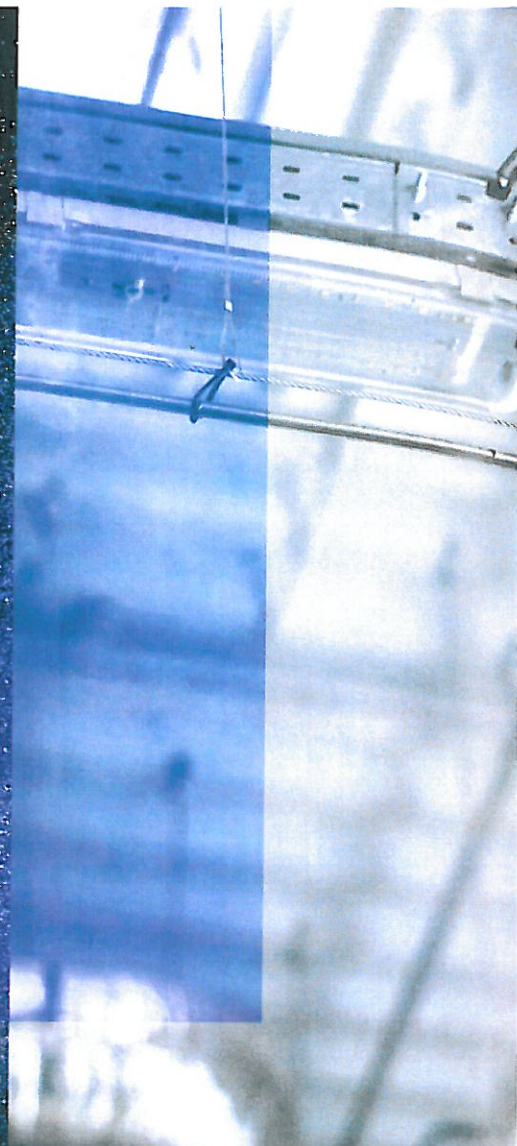


WHEN THINGS ARE STARTING TO COME TOGETHER

Bettina McDowell, General Manager, International Water Mist Association talks about the latest developments with this technology



Over the last couple of years, things have progressed well for the water mist technology. On the one hand, there is a growing market for eco-friendly and sustainable products like water mist. On the other hand, the publication of the European Standard – which has been long overdue – has and will help further advance the technology. What has been growing longer already over the years is the list of applications. And a project which is in the pipeline could become a quite game changer for water mist.

When it comes to fire protection, water mist is an eco-friendly alternative to other more traditional ways of keeping fires under control or extinguishing them. And here we are talking about sprinkler as well as foam or gaseous systems. Why use chemical additives or gases that incorporate a fear factor when it

comes to human lives when you can use a system that combines many advantages and at the same time eliminates many disadvantages?

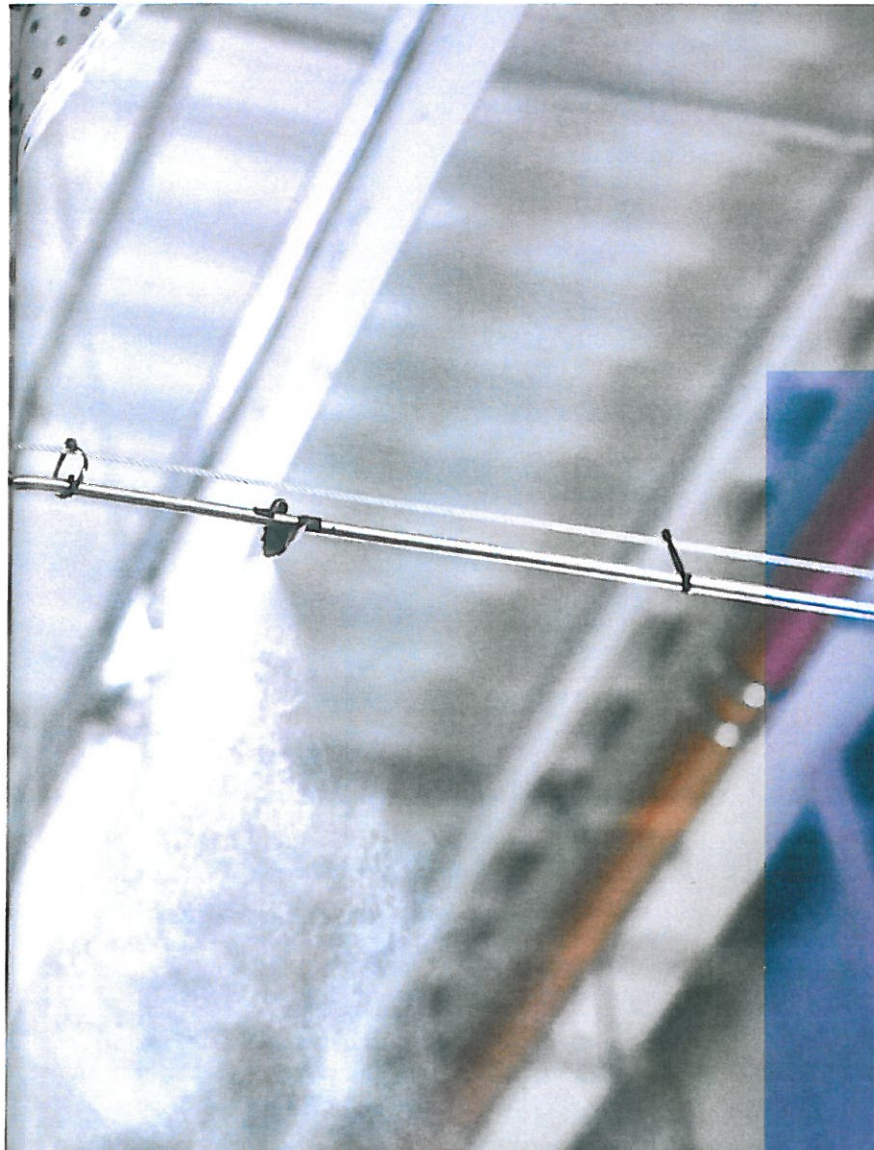
The first standards for water mist were developed well over a quarter

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of a century ago. Factory Mutual published FM 5560 in 1995 and the National Fire Protection Association (NFPA) published NFPA 750 in 1996.

Since then, the list of applications has been getting longer, both vertically as well as horizontally. Water mist – which was an off-shore technology in the very beginning – was further developed, and it has been many years since the first land projects were added to the list of applications. This growing list has most probably got a lot to do with the diversity of water mist systems. Water mist systems produce very small droplets. Water mist is thus a suppressant agent that is applicable on a broad range of fire types. In fact, water mist ticks nearly all the boxes, more boxes than other fire suppression systems. This has been proven in an endless number of real-scale fire tests that water mist manufacturers have carried out in fire laboratories over the last three decades.

When it comes to the protection of the environment, water mist goes back a long way. In the 1980s the



world acted to save the ozone layer by signing the Montreal Protocol. One of the substances that was then banned was halon, a chemical used as a fire suppression agent that had caused ozone depletion. Regarding fire protection, the eradication of halon left a gap which was filled by water mist. "There are basically two ways to look at it. You could either say that halon was banned to protect the ozone layer or you could say that water mist was promoted to save the ozone layer", says Bettina McDowell, general manager of the International Water Mist Association (IWMA). And important factor here was obviously the use of water instead of a chemical substance.

Water-based fire extinguishing systems make up by far the largest share of the extinguishing technology sector and using a natural resource like water is always a good idea. However, water mist systems use up to 85% less water than traditional

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sprinkler systems which is an even better idea. Water is a natural resource, but it is also a precious resource especially in places like the Middle East where it is scarce.

Many ask how less water can do the job. The answer to this is quite simple: a fire triangle consists of three elements, i.e. the combustible material, the heat and the oxygen, and water mist reduces the heat and the oxygen. In fact, water mist also wets the surroundings thus also affecting the 3rd side of the triangle although not as much as traditional sprinklers. But there are other benefits: since water mist systems use less water, their components are smaller which means they need less space. Then there is the local inerting effect: Due to the enormous increase in the volume of the evaporating water droplets, the oxygen is displaced at the source of the fire and the fire is extinguished. During this process, the oxygen content around the fire (and only there) is below 21%. And it is this low oxygen content that suffocates the fire. Further away from the fire the oxygen content is higher which means that there is enough oxygen available for humans. And then there is also the cooling effect that prevents reignition.

When it comes to the longevity of systems, stainless steel components are often the best choice. Their use is not mandatory, but stainless steel prevents corrosion which is beneficial for the conservation of the systems and also lowers the risk of contamination. Plus: stainless steel can be re-used and thus be re-integrated into the life circle.

A special challenge is fire protection in hazardous environments. When a fire breaks out in such areas this can result in the release of many different toxins and chemicals from the fuel of the fire or gases. The firewater gathers these substances and has to be picked up and disposed of afterwards which is a difficult job that becomes easier the less water there is. Mentionable is also the reduced water damage. After a fire there is less debris that has to be disposed

of, plus in consequence there might well be less down time for businesses.

All these benefits – some inside, others outside the eco-box – are now backed by the European Standards. EN 14972 is – as mentioned – by no means the first water mist standard, but manufacturers in Europe have been waiting for it.

This document specifies requirements and gives recommendations for the design, installation, inspection and maintenance of all types of fixed land-based water mist systems. It is intended to apply to water mist automatic nozzle systems and water mist deluge systems supplied by stand alone or pumped systems. It covers applications and occupancies which are covered by the fire test protocols of the EN 14972 series. What is important to know is that standards are not retrospective so anything in place (planned or contractual) before publication and implementation in any specific country can remain in place. And: The EN 14972 series are voluntary standards so standards like NFPA 750 can of course still be used.

The work started two decades ago and on 23rd December 2020, EN 14972-1:2020 was finally published. And although it may be a European Standard, it could well have a

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worldwide impact. Based on the Vienna Agreement – which stipulates the exchange of information and increased transparency –



standardization bodies can adopt standards which have been created in other parts of the world which means that the European Standard could be used globally.

A project that is about to start and which could change the perspective on sprinkler and consequently water mist systems is a research project on the performance of sprinkler systems. IWMA and the Fire Research and Innovation Centre (FRIC) in Norway have agreed to collaborate to take a closer look at this issue. The main aim is to gather information on the performance of sprinklers in order to quantify the consistency of their extinguishing performance. For this purpose, IWMA will collect data which will then be made available to FRIC. FRIC will then organize, process and analyse the data and publish an open report.

Bettina McDowell explains: “Our aim is to collect data from as many suppliers as possible that have conducted comparison testing between sprinklers and other alternative extinguishing systems. To ensure the quality of the results the tests have to come from accredited laboratories and approved sprinkler nozzles had to be used.”

As far as the schedule is concerned, IWMA and FRIC are planning to finish the work within a year. The collection of the data will commence during the second quarter of 2022. The report will be published during the first or second quarter of 2023.

It is no wonder that the list of applications is continuously growing. There are marine-based applications, there are land-based applications. There is a hall of fame which includes buildings like La Scala in Milan, the Elbphilharmonie in Hamburg, Windsor Castle, the Clock Tower in Mecca, Saudi Arabia, and the Eurotunnel between Great Britain and the continent. Even the ISS International Space Station carries portable water mist extinguishers.

Water mist is a performance-based technology, and all systems are bespoke systems based on real-scale fire tests, because water mist is not a one-fits-all concept. So far, not everybody seems to understand this concept, but more and more end customers, insurers and authorities having jurisdiction do. Bettina McDowell adds: “This is – first of all – not about a bigger market share. This is – first of all – about safety, about lives, about jobs, about property. The best fire protection system has to be chosen for any one application so it can actually do the job.”

Those who want to learn more about this technology can attend the 21st International Water Mist Conference, which in 2022 will take place in Madrid, Spain, on 9th and 10th November. Every year, manufacturers, scientists and other stakeholders come together to network and exchange the latest knowledge.