ONCE AFLOAT, NOW (ALSO) ASHORE!

The research into water mist systems, as we know them today, started in Sweden in the 1970s. Modern systems have been around since the 1990s. Since then, they have become more sophisticated and have entered many new territories.

Experts in the field will tell you that it all started with and in the marine sector, but that nowadays, water mist systems are installed in data centres, machinery spaces, tunnels, cable tunnels, industrial cookers etc., and have reached a stage where complete buildings can be, and are, protected with smaller droplets.

The organisation dedicated to the technology is the International Water Mist Association (IWMA). IWMA president, Max Lakkonen, explains: 'Modern water mist technology is a sophisticated evolution of the systems developed three decades ago. While the fundamental principles have remained consistent, advancements have significantly broadened the scope of applications, approvals, and validation processes.'

To start with, modern water mist systems were installed in the cabins of cruise ships. Consequently, the first application ashore were hotel rooms.

One hotel that was recently equipped with a water mist system is The BoTree Hotel in the heart of Marylebone, London, UK. The hotel saw the redevelopment of a former car park site developed to provide high quality guest bedrooms, ground floor restaurants and bars, a rooftop destination (with infinity pool) and a new subterranean hospitality and events venue. The BoTree promises to be a conscious luxury hotel that blends Marylebone flair with Mayfair chic, beautifully designed by EPR architects with interiors by renowned designers Concrete.

The company that designed and installed the water mist system was Marioff. Gregor Toland, sales director UK and Ireland, says: 'The challenges, which arose from the intricacies of the interior design, impacted on the Marioff design team were numerous but not insurmountable. Areas such as the peacock bar and cinema room had to be sympathetically designed to have as little impact on the aesthetics as possible.'

A HI-FOG® solution was also chosen for its environmental capability, using only 30 per cent of water compared with a traditional sprinkler system. Gregor Toland adds: 'Reduced tanks and water storage combined with excellent firefighting capability made the choice a simple one for the owner. They felt it reassuring to have an excellent and efficient firefighting capability at hand.' The localised discharge in the event of a fire will help ensure the continued running of the hotel coupled with the ability to minimise damage wherever possible in a fire event. The extremely effective cooling with radiant heat blocking – benefits that water mist is renowned for – will (in case of a fire) protect the structure of the building and ensure the safety of the guests and staff members alike. Max Lakkonen says: 'Radiant heat is a significant factor in the spread of fires, as it can preheat surrounding materials, making them more susceptible to ignition.'

Increase in space available to the hotel due to the smaller plant requirements, the coordination benefits from using smaller bore pipework and the aesthetically pleasing nozzles were all major benefits for the client. Additionally, Marioff's extensive testing regime will help protect some of the more challenging areas of the project. All of these and most probably more additional aspects make this hotel a lovely and safe place to stay.

Another group of applications is archives, museums and heritage buildings. In fact, heritage buildings and water-sensitive interiors are prime applicants for water mist firefighting systems, particularly when retrofitting an automatic firefighting solution in densely populated urban areas. One notable example of this is the University of Applied Arts in Vienna, Austria. Established in 1868, the university consists of both an historic and a modern section. The university covers visual and media art, architecture and other applied arts such as graphic design, industrial design or fashion design.

To meet increased fire protection standards, the entire building, including the historic attic, required retrofitting with an active firefighting system. The FOGTEC high-pressure water mist system was identified as the ideal solution, offering minimal water usage and compact, space-efficient components.

University of Applied Arts Vienna (Universitaet fuer angewandte Kunst)

However, the integration of the system posed challenges, especially given the limited space for pipes and water storage, and particularly the protection of the atrium which has significant height. Rüdiger Kopp, managing director fixed systems at FOGTEC, explains: 'Nozzle installation at reduced spacing assures an effective fire control between the open floors towards the atrium.'

The already mentioned high cooling effect of the water mist system also waived the requirements for fire-rated glass façades towards escape routes, thus standard glass could be utilised. By replacing fire-rated glass with standard glass, the overall cost of the building's refurbishment was significantly reduced. The system's effectiveness was validated through full-scale fire tests, demonstrating its capacity to provide reliable fire protection without compromising on safety or architectural integrity.

Let's move from Austria to Egypt and from a heritage building to a museum - the new Grand Egyptian Museum which is also protected with a high-pressure water mist system. It is one of Egypt's most important cultural projects and sets new standards as the world's largest archaeological museum. Within this prestigious project, a centralised electric pump unit and 1,200 nozzles have been installed. The museum is protected from fires by a high-pressure water mist system that ensures fast and efficient firefighting.

In addition to the installation, extensive commissioning and training measures were carried out. These included:

- Training of maintenance staff to ensure long-term operational safety and efficiency.
- Training of the project execution and planning team in order to be able to implement future adaptations and extensions professionally.
- System tests and optimisation to fine-tune the system under real conditions.

One of the biggest challenges was adapting the pump systems to the specific climatic conditions in Egypt and integrating them into the museum's complex infrastructure. Michael Bindreiter, sales group manager at Aquasys, explains: 'Through close collaboration with our long-term co-operation partner Nile System for Contracting and the support of AQUASYS, innovative solutions were developed to ensure the long-term operation of the system. The implementation of the high-pressure water mist system required precise coordination with the architectural features of the museum in order to ensure unobtrusive yet highly effective firefighting.'

So, what were the results and the added value? An efficient fire protection solution for the entire museum is in place. Reliable long-term maintenance is ensured through targeted training. And thanks to the compact design, the installation remains almost invisible, allowing the nozzles to blend in perfectly with the building's structure.

Michael Bindreiter says: 'This successful project is an important contribution to the technical infrastructure of the new Grand Egyptian Museum and has at the same time created a sustainable system for the future."

Bettina McDowell, IWMA's CEO, adds: 'When it comes to museums, the question is: what puts the exhibits into greater danger? The amount of water or the fire? Water mist systems use up to 85 per cent less water than traditional sprinkler systems which very often is a critical factor.'

'Modern water mist firefighting systems are founded on several key principles that collectively enhance their efficiency and effectiveness in extinguishing fires. These principles include the cooling effect, oxygen displacement, and radiant heat attenuation. Understanding these principles is essential to appreciate how water mist technology operates and why it is an increasingly popular choice for fire protection.'

The installation of an Ultra Fog high-pressure water mist system in the two towers of a high-profile, mixed-use development in Doha is a prime example of where water mist technology comes into its own. The development comprises a 30-floor tower; a shopping centre, car park and theme park; 12 floors of apartments and a 250-metre long elliptically shaped park.

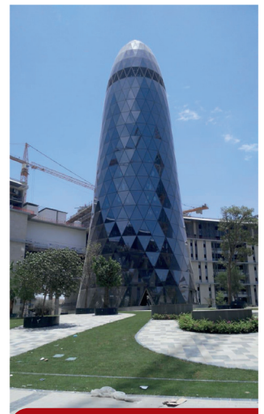
At the heart of the Doha Oasis development in Musheireb, downtown Doha, is the 27,500-square-metre Themed Experience Centre, which includes two visually striking 60-metre-high glass towers rising from the landscaped courtyard.

These towers, named Dragon and Geyser, were designed to enable visitors to enjoy panoramic views from the elliptical walkway, as well as the amusement rides inside.

Modern architectural designs with their wide-open spaces, high ceilings and glass external and internal structures present challenges for fire safety. The high cooling efficiency of high-pressure water mist, creating a fine mist which fills even the largest spaces, responds to the challenge using only a fraction of the water required by a traditional sprinkler system. Where building structures contain a lot of glass it is essential that the heat of a fire is contained quickly to avoid breaking of glass which could cause injury and impede the building's evacuation.

Ann Micheli, managing director at Ultra Fog says: 'From an architectural perspective, the Ultra Fog high-pressure water mist system with its exposed stainless-steel pipework has become part of the design itself. This is made possible by the relatively small dimensions of piping used by water mist systems when compared with traditional sprinklers. Smaller pipe dimensions are easier and faster to install, and the overall weight of the system is significantly reduced.'

Max Lakkonen concludes: 'Modern water mist firefighting systems are founded on several key principles that collectively enhance their efficiency and effectiveness in extinguishing fires. These principles include the cooling effect, oxygen displacement, and radiant heat attenuation. Understanding these principles is essential to appreciate how water mist technology operates and why it is an increasingly popular choice for fire protection.'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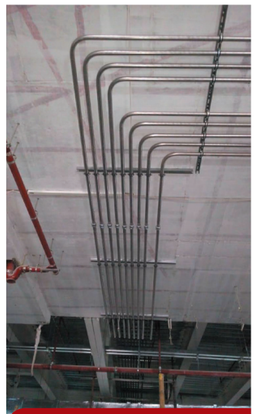
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