



Fire Fighting
for Cultural Heritage
Save Lives
Reduce Damage

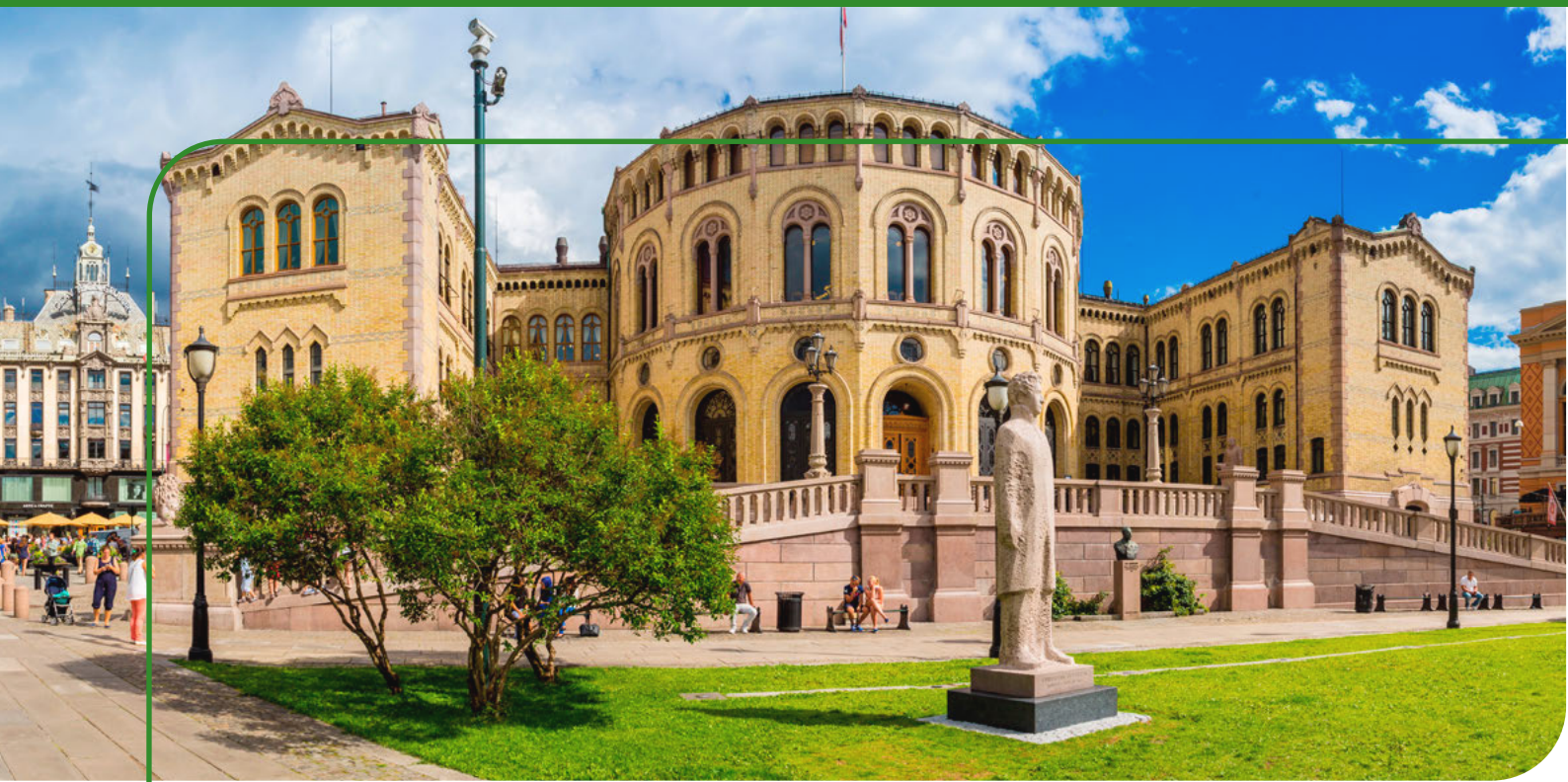


High-pressure
water mist fire protection



www.ultrafog.com





DELIVERING FIRE PROTECTION SERVICES FOR CULTURAL HERITAGE PROPERTIES

Ultra Fog is an international brand founded in Gothenburg, Sweden.

The company specializes in the development, design and application of high-pressure water mist systems. This high-performance product line results from a continuous program of research and development, extensive certification, type approvals, and quality controlled manufacturing. Ultra Fog's global reach and aftersales service and maintenance provision ensure that customers benefit from lifetime product assurance.

Protecting our cultural heritage against fire is a challenge, requiring a delicate balance between security and preservation of the

original characteristics and historical value of the building or artefact.

The key advantage of a water mist system is that it minimized damage the walls and ceiling paintings, antiques and décor found inside many old churches and other heritage buildings, in comparison to a conventional sprinkler system. Less water means smaller pipework and this is much easier to conceal within the fabric of the building.

Ultra Fog's broad experience, flexible designs and responsiveness to the need for high-performance fire protection in full respect of our customer's aesthetic and historical priorities place us in a leading position in this market.





Cultural Heritage
System Protection
Scheme

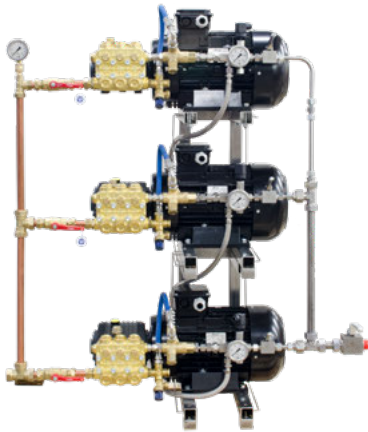
Product overview & services

NOZZLES



- Patented nozzle design - inline construction
- Droplet size 30 – 200 μm
- Suitable for very small installation space
- Specially designed nozzle arrangement for cultural heritage applications
- High quality design, made of stainless steel
- High resistance nozzles
- Colour of the nozzles may be adjusted to fit the room

PUMP UNIT MPU335



- Outlet pressure: 100 – 130 bar
- Inlet water flow: 168 litres/min at 2 bar
- Flow: 0 - 150 litres/min
- Power consumption: 33kw
- Power supply: 3 x 400 V AC 50Hz (3 x 220 V AC 50Hz)
- Flow: For 100 bar system up to 150 litres/min
- Electric driven piston high pressure pump with frequency controlled rpm on motor with adjustable system pressure with integrated pilot pump
- Easy to install, access, operate and maintain
- Strainer 50 micron, safety valve, pressure gauge, pressure transmitter and test outlet under the same frame



SECTION VALVES

- Section valves dedicated for both wet and dry pipe systems
- Two types of devices, depending on the water flow (≤ 200 L/min and ≥ 200 L/min)



WATER TANK

- Plastic or other material tank custom made
- Automatic refill
- With heater for cold environment



PIPINGS & FITTINGS

- Pippings made either of stainless steel 316, Duplex or custom special material
- Low cost pipes
- Less weight than in traditional sprinkler systems
- Pipe networks that are easy to conceal
- Pippings with fast connection fittings or welded pipe.



ELECTRICAL SYSTEM & FIRE ALARM

- In house product - fully configurable
- PLC Internal & External coms
- Mimic, touchscreen



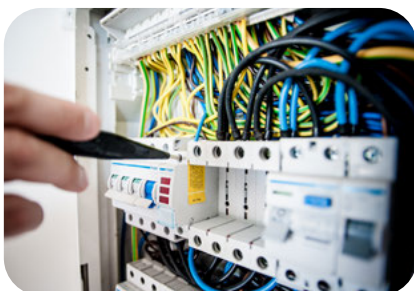
SIMULATIONS

- CFD - supported calculation models
- Pool fires of up to 100 m² and solid fires
- Application - specific fire scenarios



DELIVERY, INSTALLATION & COMISSIONING

- On-time delivery
- Onsite support with the installation all over the world



SERVICE & MAINTENANCE

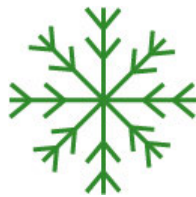
- Direct service and aftersales, through a few carefully selected and trained authorized service providers
- 24/7 on call service

FEATURES & BENEFITS



SAFE FOR PEOPLE AND ENVIRONMENT (ONLY WATER IS USED)

- The amount of discharged water is minimal,
- Environmentally friendly and people safe - no toxins, or corrosive substances.



HIGH COOLING EFFECT

- Major cooling effect when the water droplets transform into vapour.



SHIELD AGAINST THERMAL RADIATION

- Risk of flashover reduced to zero,
- Reduced drain and scupper dimensions.



Facts about Ultra Fog water mist fire suppression system:

- Droplet size: from 10 microns up to 200 microns.
- Water consumption: 85-90% less compared to a conventional system.
- 1,700 litres of water vapour will be produced from each litre of water.
- Coverage up to 48m² from each sprinkler head.



LARGE EXPANSION DURING VAPORISATION

- Fast extinguishing - fast automatic sprinklers with low Response Time Index (RTI) value or by detectors.



80-90% LESS WATER THAN TRADITIONAL SPRINKLER SYSTEM = LESS DAMAGE

- Very high extinguishing effect whilst using a small amount of water,
- Less damage to equipment and faster restoration.



CUSTOM DESIGN

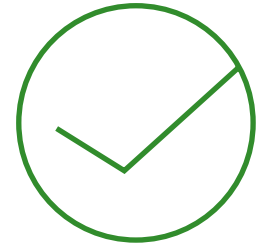
- Custom designed solutions, engineered for cost and efficiency,
- Small pipe dimensions and aesthetically considerate nozzle allow for a discreet system, resulting in an installation with no hot work required, meaning retrofits are simple,
- Extremely lightweight - requires only 10% of the water storage compared to conventional systems.

CERTIFICATES & APPROVALS

THE ULTRA FOG DROP SIZE IS RATED AS CLASS 1 ACCORDING TO THE NATIONAL FIRE PROTECTION ASSOCIATION CODE (NFPA, USA), WHICH ENSURE EFFECTIVE FIRE FIGHTING PERFORMANCE.

- FM5560 Non-Storage Occupancies, HC-1, Part 4 EN14972
- FM5560 Turbine and Machinery in Enclosures, Part 14 and 15 EN14972
- FM5560 Data Processing Equipment Rooms/Halls above and below raised floor (Appendix M and N)
- Part 3 EN14972 OH1
- Part 10 EN14972 Annex A OH4
- Part 2 EN14972 Annex A OH3
- Part 5 EN14972 Annex A OH2
- Part 7 & 17 EN14972 Annex A, Residential Water Mist Systems
 - BS 8458 – Domestic and Residential Water Mist Systems
 - BS 8489 – Commercial and Industrial Water Mist Systems
 - NFPA 750
- Archive / Library CEN TS 14972 annex B, ref fire report BFL2020/TP02/001 and BFL2020/TP02/009
- Part 12 EN14972, Fat Fryer & Galley Hood
- Component testing by the laboratory of UL and FM
- Tunnel: Uptun, Aplus guideline full scale fire test.
- Vehicle / Diesel Train: Regulation No. 107, Revision 7, Annex 13; Train test specification ALn663

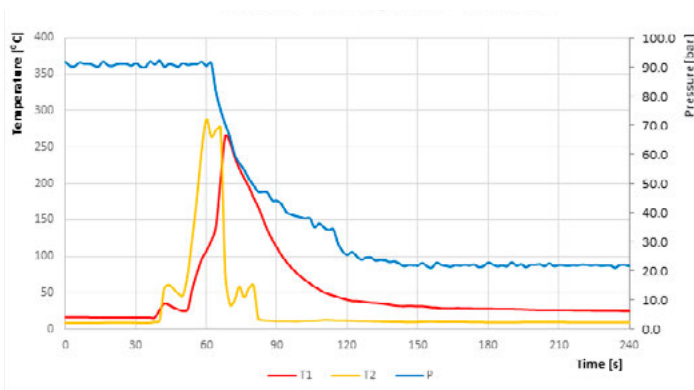




QUALITY ASSURANCE

- Quality Management System certified to: ISO 9001:2015,
- Quality cooperation with our suppliers,
- Annual supplier evaluation (in the form of ratings),
- Qualified specialists,
- High-quality calibrated measuring devices.

CONSTANT RESEARCHES AND IMPROVEMENT



Ultra Fog continues to test its products in accredited laboratories worldwide, ensuring its quality and performance is second to none.

Sample chart showing accumulator pressure and temperature changes during fire test and efficiency of the system after its startup.



REFERENCES



GUNNEBO HOUSE

The 18th-century building made in Neoclassical style, in the beginning, was a summer residence for John Hall, now is a cultural landmark with guided tours and events.

Ultra Fog water mist fire suppression system protects a beautiful interior of the neoclassical building.



SCUOLA SAN GIOVANNI EVANGELISTA

Venetian complex founded in 1261, representing examples of Gothic, Renaissance and Venetian Baroque art.

Ultra Fog intervention was aimed to replace the existing chemical gas system and to protect the attics of the School; furthermore, a couple of rooms as an archive.

The Ultra Fog system was installed during the museum's activity without interrupting the flow of visits to the museum. The pump station was assembled in a room outside the main building constructed to withstand the high tidal water levels typical of this historical city.



MANICA LUNGA



The libraries of the Giorgio Cini Foundation in Venice house over 300,000 volumes and represents an extraordinary instrument of study and research in the fields of history, art, literature, music, theatre, orientalism.

The collections kept on the Island of San Giorgio Maggiore are highly specialized and traditionally linked to the activities of the Institutes and Centers in which the Foundation's scientific activity is divided. The spaces dedicated to the use of the library heritage are organized around

the New „Manica Lunga” - an ancient benedictine dormitory - which, together with the seventeenth-century Library designed by Baldassare Longhena and planned as a reading room.

The intervention was intended to replace an existing system with a new Ultra Fog water mist system. The installation was carried out without any limitation of access by operators and visitors from 7th October to the end of December 2019.

HOTEL DANIELI PALAZZO DANDOLO

A five-star palatial hotel in Venice was built at the end of the 14th century by the Dandolos - Venetian family. Full of elements made of marble, gold and antiques, it has been seen in so many movies that everyone finds the atrium as impressive as familiar.

The installation was carried out in several stages to allow the structure to continue operating without closing to guests.



PALAZZO DONÀ



Palazzo Donà is a complex made up of three historic buildings formerly a noble residence, located in Campo Santa Maria Formosa in Venice.

The intervention concerns the entire building that will become an essential hotel in the city.

The Ultra Fog water mist fire-fighting system that protects the entire building put special care into disguising the pipes so as not to alter the environment.

The system extends the protection to all attic areas.

ÄLGARÅS CHURCH

Älgarås Church is a medieval wooden church, built-in 15th century. One of only 12 churches in Sweden that survived medieval ages. Age is not the only extraordinary thing about this building - the church houses an invaluable collection of artefacts from the middle ages including a triumph

crucifix, wooden bell with runic writing and unique altar screen.

Ultra Fog protection in Älgarås Church consist of protecting the wooden roof outside as well as the inside of the building.



EDVARD MUNCH'S HOUSE

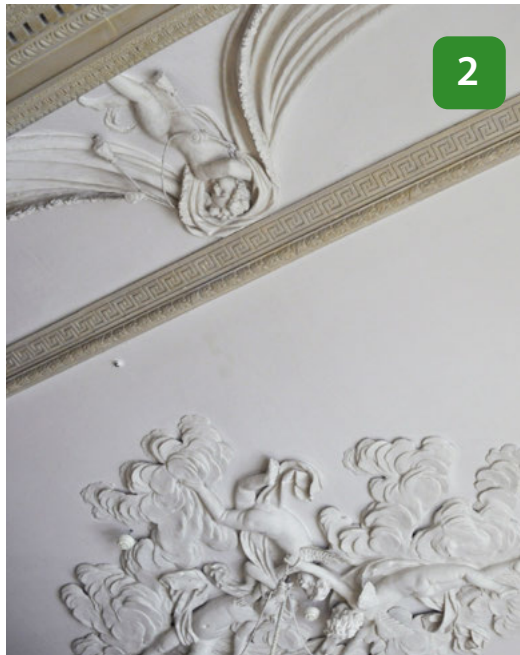


The 18th-century building, back in time was a summer house for Edvard Munch. Now it is a small museum, preserved as it was when Munch lived there.

Ultra Fog ensured that the outside, as well as the inside of the house, will be protected by the water mist fire suppression system.



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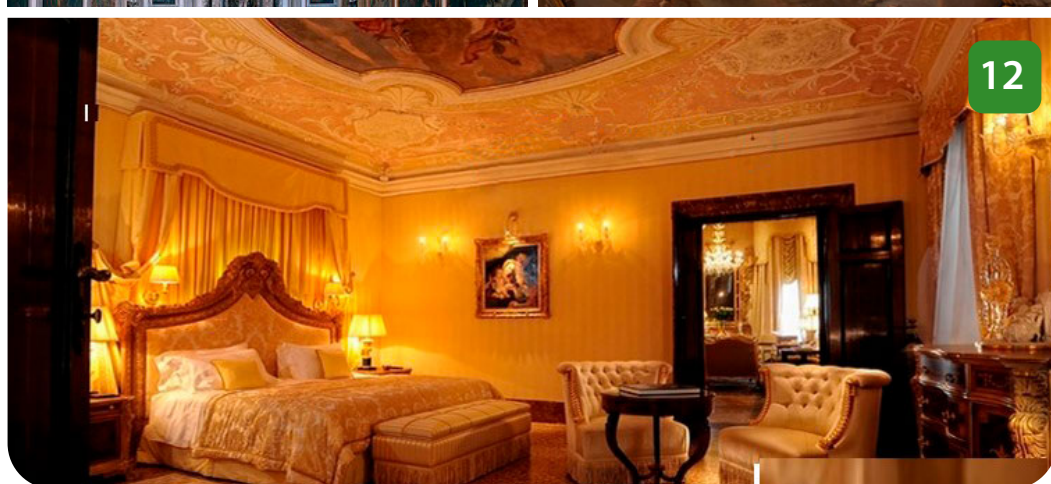
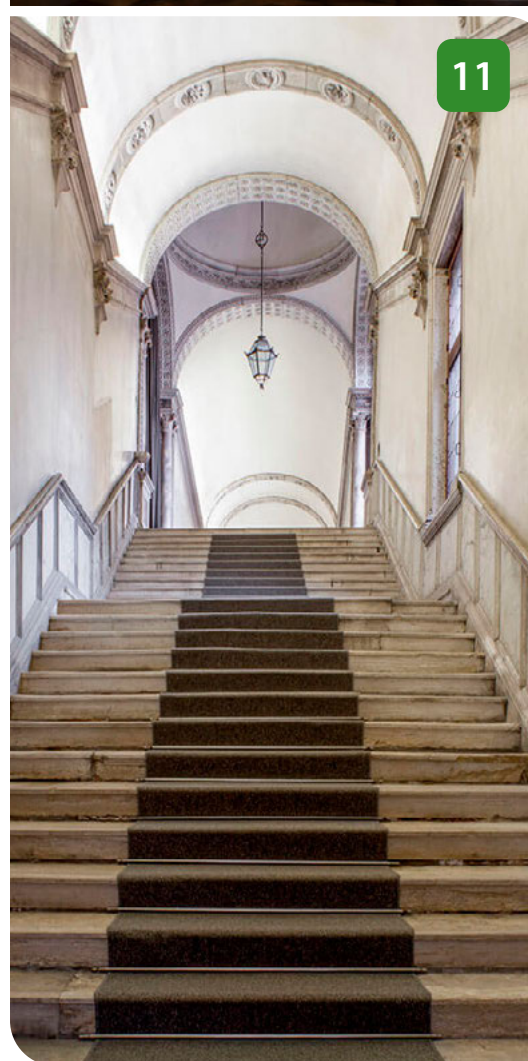
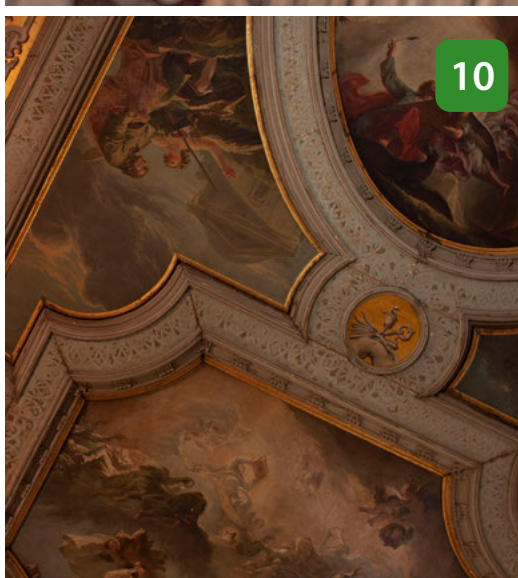
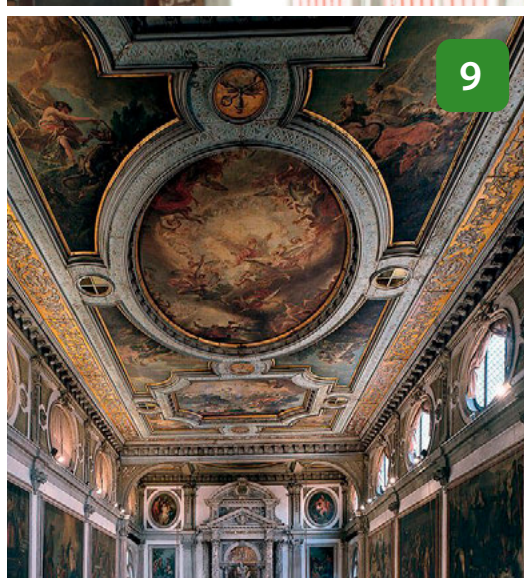
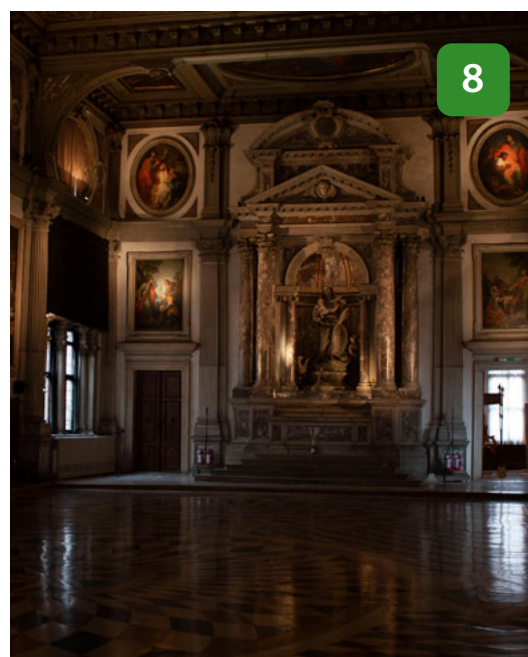
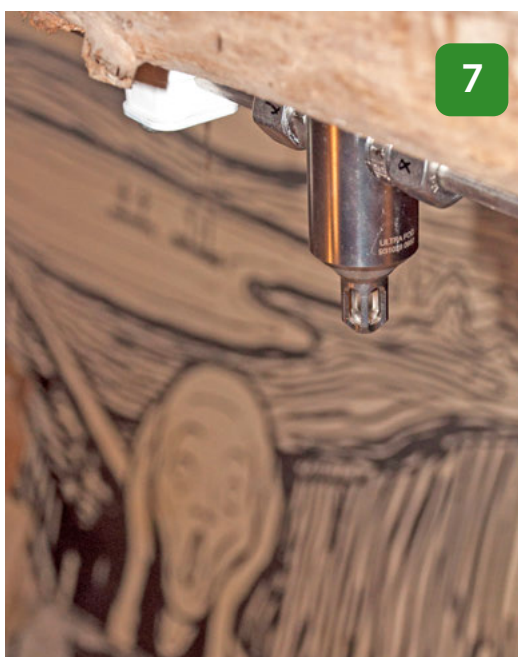
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1, 2 - Gunnebo House, Mölndal
3 - Manica Lunga Fondazione Cini, Venice
4, 5 - Historical Landmark in Linstowgate, Oslo





6, 7 - Munch's House, Åsgårdstrand

8, 9, 10, 11 - Scuola San Giovanni Evangelista, Venice

12 - Hotel Danieli, Venice

Fire Testing, Type Approvals and compliance:

Ultra Fog's Water Mist System has been fire tested by the Swedish Test Laboratory (SP), SINTEF - Norway and Danish Fire Laboratory (DFL), and the Southwest Research Institute (SwRI) and Baltic Fire Laboratory (BFL).

- FM5560 Data Processing Equipment Rooms/Halls (Appendix M and N)
- FM5560 Non-Storage Occupancies, HC-1, Part 4 EN14972
- FM5560 Turbine and Machinery in Enclosures, Part 14 and 15 EN14972
- Part 3 EN14972 OH1
- Part 10 EN14972 Annex A OH4
- Part 2 EN14972 Annex A OH3
- Part 5 EN14972 Annex A OH2
- Part 7 & 17 EN14972 Annex A, Residential Water Mist Systems
 - BS 8458 – Domestic and Residential Water Mist Systems
 - BS 8489 – Commercial and Industrial Water Mist Systems
 - NFPA 750
- Archive / Library CEN TS 14972 annex B, ref fire report BFL2020/TP02/001 and BFL2020/TP02/009
- Part 12 EN14972, Fat Fryer & Galley Hood
- Component testing by the laboratory of UL and FM
- Tunnel: Uptun, Applus+ guideline full scale fire test.
- Vehicle / Diesel Train: Regulation No. 107, Revision 7, Annex 13; Train test specification ALn663

Since 1990, Ultra Fog has been committed to a continuous programme of product development and fire testing in response to the latest rules, regulations, and standards around the world. Ultra Fog products are 3rd party tested and approved, in accordance with internationally recognised test protocols.

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