



SUPFIRE19



Water mist

Review of the technology and common applications
in the context of European standards

Międzynarodowa Konferencja SUPFIRE19

Instalacje Gaśnicze Wodne –
Nauka, Inżynieria, Stosowanie

Szkoła Główna Służby Pożarniczej w Warszawie

31.01.2019

International Conference SUPFIRE19

Water Based Fire Suppression Systems –
Science, Engineering, Applications

Main School of Fire Service, Warsaw

Water mist

Are W. Brandt

Research Scientist

President IWMA

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RISE Safety and Transport

RISE Fire Research

Trondheim, Norway



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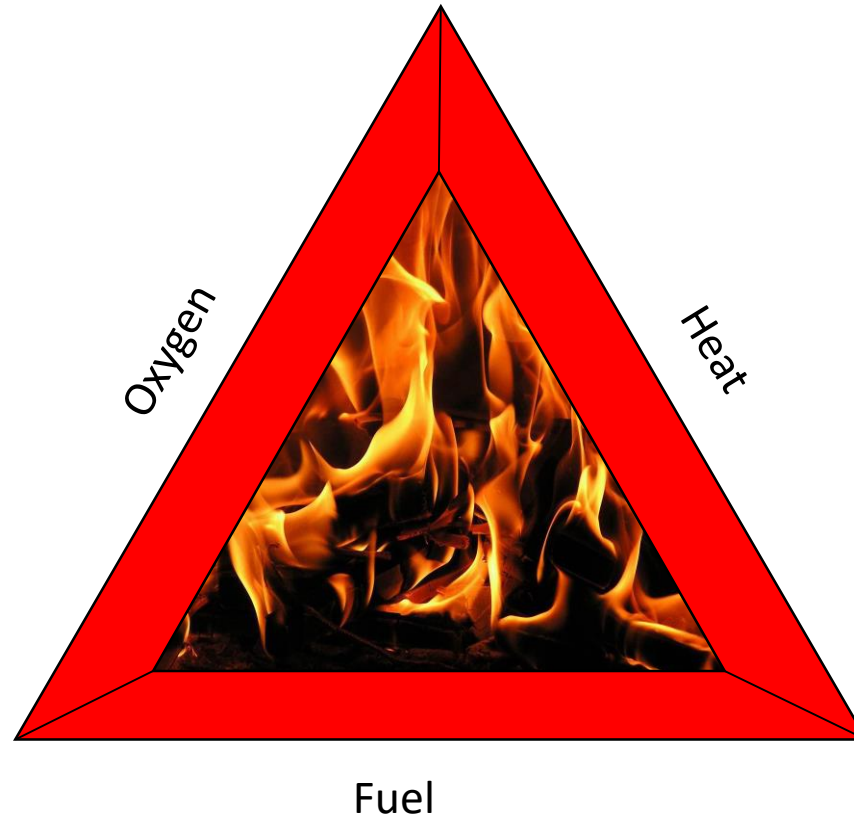
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Extinguishing systems



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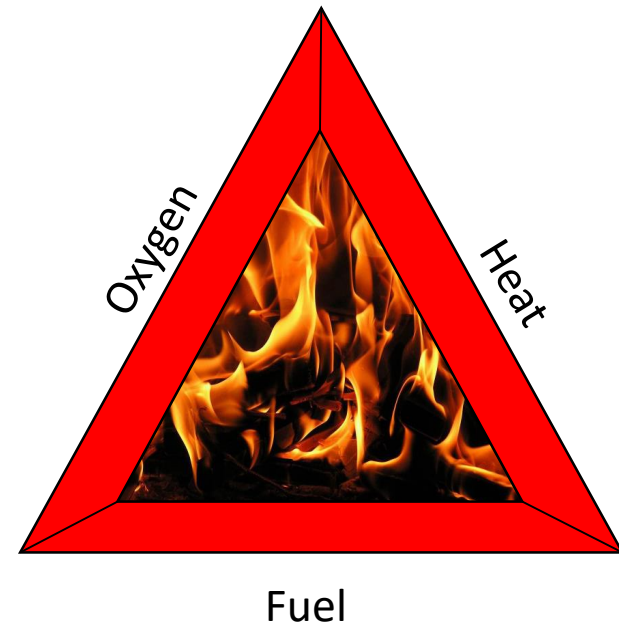
Water mist

Extinguishing systems

Gas extinguishing systems

Traditional sprinkler systems

Water mist system



Water mist

1. Remove heat, cooling

- Large heat of evaporation (2257 kJ/kg)
- Large specific heatcapacity (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 m³ which displace oxygen rich air in this volume.

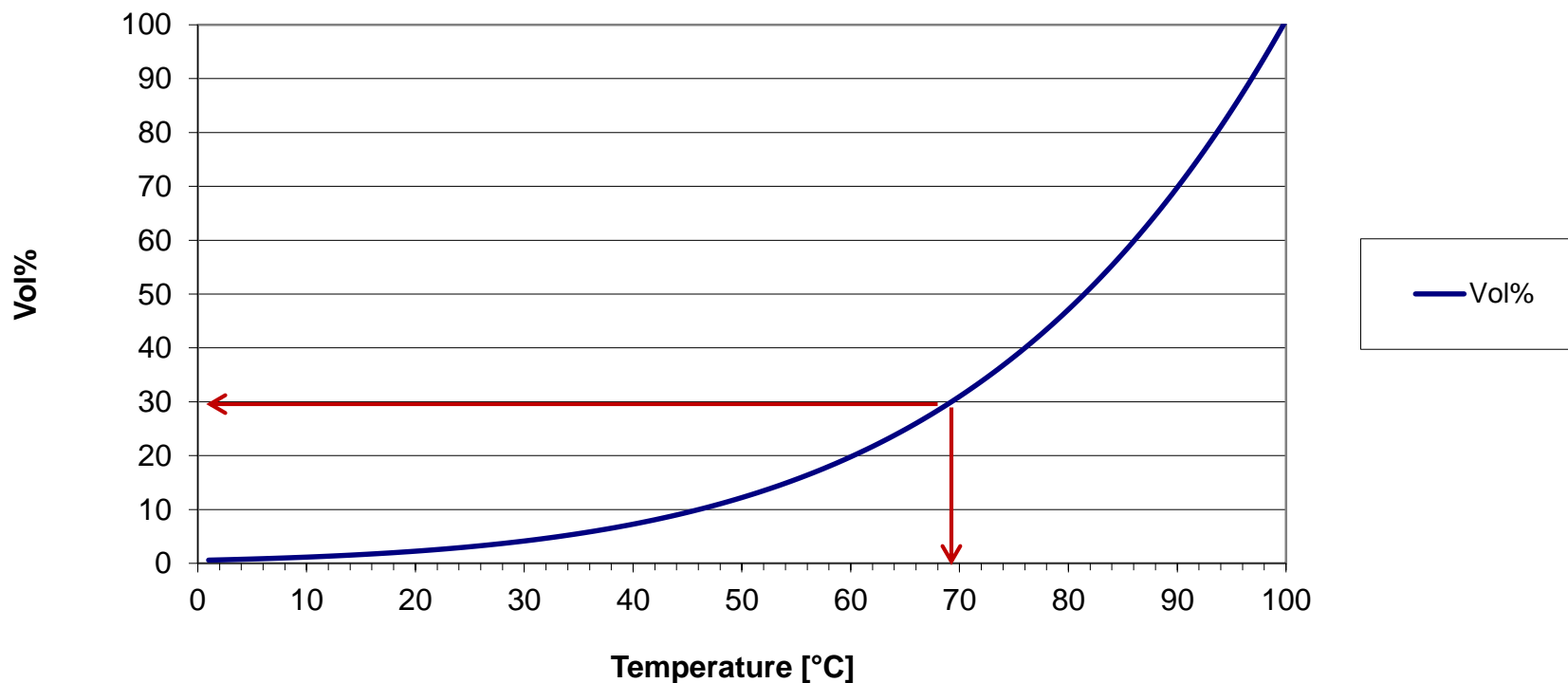
3. Limit accessible fuel

- 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 mist

Maximum volume percentage of humidity vs. temperature



Water mist

Water mist was first launched as an alternative to existing firefighting systems in marine applications,

IMO FTP Code:

- Resolution A.800(19), (now Resolution MSC 265(84))
- MSC/Circ.668, as amended by MSC/Circ.728 (now MSC/Circ.1165)

Water mist

Introduction to land based applications.

European standardization

1. Proposal to develop an EN standard
2. Acceptance of the proposal
3. Drafting
4. Enquiry
5. Adoption
6. Translation
7. Publications

Water mist

Some key dates in the development of the EN 14972

1998 -TC 191 WG5 TG3 was founded

1999 -First task group meeting

2004 -Enquiry of the first draft prEN 14972

2008 -Publication of TS 14972

2010 -Formal vote on next revision TS 14972

2011 -Publication of first revision TS 14972

2014 -Principle agreement to convert TS 14972 into EN

2016 -Establishing TC 191 WG10 (Water mist systems)

2019 -

Water mist

Summary

1% of Gross Domestic Production in developed countries in direct loss due to fire (2,5% when including indirect cost)

Water mist and traditional sprinkler has a lot in commend.

Both could benefit from a closer collaboration.

This means that investment in water based fire fighting systems can make a big difference.

Water mist

Thank you for the attention 😊

Questions?

Are W. Brandt

Are.w.brandt@risefr.no

+47 930 34 329

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