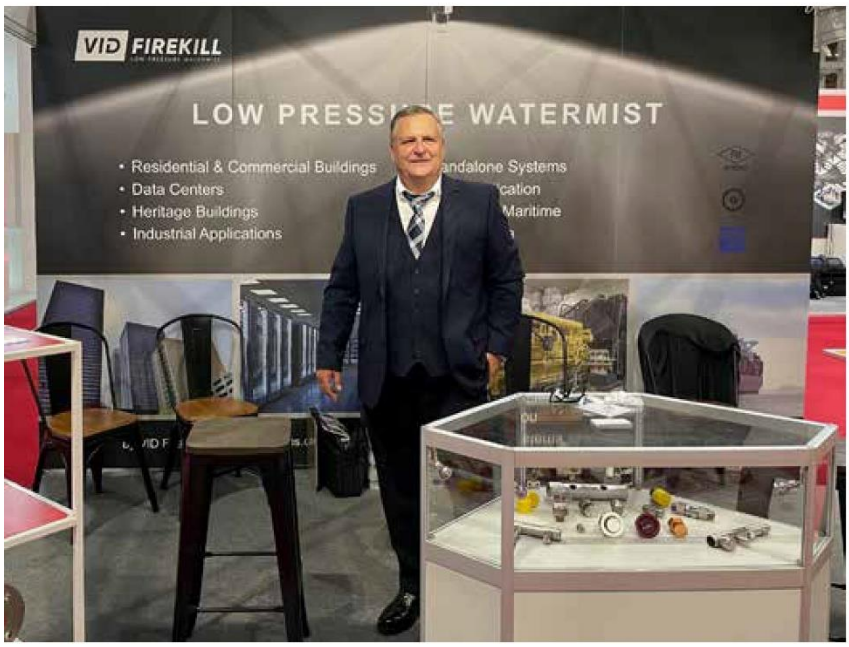
# Equal or better?

A bit more than three decades ago, watermist technology started to gain awareness in the world of fire safety. In the 1980s, the Montreal Protocol stipulated the phasing-out of halon. Watermist filled the gap when this chemical – used amongst others as a fire suppression agent – was banned. Then, some new established manufacturers – like Ultrafog and Marioff (both members of the International Water Mist Association IWMA) – took a bold step forward onto the stage of fire protection.

Traditional sprinkler systems have been around for more than 100 years. Up until watermist systems appeared, the sprinkler manufacturers had not been faced with any competition in their field: water-based fire-protection systems. So, suddenly there were two water-based fire-protection systems and the obvious happened. A discussion was triggered regarding points like: Are watermist systems as reliable as sprinkler systems? Could watermist possibly cover as many applications as sprinkler systems? Is watermist technology nothing more than an appendix of sprinkler technology or is it a technology in its own right, as watermist manufacturers would obviously claim?

In this interview, IWMA general manager Bettina McDowell talks to Dean Reeve, Director of Operations UK and Ireland at VID Fire-Kill.

▼ VID Fire-Kill's UK and Ireland representative Dean Reeve.




**BMc: Dean, what can you tell us about the development of watermist technology since the late 1980s, early 1990s?**

**DR:** The main changes in watermist technology from these times is that the industry has grown to a point where the technology and advantages of the technology have become attractive to not just the marine industry, where it mainly developed to become established with test protocols to back it up, but to the land-based market of the built environment.

Up to date now, the land-based industry has test protocols and standards the same as the marine industry that stand on their own.

There are also third-party accreditation schemes available for installers to bring the industry in line with other fire-suppression disciplines.

In all relatively new industries, there are growing pains. Sprinklers suffered the same as watermist, or the car, aircraft, building industries and similar. All growing industries attract chancers, gold prospectors and less-than-honest people.

As the industry has matured and the wider related industry has started to understand the technology and the key points to look for, in a quality insurable watermist system from manufacturer to installer, barriers are appearing to reduce the chances of sub-standard manufacturers and installers being successful.

Due diligence is always required when selecting any suppression system including watermist, and the information is there to help prospective buyers weed out substandard manufacturers and installers.

**BMc: How would you assess the position of watermist compared to sprinkler systems in current times?**

**DR:** I would assess the position of watermist as a viable alternative to sprinkler systems in all applications where there is an acceptable test protocol in place.

As long as the watermist system is approved for the application, is fully tested, has third-party approval, and has full component testing and has been installed

correctly, then it should be considered as an equally acceptable technology, in the eyes of the authority having jurisdiction (AHJ).

It is then up to the stakeholders of a project to decide which technology best fits their aims and requirements.

**BMc: Are there any applications that sprinkler systems can cover but watermist systems cannot?**

**DR:** Yes, there are at this time. Wherever there is not an acceptable test protocol it would be difficult to justify the installation of a watermist system. However, the gap between the technologies in terms of applications grows smaller over time as with any technological development.

Advances are made in the built environment, and new hazards are discovered that challenge both sprinkler and watermist technologies. New test protocols are developed to address these new hazards, and watermist will be full-scale tested as is required for an approval.

**BMc: There is this ongoing discussion on equivalency, but can sprinkler and watermist systems actually be compared?**

**DR:** Yes, I believe they can be compared. Both are water-based systems, and both have a performance requirement. If they are tested directly to the same test protocol, then they can be compared from the results of the tests.

It is up to others to decide which set of test results are better than the other. Watermist in many test protocols has to be equal or better. When it is equal the watermist system will pass the test. When it is better, then it will pass the test. When it is better, it is difficult to quantify how much better it is because that is on a test result, and what is better.

What is better means different things depending on the agenda. Was it to use less water? Was it to cool faster and similar goals?

I do believe that when the watermist system is shown as clearly performing better, it should be clearly shown in the report.

This helps decision makers and should also help the suppression industry understand how water systems can be optimised.

This would also help overcome the growing trend and practice in the UK of related building design standards and regulations committees omitting information on watermist systems in figures and tables that allow designers and AHJs to choose from a menu of technologies suitable for a particular scenario/application.

Once these publications are in force, it can be many years before they are reviewed. As we all know, standards cannot keep up with innovation, or indeed with industry development. With equivalency data available decisions can be made. It must be noted that a fire test is only part of an approval so a fire test on its own should not be accepted in isolation. There must be quality systems, third-party witnessing as a minimum and component test records before an equivalency decision can be made.

**BMc: Since the early days, would you say that watermist systems have reached – as far as reliability and the number of applications is concerned – a position comparable to that of sprinkler systems or has watermist maybe even overtaken sprinkler systems?**

**DR:** I consider that a difficult question to answer, as the records of sprinkler systems

## Study of sprinkler systems

**A study of sprinkler systems as a benchmark for other extinguishing systems which will be carried out by the Fire Research and Innovation Centre at RISE Fire Research Norway with the support of IWMA is mentionable in this context. The impulse to have a closer look is the impression that extensive testing where sprinklers have been used as a reference indicates that the consistency of the extinguishing performance of sprinklers is not as high as desired and the aim of the project is thus to gather information on the performance of sprinklers to quantify the consistency of the extinguishing performance. Data shall be collected from as many suppliers – that have conducted comparison tests between sprinklers and other alternative extinguishing systems – as possible. In order to ensure a good quality result, the tests shall be carried out at an accredited laboratory and with approved sprinkler nozzles. As this is a 12-month project and the result is expected to be published in early 2023.**

▼ **Watermist components are thoroughly tested before approval.**

◀ All watermist systems are based on real-scale fire tests.

go back much further than watermist.

What I would say is there are areas where watermist systems perform better and much more efficiently than sprinkler systems and vice versa. As time goes on, the gaps will close. I would hope that in the future the differences will become almost invisible, and we will talk about water-based suppression systems under a single umbrella.

After all, the raison d'être for engineers and designers is to innovate and go forward. Safely of course, and that is the reason there are test protocols and standards to work with.

**BMc: If yes, how would you underpin this statement?**

**DR:** Resources become scarce, so if we can use less power, less water, smaller pipe sizes etc. to give an equal or better performance, then that must be progressing.

**BMc: One of the main differences between sprinkler and watermist systems is that sprinkler systems are prescriptive and watermist systems are performance-based. What are the advantages of performance-based fire-protection systems?**

**DR:** Performance-based systems are going to be more expensive initially, which should not be seen as a negative, as it only reflects the investment given to a component before it gets to market. The advantage of performance-based systems to me lies in the fact that it is full-scale tested, and that when a manufacturer does full-scale tests, there have been many hours of pre-testing, which allows the manufacturer to fine tune and to optimise the nozzle/system performance. To effectively suppress a fire may not need to use 5mm of water per square metre. It could be 2mm or similar. This will only be found out by full-scale testing. It may be found that 5mm of water per square metre reduces the performance. These are things that are found in the test laboratories.

**BMc: Another difference is the amount of water that is used. It seems that many find it difficult to understand that less water can still do the job. So, what happens when smaller droplets are used to fight a fire?**

**DR:** The short answer to this is that many smaller droplets present a larger surface area to the flame front. This is an optimisation of water that gives a high cooling and physical performance advantage to watermist.

Different types of fires need different types of approaches. Some will need a bias towards small droplets when you need to primarily reduce oxygen, and some need larger droplets for physical penetration and wetting. Often a mixture of droplet sizes creates the best performance.

**BMc: If end customers approach watermist manufacturers for a project how can they be sure that they give the job to a real expert?**

**DR:** An expert does not always have all the answers, but an expert will know where to get the answers from. Openness and transparency are the sign of a good expert, and of a good manufacturer. If you have nothing to hide, then from my experience that is a good sign of an expert. An expert can also explain a subject so anybody can understand what he or she is saying without resorting to highly technical industry jargon. There is always a need for technical writing, but the ability to make it understandable is a skill.

**BMc: The first and also other parts of the European Standard EN 14972 are now published. What else needs to be done to overcome the remaining objections?**

**DR:** The adopted test protocols need to be published as soon as possible, to enable the industry to concentrate on moving forward. It is not just the designers and installers that would benefit from this but also the AHJs and other decision makers such as insurers. Once the base protocols are fully published, then the living document can grow just like all other standards. I have no doubt that politics will always be there, and there will always be heated discussions and opinions that delay and cause confusion and grey areas. That is nothing different to normal life since time immemorial and cannot be seen as something peculiar to EN 14972 or in fact the water-based fire-suppression industry.

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