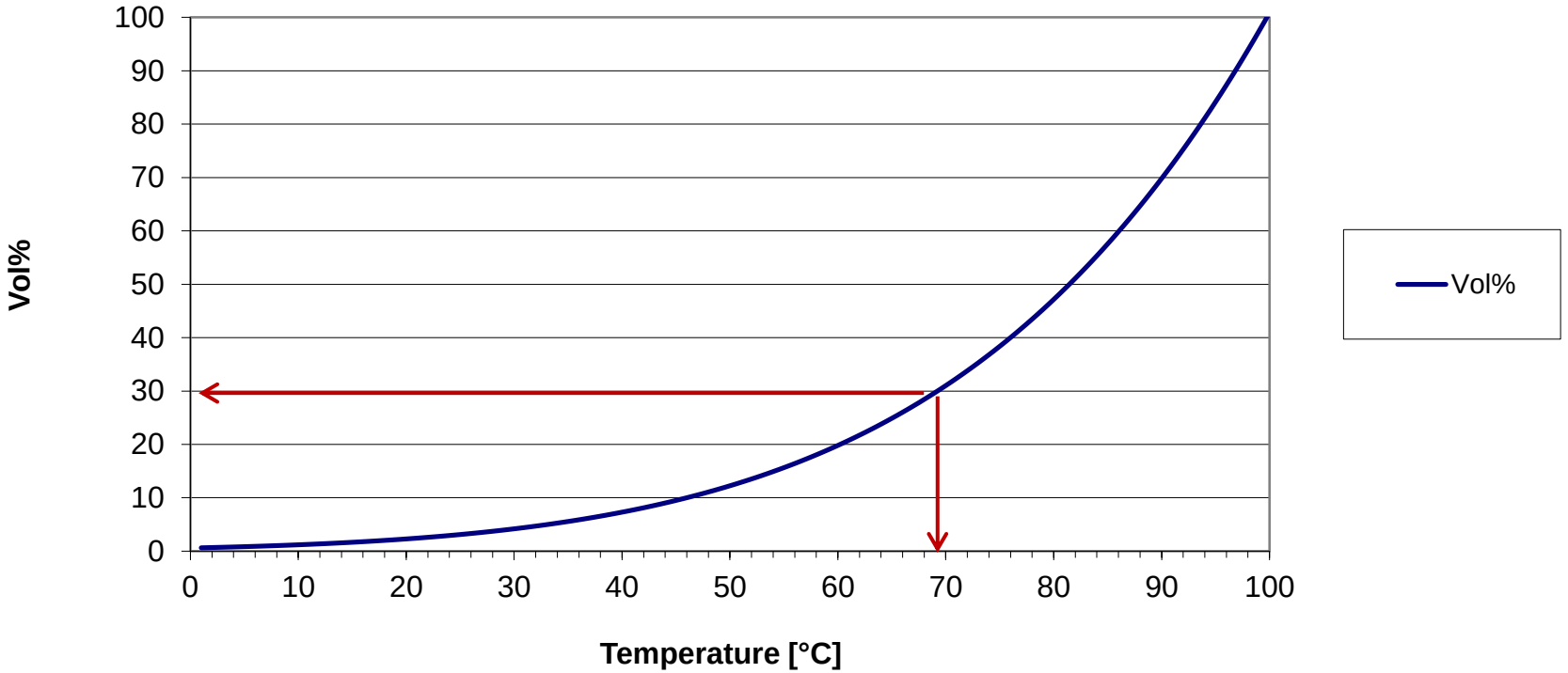
- This is however a theoretical value and in real life the amount would be higher.

Example of water needed (theoretically)

- Extinguishing of a fire in a room that measure 3.5 x 2 x 2,4 meter.
- Inserted in the equation this gives:

$$\frac{3.5 \times 2 \times 2.4}{5.6} = 3 \text{ Liter of water}$$

Maximum volume percentage of humidity vs. temperature



Advantages with using water mist

- Small droplets
  - Large surface area per liter of water
- Less water consumption
  - Thinner pipes
  - Fever restrictions on water supply
  - Reduced secondary damage due to the extinguishing system
- Attaching all three sides of the fire triangle.

Some final reflections

-Water mist is a relative new technology compared to the more traditional sprinkler.

-It has managed to establish it self in the maritime and offshore industry but has faced some challenges being accepted for use on land based installations.

-So there is still some work do be done before Water Mist can compete on a level playing field as the more traditional extinguishing systems.

Thank you for the attention!
Questions?

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