

sprinkler OUTLOOK

Issue 6/2026

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OUTLOOK

issue 6/2026

Welcome to the sixth edition of *Sprinkler Outlook*!

Despite sprinklers being invented over 150 years ago, innovation continues. In this issue, we focus on innovation with articles about products that improve system performance and reliability, or reduce environmental impact.

The core mission of the EFSN is to develop the widespread use of sprinklers across Europe. We do this through national campaigns and continue to make great progress. Every year there are new requirements or incentives for sprinklers introduced in fire safety building codes. We have national updates from Inge Devalez for Belgium, Giorgio Franzini for Italy, John van Lierop for The Netherlands, Alfredo Álvarez for Spain and Alisdair Perry for the UK.

At FSI 2026 in Paris we saw many French innovations to reduce carbon emissions and water consumption which are comprehensively summarised by Youcef Ouammou of EFSN.

Discussing the benefits of automated pump testing in terms of cost savings and improved system reliability, Ludger Tegeler of FM goes on to explain the approval criteria applied by FM for such systems. John de Gieter and Miriam Nyabuto of AquaSecurity present their sprinkler system remote monitoring package, already installed at 60 sites where it has revealed when alarms are disabled and helped their company to offer more targeted maintenance, at lower cost to their customers.

Back in 2024 when FSI was in Dublin several delegates asked me about Environmental Product Declarations (EPD). These are already required in some EU countries and are set to be required in all. Rapidrop has achieved its first EPDs, with more to come and in an article also shares what the application process taught the company about its environmental impact.

Not only are electronics improving sprinkler system reliability, they are also improving performance. Johanes Falk of Calanbau discusses recent fire tests for the SmartSprinkler concept, where electronic detection operates a group of sprinklers earlier in the fire for more efficient fire protection, also able to protect risks beyond the capability of regular sprinkler systems.

Sprinkler systems can have very long service lives, as long as they are maintained. Johan Hoogeweg of DGMR recounts a project to refurbish systems installed in the 1940s to protect historical buildings.

In this edition I would like to congratulate Profit on 20 successful years of trading. Growing from its origins in Belgium, in an interview with Jeroen De Smedt we learn that the company now serves customers in 60 countries, has a pipeshop in Romania and a local sales team in France.

We are often asked for the reasoning behind a requirement in a standard, documents that set out what to do but not why. Stuart Lloyd of Zurich explains how test data leads to the guidance in standards, using the ESFR installation guidance as an example. Still on standards, Sarah Colwell of BRE discusses how new European pump and pump set standards, combined with third party product and installer accreditation schemes, help to drive consistency in design, testing and performance.

In Europe most sprinkler systems need a tank and these need periodic cleaning. Jules Bellard of Air Eau Tech discusses robotic water-tank cleaning, which avoids the need to empty and refill the tank. Latest models can filter and return water extracted during the cleaning process, so eliminating water losses.

I hope you enjoy this edition of *Sprinkler Outlook*!

Alan Brinson





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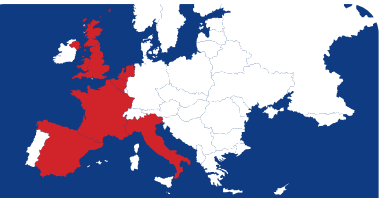
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Sprinkler systems in historic churches

By Ronald Oldengarm and
Johan Hoogeweg, DGMR

Historic churches combine irreplaceable cultural value with concealed combustible construction, great height and difficult fire service access. Many Dutch churches still contain sprinkler pipework installed decades ago. The engineering challenge is no longer simply whether a system exists, but whether it can deliver water automatically, promptly and reliably when a fire starts.

The protection objective has not aged

The Netherlands has a distinctive collection of historic churches and church towers that shape the identity of cities, villages and landscapes. Their value is cultural, architectural, religious and social. Fire can therefore cause much more than repairable property damage: it can remove original fabric, interiors, archives, organs and

AT A GLANCE

- A substantial number of Dutch churches and church towers contain sprinkler systems that are several decades old.
- Age alone does not determine fitness for service. Condition; hydraulic capability; water supply; detection; alarm transmission and management must be assessed together.
- A pipe network without an automatic water supply may provide only limited protection because fire growth continues while the fire service connects and supplies water.
- Revitalisation should start with explicit heritage-protection objectives and an integrated review of building, installation and organisational measures.

the familiar landmark around which a community has developed.

The Dutch government recognised this national interest before, during and after the Second World War. Under government responsibility, dozens of important monuments were equipped with sprinkler installations. This policy continued after the Second World War and,

until the early 1980s, important churches and towers received government-funded sprinkler protection.

Why churches remain a demanding fire risk

Church roofs and towers often contain extensive dry timber constructions. Fire may start in voids that are difficult to inspect and even harder to reach with hose streams. Height causes static pressure loss, access routes may be restricted, sometimes to a narrow internal staircase, and the seat of the fire may be above vaults or behind historic finishes. Renovation work; electrical faults; lightning; arson; changing use and sustainability measures, such as PV panels, can all introduce ignition sources or alter fire development.

The legal minimum is not the same as heritage conservation. Dutch building regulations primarily address life safety and the prevention of fire spread to adjacent plots. They do not guarantee preservation of the monument itself. Owners therefore need to define additional private objectives, particularly limitation of damage to the building and its contents, continuity of use and reduction of societal impact.

What an automatic sprinkler system contributes

An automatic sprinkler system detects heat locally and applies water to the developing fire. Only sprinklers sufficiently heated by the fire operate. The principal effects are cooling of the fuel, limitation of pyrolysis and pre-wetting of nearby materials. These mechanisms restrict heat release and prevent a local fire from developing into a building-wide event. Early control also creates a more stable situation for fire service intervention and can reduce the amount of water ultimately required compared with a developed fire.

For heritage applications, this local response is particularly important. A sprinkler does not wait for visual discovery, alarm verification, mobilisation, access to a difficult roof space and manual deployment of hose lines. It acts where heat is produced, while the fire is still comparatively small.

The legacy-system problem

Many historic systems are now around half a century old or older. Some remain in good condition, while others have lost essential elements. Pumps may have been removed, water sources may have deteriorated, fire service connections may no longer suit current operations, alarm transmission may have changed, and sections may have been isolated or taken out of service. In several churches only the (corroded) dry pipe network remains.

This does not mean that every old installation is obsolete. Properly installed steel pipework can remain serviceable for many decades. A condition-based assessment is therefore more useful than replacement based on age alone; it helps identify which parts can be retained, which require repair and which must be upgraded to restore a reliable protection concept.

Automatic versus fire service-fed systems

A conventional sprinkler system includes an automatic water supply capable of delivering the required flow and pressure for the specified duration. A number of historic church systems, by contrast, rely on the fire service to connect an appliance and feed the dry network. These arrangements are often described as non-automatic sprinkler systems.

“The central question is not whether an old sprinkler system complies word for word with a modern rulebook. It is whether the complete protection concept can still control credible fire scenarios”

.....

The delay is critical. As the fire grows, additional sprinklers may open and the operating area can exceed the area for which the pipe network and available water supply were intended. High towers also impose approximately 1 bar of static pressure loss for every 10 metres of elevation, before friction losses are considered. Historical calculations for some churches indicate water demands exceeding 4 m³/min at supply pressures in the order of 8 to 13 bar. Such demands may be beyond the practical capability of a single fire truck or the available hydrant supply. Once a fire has developed, firefighters may also be reluctant to operate close to the church because of the risk of falling or collapsing building elements; accidents involving partial collapse have occurred in the past.

A fire service connection can remain useful as a supplementary or contingency provision, but it should not be mistaken for an automatic water supply. If full automation is not immediately feasible, the residual risk and the operational assumptions must be made explicit and agreed through pre-incident planning.

This distinction is especially relevant for owners and advisers because it determines whether the system can be treated as an active fire-control measure or only as an operational aid for the fire service.

Engineering comparison

The following comparison (see overleaf) highlights the main engineering differences between fully automatic sprinkler systems and legacy systems that depend on fire service intervention for water supply. The distinction is important: both systems may use similar pipework and sprinkler heads, but their reliability, response time and hydraulic assumptions are fundamentally different.

A rational renewal strategy

Bringing or keeping the installation to a working fire safety strategy should not begin with a shopping list of new components. It should begin with the protection objectives, credible fire scenarios and the heritage values that must be preserved. The outcome is an integrated concept that combines building, installation and organisational measures.

- Establish ownership and responsibilities: Church buildings and towers may have different owners, while the fire-protection system crosses that boundary.
- Recover available documentation: Drawings, hydraulic calculations, operating instructions, test records and modification history are essential.
- Survey the system: Record protected areas, omissions, pipe routing, sprinkler types, valves, alarms, fire service inlets, supports, drainage and accessibility.
- Assess condition: Use representative internal pipe inspection, wall thickness measurements where

Aspect	Automatic system	Fire service-fed legacy system
Water application	Starts automatically after sprinkler operation.	Starts only after alarm receipt, mobilisation, access and connection.
Design basis	Dedicated supply matched to hydraulic demand and duration.	Dependent on appliance, hydrant capacity, hose layout and operational access.
Fire growth	Water is applied at an early stage.	Fire may continue to grow before water is applied.
Water requirement	For a small fire, the required water demand is well established.	For a larger fire, the required water demand is uncertain and cannot be based reliably on sprinkler design codes.
Pressure/flow at elevation	Established by pump and hydraulic calculation.	Available pressure is reduced by static head and hose/pipe friction and fire brigade capacity
Operational dependency	Low, provided the system is available and maintained.	High; relies on people, equipment, access and correct procedures.
Preferred role	Primary automatic fire-control measure.	Interim, supplementary or contingency measure with explicit limitations.

justified, obstruction checks, sprinkler sampling and functional testing.

- Verify hydraulic performance: Reconstruct or update calculations using the actual pipework, elevations, hazards and available water supply
- Review detection, alarms and follow-up: A local alarm without prompt and effective response will not provide the intended protection; even an automatic system still requires organised follow-up.
- Provide an automatic and reliable water supply wherever reasonably practicable.
- Document the final concept, design criteria, deviations, management requirements and inspection basis in a clear fire-protection specification.

Fire brigade

Pre-incident planning with the fire service remains important, even for a fully automatic system. Responders need to know where activation occurred, how the water supply is arranged, where alarm valves and controls are located, which parts of the building contain exceptional heritage value and when the system may safely be isolated. The sprinkler system should normally remain in operation until the fire is confirmed to be extinguished.

Funding the next generation of protection

The original systems were installed because the monuments were considered to be of national importance. The same cultural value remains, but the accumulated maintenance and modernisation task now often falls on owners with limited resources.

Although funding options are limited, available subsidy schemes for monument maintenance can provide an important opportunity. In particular, installations originally provided at the request of the government may qualify for financial support. Several current projects are already exploring this route through formal subsidy applications.

The objective should be more than a one-off catch-up programme. It should bring systems to a defined condition and then keep them there through planned testing, maintenance, periodic review and clear allocation of responsibility. The programme should also allow risk-based consideration of important churches that do not yet have automatic suppression, but where sprinklers or water mist could provide substantial heritage benefit.

Conclusion

Historic sprinkler systems should neither be removed simply because they are old nor trusted simply because

pipework is present. Their value depends on the complete chain from heat-operated sprinkler to water supply, alarm, management and fire service follow-up. A technically sound assessment may show that substantial parts of an existing network can be retained. It may equally show that automatic water supply, alarm transmission, corrosion control or hydraulic capacity must be restored.

For sprinkler specialists, historic churches offer a clear engineering lesson: preservation is achieved through early control of fire, but the system to provide that control must be verified, maintainable and aligned with the realities of the building. Revitalising these systems protects more than steel pipe and sprinkler heads. It protects irreplaceable architecture, interiors, memory and community value.

Practical checklist

	Action	Technical intent
1	Define the objective	Preservation of the building and contents, life safety, support for fire service intervention and acceptable residual risk.
2	Confirm the legal and stakeholder framework	Identify owners, users, authority, insurer, heritage adviser and fire service.
3	Inspect the existing installation	Establish scope, condition, accessibility, modifications, omissions and impairment status.
4	Verify water supply and hydraulics	Confirm demand, elevation losses, friction losses, duration, source reliability and redundancy.
5	Review alarms and response	Confirm fire and fault transmission, responsible recipients and response procedures.
6	Select the intervention	Retain, repair, automate, extend or replace, on the basis of evidence.
7	Embed maintenance	Assign a trained manager, maintenance contractor, test regime, logbook and impairment procedure.
8	Plan for the next review	Link major maintenance, condition monitoring and funding to a multi-year programme.



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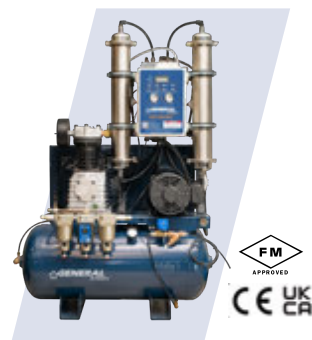
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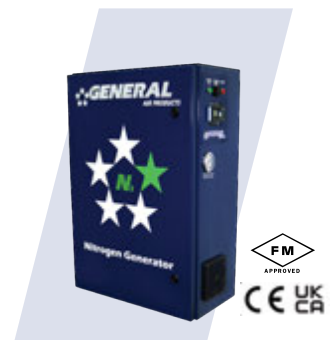
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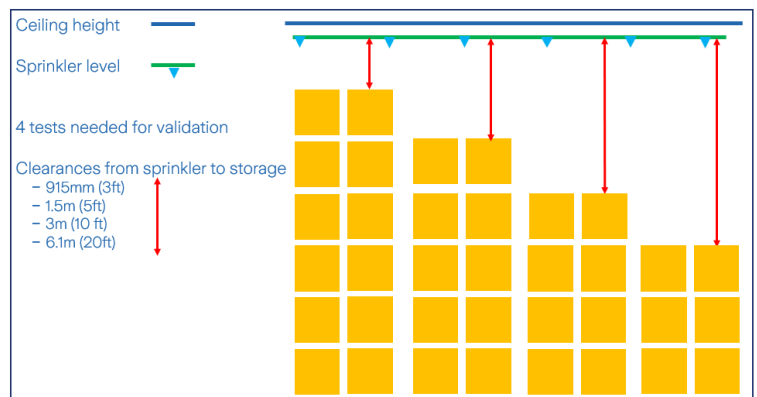
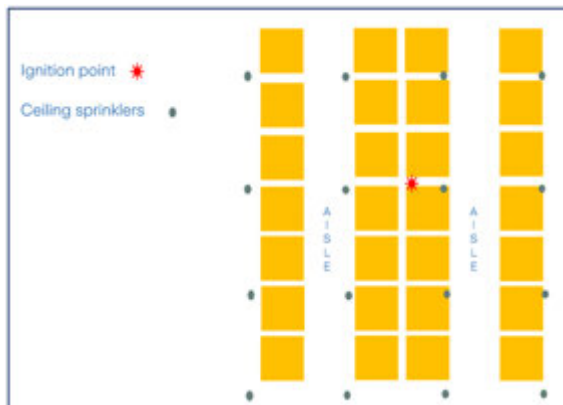
Stuart Lloyd, Global Practice Leader – Fire Protection, Zurich Insurance Company examines progress with ESFR sprinkler protection

As development of Early Suppression Fast Response (ESFR) sprinkler protection solutions continues to evolve, I believe it is time for us all to take stock of the journey and to understand the development and approval process. This helps us understand what stands behind the solutions we see today, how they were developed and their limitations, but it is also important that we take a closer look in the rear-view mirror... Not all changes are for new solutions, we have learnt some lessons and some older solutions are known to be inadequate today.

It is testament to the manufacturers, research and test laboratories in conjunction with standards committees that we continually review data and guidance, improve answers and critically act on identified concerns. You should be aware that published guidance has not always kept pace across all standards you may use locally, and that older installations may not be adequate for the risk today.

We all know the simple positives of using an ESFR design approach; essentially it boils down to three main points that attract end users, contractors and insurers to the design philosophy where permitted.

- Ceiling only design option for tall storage warehouses
- 60-minute water supplies
- Suppression, the ability to crush the fire and reduce its size compared to control sprinklers



As an insurer representative, I have had these discussions with our customers and their contractors on a regular basis, ESFRs provide some freedom with storage arrangements when avoiding solid shelves, blocked flues and open top containers. They respond quicker than typical control sprinklers and their discharge patterns are proven to drive back the fire by driving a central core jet of water that penetrates the fire plume, all based on large scale fire tests and approvals. Compliant application can limit the size of a fire, reduce the amount of smoke generated and as a result limit disruption to the customer. This in turn leads to reduced claims for an insurer – an overall win for everyone.

But I am often presented with requests or proposals that deviate from the design guidance, so I would like to offer some insight on the testing approval and process, followed by highlighting how that process has been refined and what has changed. We all need to be aware of this to meet our combined goals of providing solutions that we know will be fit for purpose and maintain the integrity of those involved.

I sit in a privileged position of being involved with multiple standards committees that deal with ESFR sprinklers, namely LPC Rules, EN 12845, and NFPA 13. I am also involved in research via the NFPA Research Foundation and its Property Insurers Research Group. Through these groups and over many years, I have been fortunate to have access and review the test data for multiple new ESFR solutions, engaging directly with manufacturers and test labs that do the large-scale fire tests (FM and UL), and learn about the nuances of the testing process from healthy debates and discussions. I know that small details matter, I have seen the impact of minor changes in research test programmes that have brought solutions to NFPA 13 (and FM data sheets) for protection of exposed expanded plastics (EEP), high volume low speed (HVLS) fans, sloped ceilings above storage, and relaxed ESFR obstruction rules.

So, let's look at how ESFR sprinklers get approved for storage protection. Beyond this obvious selection of storage arrangement (racks), goods classification/category, storage height, and aisle width there are two key other parameters that must be proven by multiple tests. Let's consider the first one, you may have heard about *ignition points and head location*.

The ignition point is consistent with both Underwriters Laboratories (UL) and Factory Mutual (FM) test labs. It is a point two-thirds of the distance of a pallet from the loading aisle in the transverse flue, highlighted in figure one with a red marker, maybe like where someone may

try to set a fire in an arson attack at arm's length. At this point it is known that pallets on both sides of the transverse flue will get involved and as the fire grows, it will wrap into the central longitudinal flue involving more product and head towards the ceiling.

Depending on the distance from the top of storage to the ceiling sprinklers, the test labs will ensure that the ignition point is located either below one sprinkler, offset between two (as shown in figure one) or amongst four. The labs will choose the most challenging, for example it is typically below one for the highest clearances as the heat will spread out before reaching the ceiling sprinklers and may actuate a less favourable sprinkler first.

You are probably aware that in a fire test if the fire reaches the end of a storage array, jumps the aisle and burns through a single target array or operates too many sprinklers it is a failure. The ignition point relative to ceiling sprinkler location is one series of tests that is designed to challenge the robustness of the sprinkler design. The other is a series of four tests that is also required. Working in combination with the above it is concerned with ceiling clearances. (see figure 2)

These tests demonstrate the ability to protect various storage heights under a given ceiling. High clearances may be impacted by air movement or ventilation systems, low clearances test the ability of a sprinkler to form a suitable spray pattern in a limited space.

The objective is to be able to discharge effectively into flues and aisles when located in a challenging position relative to ignition point, which will be engineered not to be ideal.

These tests also prove the ability to handle various fire loads which may encourage the fire to move along the rack, rather than race to the ceiling to activate the sprinklers. We have seen failures at 1.5m and 3m even after passing the high and low clearance tests – who would have thought? That's why we do tests. These variables are what demonstrates the capability of a protection scheme for the real world variations in a storage warehouse or other locations.

Reviewing test data, being involved in research projects and direct discussions with major test laboratories and manufacturers, often at the same table has provided some real insights, it has also highlighted the importance of not deviating from what is published.

Imagine yourself as one of the major sprinkler manufacturers looking to outperform your competitor. Also bear in mind the investment in large scale testing alone on top of extensive research. Each manufacturer has taken their sprinkler to the limit of what can be

achieved. ESFR is a proven performance-based design solution, some manufacturers have unique edges to their sprinkler performance, these are captured on their data sheets and due to their uniqueness cannot be included in installation standard tables. Some offer different ceiling heights or aisle widths, but are reliant on specific temperature ratings, distance of head to the ceiling requirements or limited scope of stored goods. Do not try to push the limits published, manufacturers have explored them already and found the boundaries of what is possible for their sprinklers.

Now we are armed with this information, we perhaps believe that updates to standards are regular, aligned and only add positively to the number of solutions?

Well, if only this was true. We need to understand some important points as development of standards and datasheets are not aligned:

- Representation is not consistent, especially globally
- FM develop and publish some of their own unique solutions, primarily for their customers
- Test data is not openly available to every standards organisation
- NFPA 13 updates with a 3-year publication cycle
- FM update their data sheets more frequently as they determine when needed
- EN 12845 is addressing issues with ESFR now: –
 - EN 12845-2 is published and should be used by everyone in Europe
 - EN 12845 is being amended to remove ESFR annex P – very outdated
 - LPC Rules – Technical Bulletin 209 is being removed now EN 12845-2 is published
- No other local/international standard should be trusted

You may be surprised by the above list and the last bullet point. As a contractor I would have chosen the most economical solution from these guidelines above and used it in good faith. Currently having many guidelines to choose from, I may even find one option not included in the others, that needs careful review.

Now is the time to take stock, look in the rear-view mirror and be responsible for what actions we all take going forward. As a contractor, specifier or consultant you may be using a copy of a standard from a few years ago, you may perhaps regularly use a design for a specific customer or ceiling height and not felt the need to review the latest publications.

Here is the shock news, all the testing, research and product development has also taught those involved some lessons over the years. However, unless you track changes to standards and data sheets you may have missed some critical changes completely.

Using NFPA 13 as an example, looking at table 23.3.1 covering storage of different standard products in buildings of various heights up to 13.7m, today there are 59 design options using available upright and pendant sprinkler heads up to K360. These 59 options are based on only 23 actual tests (4 upright and 19 pendant), the remaining options use the same solution cascaded to a lower product group or a lower ceiling height to populate the table. Manufacturers will test against these benchmark tests but are unlikely to look for a better answer; they are now focused on higher ceilings.

However there used to be many more. ESFR was originally an FM concept, and early tests were driven by their protocols. Over time these protocols were modified. Originally in many tests, the ignition point was located at



the junction of the transverse and longitudinal flues. It was discovered that the fire travelled up the flues very quickly to activate the sprinklers and very little product was involved in the fires.

The test was essentially too easy to pass, so UL and FM aligned to agree the ignition point as indicated in figure one. Some of these solutions were originally included in NFPA 13 from 1994, 1999, 2002, 2007 and 2010. A few were removed in 2013, but many not removed until NFPA 13:2022, some were present for 19 years! The original designs failed to pass the revised current test protocol, that can happen in a real warehouse.

Some solutions were never tested, and the design was based on engineering judgment from early tests, there were 13 of these solutions removed for the 2022 edition of NFPA 13. FM dealt with the same issues over a similar time frame, and all have now been removed from NFPA 13 and FM data sheets in their current form.

You will now hopefully realise that Annex P of EN 12845 is wildly out of date, and I would consider it unsafe, I have had that view for many years, and it is why I was involved with supporting development of LPC technical Bulletin 209. However, I should advise that although this is more recent, some of the design options removed from NFPA and FM remain in TB 209. I noted earlier that TB 209 is in the process of removal, users should look to EN 12845-2 since that was published in 2025.

I was instrumental in the authoring of EN 12845-2 using my experience and insights from NFPA 13 committee work, research activity and data available to myself. It was a collaboration with a fellow NFPA 13 member from Sweden along with FM's Chief Operations Engineer for Europe. This new standard contains the latest NFPA 13 and FM 8-9 design criteria validated by representatives of those groups. Any other publication besides NFPA 13, FM data sheets and EN 12845-2 is based on pure interpretation of published standards and/or outdated information.

Progress brings new solutions and better answers, but it also identifies the gaps and weaknesses of previous work. I would urge you to do your due diligence, seek the most recent standards, latest data and liaise with the customer's insurer to determine a suitable solution. If you are reviewing existing systems, you should be aware that the original system may not perform as intended.



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Sprinklers are only as effective as their pumpsets

By David Ferguson, Global Head of Audit, LPCB

When people think of fire systems, they often think of fire doors, extinguishers, and sprinklers. For the latter, they rarely consider how the system works as a whole. There's much more to fire suppression systems than just a sprinkler head.

Yet many misunderstand that a sprinkler head is not where suppression starts. Modern fire suppression systems still depend on access to a reliable water supply and pumps that perform when required. A sprinkler system only works if its water supply does too.

So, while the sprinkler head is no doubt a critical component, the first level of demand actually relies on where the suppression action begins - the pump set.

It may spend most of its service life on standby, but when called upon, it must start, reach

the required duty and continue operating under fire conditions.

And pumps are not simple systems. Of course, the pump itself matters, but so do the driver, controller, coupling, base, power or fuel supply, installation and commissioning. A weakness in

any one of these areas can affect whether the required flow and pressure reach the sprinkler network when needed.

To ensure that all parts of a system work as intended, the industry has adapted. Product claims can be tested, standards account for environmental demands and suitability, procurement supply chains can see if a product has been certified, and installers can be verified.

The entire chain of fire protection relies on product performance assurance.

The importance of performance

To bring reliability, transparency and confidence to fire suppression systems, including sprinklers, pumps and all of the components in between, stakeholders rely on trusted third-party certification.

The Loss Prevention Certification Board (LPCB) is a global leader, providing certification assurance beyond a one-off test result or manufacturer's declaration. Through rigorous, evidence-based testing set to LPCB's Loss Prevention Standards (LPS), products or service providers are assessed to ensure they meet the requirements of relevant standards.

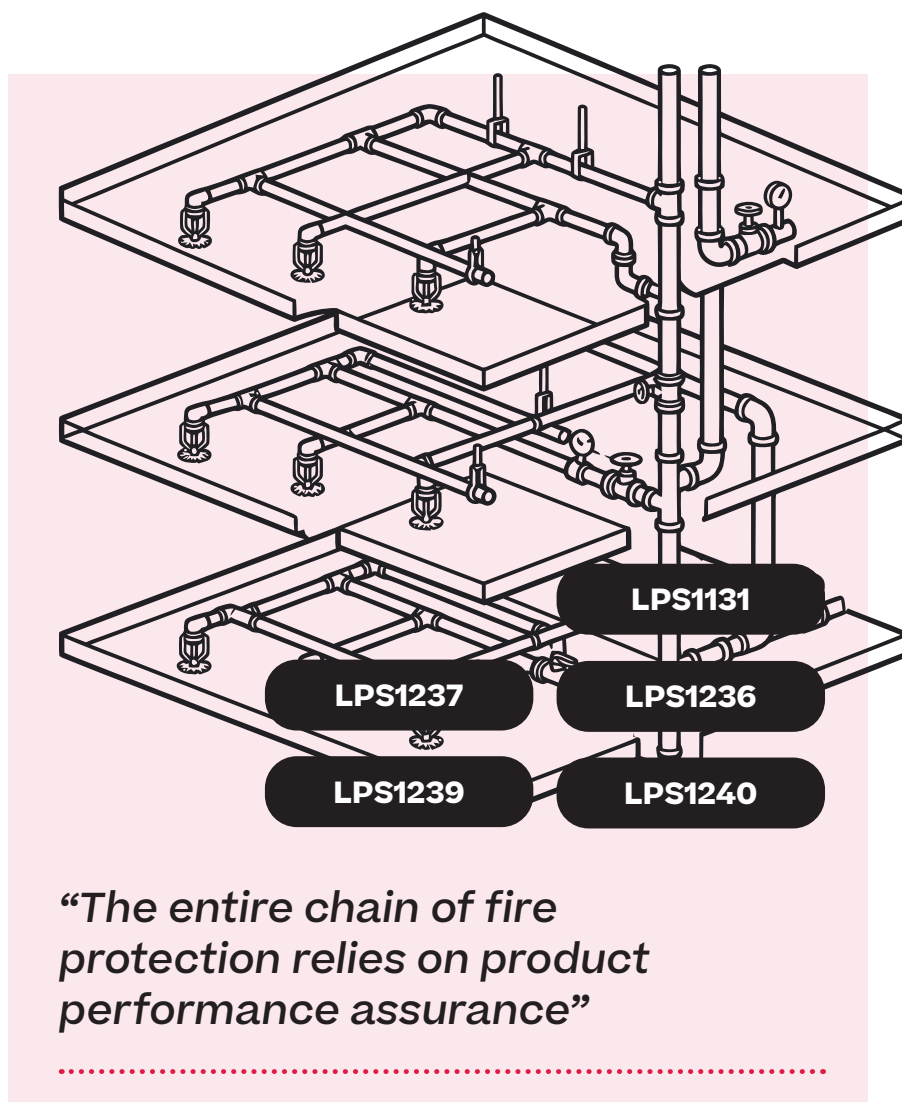
For procurement teams, the practical benefit is traceability. Certification can be checked against a defined product, configuration and scope rather than treated as a generic endorsement of a manufacturer's entire range. Ultimately, third-party certification proves a product will perform as intended, or a service provider meets the required knowledge to install products correctly, meaning correct investment can be made by specifiers, and end-users can rest assured knowing the fire and security systems around them have been thoroughly assessed and are fit for purpose.

Without third-party certifiers, product claims are just that, claims.

Parts of the pump: the importance of specific standards

LPS 1240

The LPCB approach to pump set approvals provides an example of how the complexity and degree of change within these systems is being addressed by 3rd party approval schemes.



“The entire chain of fire protection relies on product performance assurance”

LPS 1240 reflects the latest changes in European standards and defines a fire pump set as an assembly comprising at least a pump head, driver, controller, drive coupling and mounting or base. It also addresses factors that become important when those components are brought together, including alignment, base-plate design, mounting and installation and commissioning information.

By placing requirements on the pump set manufacturer and on the equipment itself, LPS 1240 calls for documentation covering commissioning, operation, maintenance, faults and remedial action, as well as pump dimensions and connections. It also requires information covering foundations, base plates, levelling and alignment, connection of suction and delivery pipework, and final installation.

These details may appear routine, but they support reliability. Pipe strain, poor alignment, unsuitable

foundations or errors introduced during site assembly can alter the conditions under which the pump and driver operate. Assessment of a complete pump set therefore needs to consider whether its components work correctly together and whether the manufacturer has adequately defined how that performance should be preserved during installation.

LPS 1236, LPS 1237, LPS 1239, LPS 1131

LPS 1236 specifically assesses control panels for diesel engine-driven pumps. LPS 1237 covers the same, but with electric motor-driven pumps. LPS 1239 covers diesel engines for sprinkler pump sets. LPS 1131, which sits alongside them, addresses the bare-shaft pump.

The point is a one-size-fits-all assessment of pump performance would not provide the same level of assurance because individual systems differ in their configuration

and installation requirements. Certification therefore needs to account for the characteristics of specific products and assemblies, even though they are ultimately designed to perform the same critical function.

Component approval is important, but it does not remove integration risk. A pump, engine and controller can each meet their respective requirements while still depending on correct selection, alignment and assembly for the complete set to achieve its intended performance.

European standards

European frameworks also support LPS standards.

The current BS EN 12259-12:2023+A1:2026 specifies requirements for pumps for automatic sprinkler systems, including several types of centrifugal pumps as well as vertical turbine pumps.

EN 17451:2024 specifies requirements for the design, assembly, installation and commissioning of pump sets used in sprinkler systems conforming to EN 12845:2015+A2:2026.

The distinction lies between assessing a pump as a manufactured component and assessing the wider pump set within the fire suppression system. EN 12259-12 addresses the pump as an individual product, whereas EN 17451 considers the assembled pump set and the process by which it is installed and brought into service.

Reliability does not end with certification

Third-party standards and certification can provide confidence in systems designed to protect people and assets, but risk does not disappear once a product has been correctly manufactured and certified. Performance can still be affected during installation, maintenance or use. These risks may also be difficult for manufacturers, certifiers, specifiers, building managers and end users to identify.

Improper maintenance, interference or damage are obvious areas of concern.

Research from the National Fire Chiefs Council (NFCC) and the National Fire Sprinkler Network (NFSN) illustrates the issue. Their study found that fire sprinklers have an operational reliability of 94 per cent.

“Research from NFCC and NFSN illustrates the issue. They found that fire sprinklers have an operational reliability of 94 per cent.”

National Fire Protection Association (NFPA) data reproduced by British Automatic Fire Sprinkler Association (BAFSA) suggest that, when sprinklers fail, two-thirds (66 per cent) of the time it was because water pump systems had been shut off. Whether this occurred accidentally, during maintenance or as part of other building work is unclear; it demonstrates the importance of maintaining the entire system.

A lack of maintenance accounted for a further 10 per cent, with debris and system neglect affecting performance. Six per cent was attributed to an inappropriate system, where the suppression method was unsuitable for the type of fire risk, while two per cent of failures resulted from damage.

Many of these issues point to the importance of clear ownership within building management and appropriate education for end users. Manufacturers, certifiers and Fire and Rescue Services can support awareness, but responsibility for protecting the system throughout its working life must also be clearly understood.

However, one important reason for failure - improper installation - can be corrected.

Installation completes the chain

A correctly designed and certified pump set can only deliver its intended performance if it is installed and commissioned correctly. This is why approval does not stop at product performance. Installer competence also forms part of the reliability chain.

In the UK and Ireland, LPS 1048 provides the LPCB approval scheme for contractors responsible for sprinkler systems and firefighting mains. The scheme assesses a contractor's capability to undertake work within defined scopes, including design, installation, inspection, testing, commissioning and servicing.

This complements the product requirements within LPS 1240. LPS 1240 makes the installer responsible for installing the pump set in accordance with the manufacturer's instructions.

For projects outside the UK and Ireland, the installer approval route differs, as LPS 1148 assesses installer competency for automatic sprinkler contractors operating overseas.

The connection between product approval and installer competence is central to system reliability. Product certification addresses whether the equipment has been independently assessed against defined requirements.

Performance matters for the whole system, not just the parts that are seen

That is the wider reliability chain behind sprinkler protection. Pumps, drivers and controllers must perform individually, the complete pump set must operate correctly as an integrated assembly, and installation and ongoing management must preserve that performance throughout the system's working life.

When each part is treated as a critical element of the same fire protection system, specifiers, building owners and end users have a stronger basis for confidence that the water supply will be available when it is needed.

The role of standards and certification isn't simply to provide a stamp of approval for product endorsement, or to be seen labelled on equipment. It is about ensuring that, from manufacturing through to installation, a product has been proven to perform as intended when it matters most.

Fire risk isn't slowing, but when we account for the full chain of detection, prevention, and suppression systems, we have the best chance to protect people and assets in today's built environment.

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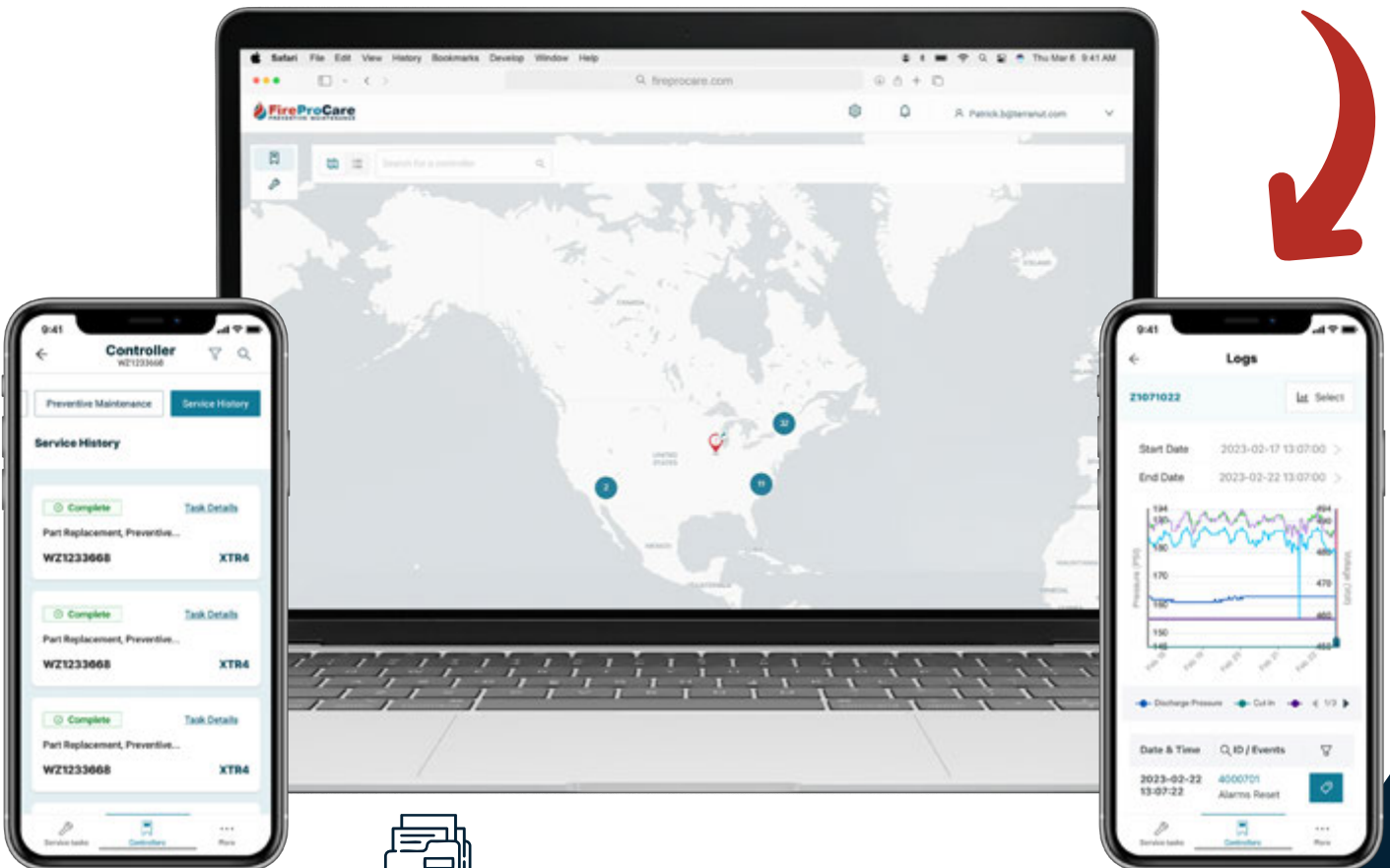
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Shared goals in technical fire protection

VdS and FM share a long history in technical fire protection. Both organisations aim to prevent property damage and business interruptions through effective preventive measures. In this interview, Frank Bieber of VdS and Ludger Tegeler from FM explain how the collaboration has developed, the role played by qualified installation companies, and why technical quality is equally important for operators, insurers and planners.

What experience has VdS gained over the years with FM's requirements for fire extinguishing systems?

Frank Bieber: When talking about VdS, it is certainly worth looking back at our history. Our roots date back to 1908, when the Monitoring Center for Sprinkler Systems was established. Even then, the key question was how to ensure the long-term quality and reliability of sprinkler systems.

Over the decades, this work has evolved into what VdS stands for today: we develop technical standards, test products and systems, and certify installation companies. Our objective has remained unchanged: fire protection systems must operate reliably in an emergency and throughout their entire service life. Since 1997, VdS Schadenverhütung has provided these services as an independent organisation.

Ludger Tegeler: FM's roots also go back a long way. Our technical work in fire protection and loss prevention began as early as the 19th century. Research, risk assessment and the development of technical standards continue to shape our work to this day.

The European perspective is particularly interesting. The Fire Offices Committee (FOC) was established in the UK in 1868. In 1888, it published one of the first European sprinkler guidelines. Looking at developments since then, we can see a remarkable degree of continuity – from the FOC Rules through CEA 4001 and EN 12845 to today's VdS CEA 4001. Many of the fundamental principles of modern sprinkler guidelines have their origins there.

Frank Bieber: VdS and FM first came into closer contact through joint fire tests. At the time, the tests investigated the effectiveness of a sprinkler system without addition of foaming agents for block storage of small plastic load carriers on wooden pallets.

Since then, there has been a regular exchange of technical expertise between the two organisations. Although FM had been a member of the German Insurance Association (GDV) for many years, it initially played a relatively low-key role from our perspective. This has changed considerably in recent years.

What are the key elements of the enhanced cooperation between VdS and FM?

Frank Bieber: VdS-approval of installers for fire extinguishing systems has been in place since the early 1970s. It became clear at the time that the quality of a fire extinguishing system depends not only on the technology itself, but also on its design, installation and maintenance.

That is why VdS-approved installation companies are subject to ongoing monitoring. This includes, among other things, unannounced site inspections, reference installations, and assessments of design and maintenance work. For insurers, this approval has always been an important indicator of quality.

At the same time, insurers need a transparent basis for assessing the effectiveness of technical fire protection systems. In response to this need, an assessment system was established at an early stage. This is now carried forward through the Facility Inspection Score. Put simply, it is a tool for the systematic assessment of the quality and reliability of fire safety measures.

Ludger Tegeler: This is precisely where we have a great deal in common. FM also relies on several interrelated elements: technical standards, systematic design reviews, and the involvement of FM engineers in projects. This enables deviations to be identified at an early stage and corrected while the project is still under way.

Furthermore, we see a strong need for installation companies with in-depth knowledge of FM requirements. This is by no means limited to sites insured by FM. Worldwide, numerous systems are designed and installed in accordance with FM requirements, even though they are not subsequently insured by FM.

That is why VdS has developed an additional FM qualification for VdS-approved sprinkler installation companies. It builds on the existing VdS approval and supplements it with FM-specific content, additional qualification requirements and practical experience of projects carried out in accordance with FM guidelines. This creates a common basis for quality for operators, installation companies and insurers.

Perhaps this also explains why FM is significantly more visible in Germany today than it was 20 years ago. The growing use of modern storage technologies, ESFR and CMSA sprinklers, as well as FM's own guidelines, has

“Our objective has remained unchanged: fire protection systems must operate reliably in an emergency and throughout their entire service life”

.....

considerably increased the international importance of FM requirements. At the same time, FM Insurance Europe S.A., based in Luxembourg, is firmly established in the European insurance market as a member of the German Insurance Association (GDV).

Frank Bieber: This is precisely where we provide support. Together with FM, we offer specialised training courses covering the specific requirements of projects carried out in accordance with FM requirements. Our aim is to equip designers, installation companies and operators with the knowledge they need to ensure that these requirements are implemented correctly.

FM approaches fire protection from a somewhat different perspective. Where, then, do the two organisations share common ground?

Ludger Tegeler: People often talk about the differences. For me, however, what unites us is far more interesting.

Both FM and VdS aim to ensure that fire protection systems perform reliably in an emergency. Both organisations seek to prevent property damage and business interruptions wherever possible. There are some differences in methodology and risk assessment, but not in the ultimate objective.

As a 100% insurer, we also look very closely at the potential impact of a loss event on our clients' business





operations. Ultimately, however, the aim is the same: to identify risks at an early stage and implement effective protective measures.

Frank Bieber: I can only agree. Reliable fire protection systems are in the interests of everyone involved – from operators and designers to insurers. VdS-approval of installation companies has established itself as an effective quality assurance tool over many decades. The proven effectiveness of sprinkler systems provides compelling evidence of the value of this approach.

What does the collaboration look like in practice today?

Ludger Tegeler: FM Insurance Europe is a member of the German Insurance Association (GDV). Against this background, it made sense to actively support the further development of the VdS-approval for installation companies for projects meeting FM requirements.

For many years, whenever our customers in Germany needed qualified installation companies, we referred them to VdS-approved companies. Incorporating FM-specific content now provides an even stronger basis for delivering high-quality projects.

There are also existing points of alignment between the two sets of technical requirements. For example, Annex T of VdS CEA 4001 permits the use of FM Data Sheets under certain conditions. The current collaboration therefore builds on existing common ground and continues to develop.

Another important aspect is the consideration of qualified installation companies within the Facility Inspection Score. Here, too, FM and VdS ultimately share the same objective: reliable and effective fire protection systems as a basis for risk transfer.

Frank Bieber: The progress made is now tangible. Currently, 101 companies worldwide hold a VdS-approval for fire extinguishing systems across 208 trades. Of these, 82 approvals relate to sprinkler systems. Two companies have already obtained the additional FM qualification, and further companies are currently undergoing the approval process. This shows that the concept is gaining acceptance in the market.

What topics are on the agenda for FM and VdS going forward?

Ludger Tegeler: I believe the focus will increasingly shift away from differences and towards further developing our shared technical foundations.

VdS and FM have evolved along different historical paths. However, when it comes to our technical

objectives, there is a great deal of common ground. That is precisely why I regard today's collaboration as a logical and sustainable step.

Frank Bieber: Our collaboration need not be limited to sprinkler systems. VdS has extensive expertise in numerous areas of fire protection and security technology. I therefore see clear potential for further joint activities.

Risk management is a particularly interesting area. VdS risk engineers have been assessing industrial and commercial risks for insurers for many years, and increasingly for insurance brokers as well. There are clear opportunities here for closer cooperation.

We are also currently discussing potential collaboration in the field of smoke and heat extraction systems.

Ludger Tegeler: Smoke and heat extraction systems traditionally play a different role within the FM guidelines than they do in some European regulatory frameworks. Nevertheless, we explicitly recognise their importance as part of a comprehensive fire protection strategy.

As many European manufacturers do not currently hold an FM Approval, we are working with VdS to examine how existing approvals can be taken into account in future. The established VdS-system-approval could provide an important basis for this. The solutions that will emerge from this are the subject of ongoing discussions.

In your view, what is the key takeaway from this collaboration?

Frank Bieber: We come from different traditions, but we are pursuing the same goal: reliable and effective fire protection.

Ludger Tegeler: Exactly. Ultimately, it's about making technical quality visible, transparent and reliable.

And I think we can both agree on this: the collaboration between FM and VdS is far more than a formal partnership. It provides a shared foundation for quality, trust and effective technical fire protection – benefiting installation companies, operators and insurers alike.

Dipl.-Ing. Ludger Tegeler, BEng., MSc., is Senior Advisor – Technical Relations/Specifications/Standards, Climate Resilience & Adaptation at FM Insurance Europe S.A., Frankfurt am Main.

Dipl.-Ing. Frank Bieber is an inspector for fire-extinguishing systems and, at VdS, Head of Product Management at the Technical Testing Centre as well as Deputy Head of the Technical Testing Centre division.

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Please find the factory video here

Your sprinkler system has been talking for years... Is anyone listening?

By John De Gieter, CTO of AquaSecurity & Rosiot
and Miriam Nyabuto, Data Scientist, Rosiot

What a thousand sites have taught us about the time between maintenance visits

A quarter past three in the morning. A single signal comes in via the fire alarm receiving centre: the diesel engine-driven fire pump is running. Nothing else. No fire alarm.

The on-call technician knows what that means, or thinks he does. A running pump without a fire alarm usually has a technical cause: a loss of normal power, a problem with the jockey pump, or a leak. Someone needs to attend, but not on blue lights.

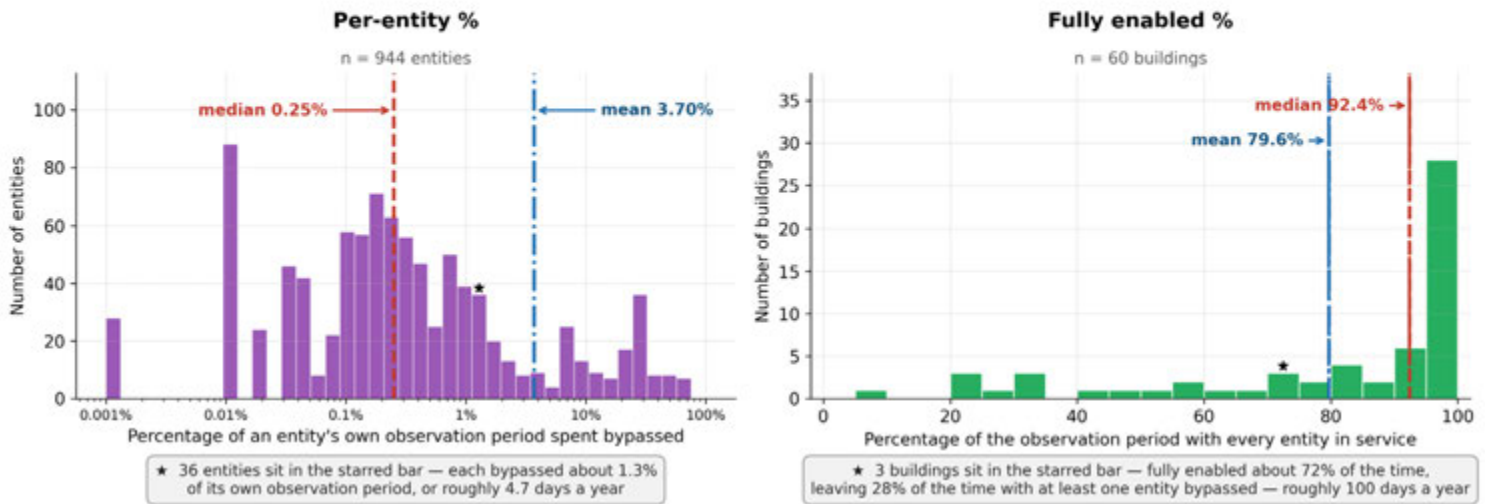
What nobody knows is that, at that moment, a fire is already burning.

The alarm that never came

The wet alarm valve for that zone had in fact operated. The sprinkler system was working. It was just that nobody knew.

The pressure switch on that wet alarm valve had been giving false alarms for weeks and needed replacing. The quotation was with the client; the work had not been ordered. In the meantime, a technician had disabled the corresponding entity on the control and indicating equipment (CIE) — a stopgap for a few days. After that, everyone lost sight of it.

How much time is each entity bypassed, and how often is a CIE fully enabled?



So the fire alarm was never sent. All the receiving centre got was what was still allowed through: pump running. The fire brigade was not called.

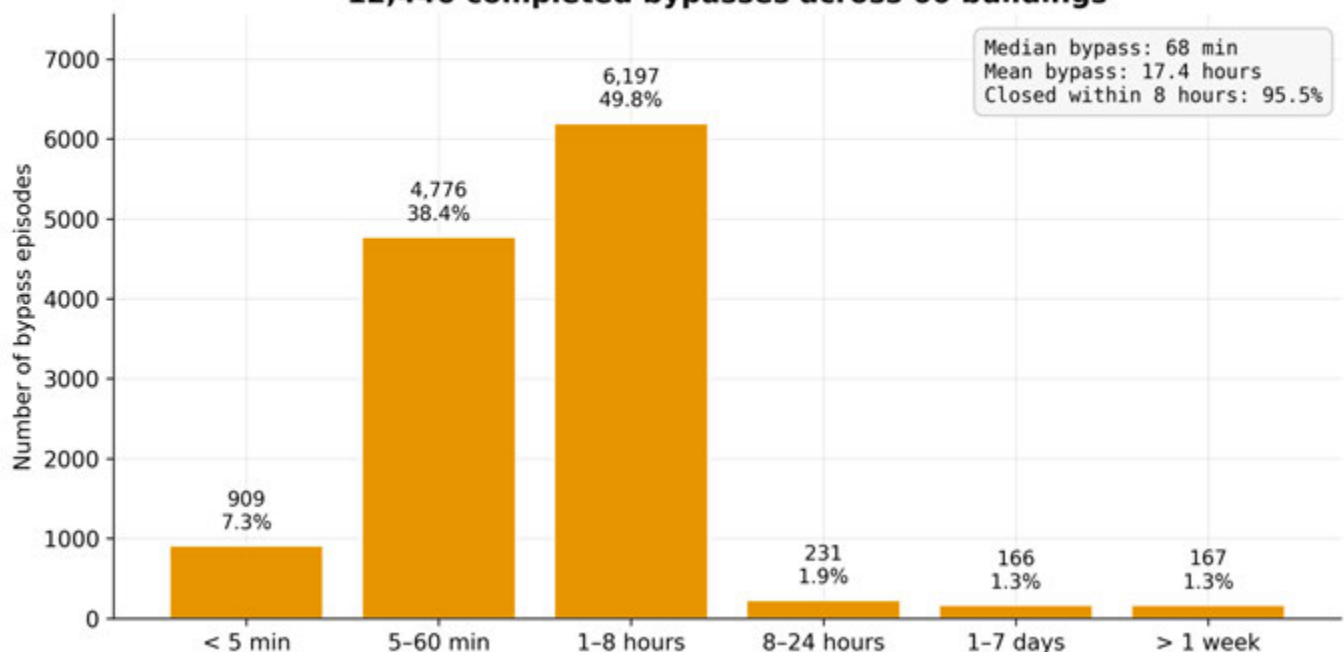
Not one of these steps is invented. A pressure switch giving false alarms; a quotation left pending; an entity that gets disabled; a disablement that nobody notices any more — all four occur regularly in our portfolio. What we have never had is the fire to go with them. That is not to our credit; it is luck.

AquaSecurity installs and maintains sprinkler systems at around a thousand sites and, since 2018, has been continuously monitoring a growing share of them. The most uncomfortable finding from that data: between maintenance visits, almost nobody knows the actual state of a sprinkler system. Neither did we, until we started monitoring.

“Of the sprinkler systems that failed to operate in a fire, six in ten were not faulty. They had simply been shut off.”

.....

How long does a fire-safety bypass last? 12,446 completed bypasses across 60 buildings



A procedure says what should happen, not what has happened

Things can go wrong in two places: in the sprinkler system itself, or at the CIE, which has to route its signals to the fire alarm receiving centre. The system can be out of service — an impairment in the NFPA 25 sense: a closed control valve, a pump that is not in automatic mode. Or the system works, but its signal is disabled at the CIE. The CIE we are talking about here is the one that handles the sprinkler system's signals: waterflow, valve supervisory and pump signals. In this article, anything on such a CIE that can be disabled individually is called an entity. On the one hand, these are inputs: points and zones, through which fire detection information arrives, such as the pressure switch or valve supervisory switch on a wet alarm valve. On the other, they are outputs, such as routing to the receiving centre and controls. Fire detection and evacuation, such as smoke detectors and sounders, are often handled by a separate CIE.

Both NFPA and FM treat impairments as a major concern. Yet they remain the leading reason why sprinkler systems fail. Sprinkler Outlook cited this figure in issue 5/2025: in 59% of incidents in which sprinkler systems failed to operate, the system had been shut off.

The second failure point falls outside NFPA 25: it happens at the CIE. A disablement is sometimes necessary in order to carry out work. Whether it is followed by a re-enable depends on memory, a procedure or a note in the ERP or EAM (enterprise asset management) system. These record an intention, not a state: that the alarm on the CIE should be re-enabled, not that it has been. And in many cases, whoever disables the entity never sees the maintenance contractor's ERP or EAM. It is the same with impairments: there too, the procedure has existed for a long time, and yet they remain the leading cause of failure. Meanwhile, a disabled entity stays silent — at most, a disablement indicator lights up on the CIE itself.

This is where the two meet. All supervision converges on the CIE. A great deal of attention goes to the reliability of that supervision, far less to its disablement. If an entity is disabled at the CIE, nobody sees what happens behind it: a control valve closing, a pressure switch failing or, as in the example above, a fire. Once something is disabled, it no longer exists for anyone.

Whoever flips the switch does not bear the risk

The person who disables an entity is rarely the one who bears the consequences. Often it is the owner's on-call person: a reluctant volunteer who did not choose the role and has limited knowledge of the CIE. On a Friday evening, they do not ask what an annoying signal means for the building's fire protection, but how to silence it and get some peace and quiet back, so they do the most obvious thing and disable the entity. The reasoning is almost always the same: the chance of a fire breaking out right now is small. That much is true, but it is the wrong calculation: a sprinkler system exists precisely to cover that risk. Without monitoring, we only find out at our next visit.

The weekly no-flow (churn) test of the fire pump ought to catch it. But whoever carries out the test often sees a disablement that has been in place for a long time, and leaves it: they assume a colleague disabled it for a good reason and ask no further questions. They should ask; in practice, they often do not. The disablement is not overlooked; it is normalised.

Four ways a sprinkler system silently goes out of service

- **The forgotten disablement.** An entity on the CIE is disabled during works and not re-enabled afterwards.
- **The duration itself.** The pump is kept out of automatic mode for the entire maintenance visit, even when that is not necessary.
- **The weekend decision.** On a Friday evening, the reluctant volunteer on call deals with a disruptive pump start by taking the pump out of automatic mode until Monday and disabling the associated routing to the receiving centre.
- **The pending quotation.** The entity for a wet alarm valve is disabled pending a repair that never gets ordered.

What alarm routing does not tell you

A signal routed to the fire alarm receiving centre is a one-off event: it is sent once, on the assumption that someone there will deal with it. It is not a state that the maintenance contractor or the owner can consult, either now or afterwards.

Conventional routing (EN 54-21: fire alarm routing equipment and fault warning routing equipment) is also often limited to a few summary signals: a fire alarm, a technical fault warning, sometimes a separate 'pump running' signal. It does not tell you which device is involved, in what order, at what system pressure, or how long an entity has been disabled. And it often bundles all technical fault warnings into a single common signal. If that signal is already active for a non-critical technical fault warning, a second, critical one goes unnoticed — or is not even routed at all.

One timeline, two sources, one answer

Take another night, built from signals of the kind we see coming in on our own platform, Rosiot GO. Two maintenance contractors receive the same message: fire alarm on a wet alarm valve, and the fire pump running.

The contractor without monitoring knows no more than those two lines. A fire alarm with a running pump is a fire until proven otherwise. The fire brigade is called and the technician sets off at top priority. The right call, even if it turns out to be nothing.

The contractor with monitoring sees a timeline alongside the same message. System pressure dropped below the jockey pump's start pressure, but the jockey pump did not start; pressure kept falling until the diesel engine-driven fire pump started, and it was that pump start that made the wet alarm valve operate. In the recent history, the on-call technician can see that the same thing happened two days earlier, when the fire pump started during the weekly test. The pressure trend afterwards is normal and the tank water level shows no drawdown: no water is flowing, no sprinkler has operated. It also turns out that the site has been without normal power for several hours, so the jockey pump could not run.

The two nights mirror each other: in the first, nothing seemed wrong while there was a fire; in the second, there seemed to be a fire while nothing was wrong.

And the two are connected. Repeated false alarms undermine confidence in a sprinkler system, and it is precisely that mistrust that leads someone to disable an entity.

That is why we argue that remote monitoring should be treated as a standard part of maintenance, not as an extra: not as a replacement for the required inspections and tests, but as the overarching layer that also covers the time between visits. By this we do not mean the supervision the CIE already performs, but continuous remote tracking of pumps, pressures and the state of the CIE, disablements included.

Technically, nothing stands in the way. Modern fire pump controllers log their own events and make them available to external systems, usually via Modbus; the CIE knows what has been signalled and what has been disabled. A simple gateway brings this together, without anyone having to record anything. All the data ends up in the cloud, live and historical: alerting, visualisation and statistics all draw on the same source.

Who is looking determines what is shown

A portfolio is made up of CIEs and fire pump controllers of different makes and generations, each with its own signalling logic. A good platform translates each signal into a uniform, brand-independent message, shown alongside the original. And the same sprinkler system has different readers: the technician wants to know status, alarms and pressure; the facilities manager wants to gauge how urgent a call is in the evening; the risk manager wants statistics across all their sites. That is why a responsive user portal is not a detail but the core: usable on a phone and in the office, with simple management of devices, sites, users and role-based permissions, configurable notifications, and security and privacy by design. A single overview then flags in red which sprinkler systems are not in their normal condition. AI is also changing how people work with such a platform. Instead of clicking through screens, you simply ask the chatbot a question about the data, or ask it to set up an alert.

Measured, not estimated

When we started monitoring our portfolio continuously, something regularly turned out to be wrong, even where we thought everything was in order. We have since fundamentally changed the way we work as a result. The figures below come from 60 sites, with an observation period of 14 to 21 months per site. We looked at every entity on the CIE that was disabled at least once in that

Six questions for tomorrow morning about the sites you manage

1. Which sprinkler systems are fully operational right now?
2. Which entities are disabled on the CIE, and how long have they been disabled?
3. Are all pumps in automatic mode and operational at this moment?
4. On which sprinkler systems is the jockey pump more active than normal?
5. How many times has someone attended site unnecessarily for a call-out?
6. And is too much risk sometimes being taken by ignoring a signal?

period: 944 entities, accounting for 12,466 disablements in total, each counted from disable to re-enable. All of them belong to the sprinkler system. We show them because we are convinced they reflect the reality of most sprinkler systems.

The payoff is large. The cost is small. That is what is new.

Five years ago, this was seen as a luxury: the visible return did not justify the cost, so hardly anyone did it.

That has changed. Cloud storage and computing power make it feasible to keep years of pressure trends and signals; AI techniques show what deviates from the normal behaviour of this particular sprinkler system. The cost is in the order of a few euros per day per site, and installation on an existing sprinkler system takes less than two hours and involves only simple work.

There is a financial payoff too. We see it in our own operations: we work more efficiently, dispatch more precisely and achieve a higher first-time fix rate (FTFR), while call-out costs for the client go down. In our experience, the payback period is usually less than a year. So the question is no longer whether it is worth the investment, but whether it should become a standard tool in the maintenance of sprinkler systems.

What is a competitive edge today will be expected tomorrow. Both NFPA and FM are backing remote monitoring. End clients and insurers are already interested in availability statistics of this kind.

The technology is ready. Waiting is now a choice.

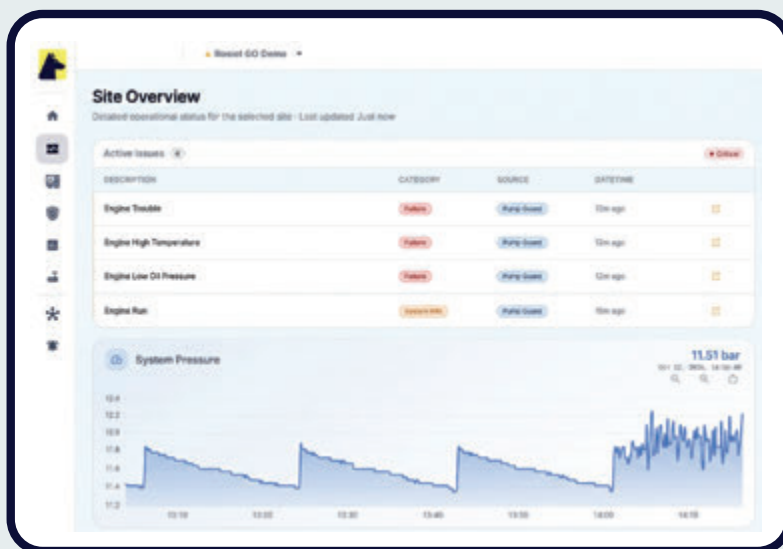


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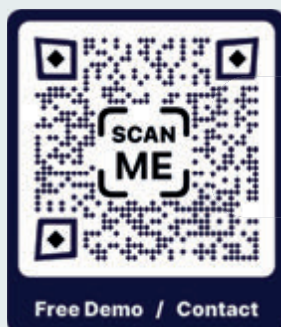
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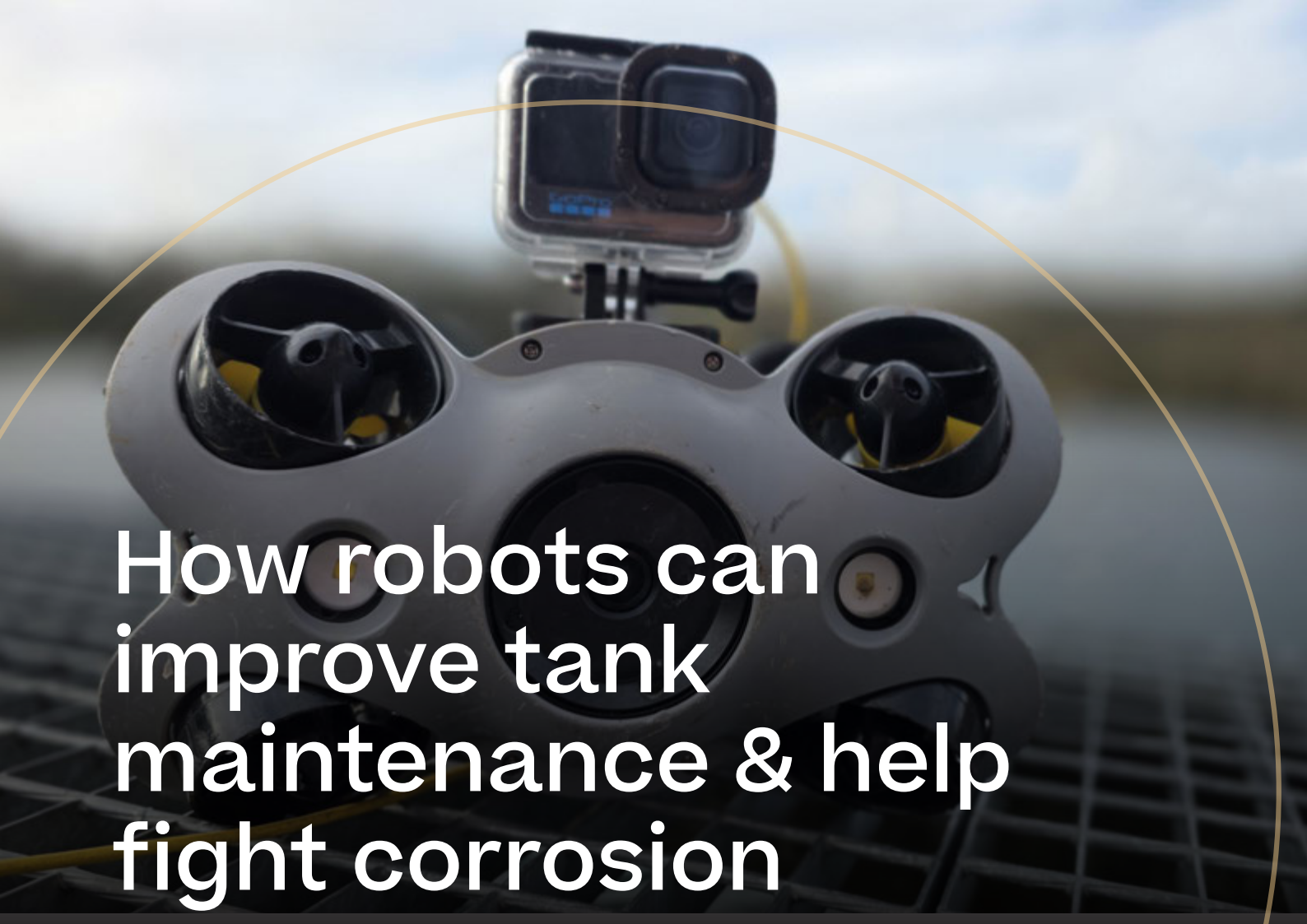
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How robots can improve tank maintenance & help fight corrosion

... Keeping fire-water tanks clean, documented and in service

By Jules Bellard, Commercial Director, Apro Industrie

Tank-maintenance innovation is more than an underwater camera. It gives operators a practical way to inspect and clean a tank while full, reducing avoidable draining, water replacement and disruption to fire protection.

Corrosion, sediment and scale are connected challenges. Deposits can accumulate around the floor, suction pipework and fittings even when a tank looks sound outside. Draining exposes wet steel to air; refilling wets it again. Repeated wet-and-dry cycles can accelerate oxidation. The challenge is to intervene while preserving water and the structure.

Pump tests can also change water levels; where beams, supports or fittings are repeatedly exposed and re-immersed, the wet-dry interface is a useful point to monitor.

From early robots to tank-specific design

Underwater robots have been used in tank work for years. APRO

Industrie introduced an early generation of robotic cleaning in 2011. Equipment from manufacturers including Deep Trekker and SubseaTech helped demonstrate the potential of remote operation, including in APRO's early experience. Field use also revealed a practical challenge: a robot designed for open water may struggle with liner folds, hardened deposits, confined geometry or debris inside a bolted tank.

That experience informed the work between APRO Industrie and R&O. The collaboration focused on limitations of earlier equipment and the needs of tank interiors. R&O is developing a platform intended to negotiate liner folds and clean deposits with controlled contact.

Folds can impede movement, and rigid steel pieces in a degraded tank may make passage unsafe. Forcing a robot through could cause damage; draining or another repair method may be needed.

The aim is to map and clean accessible areas inside the tank. Video and images help locate sediment, scale, visible corrosion, liner damage and issues around fittings. Returning to the same viewpoints helps teams compare conditions over time. Findings guide decisions but do not replace other checks or repairs when needed.

Understanding what is happening inside the tank

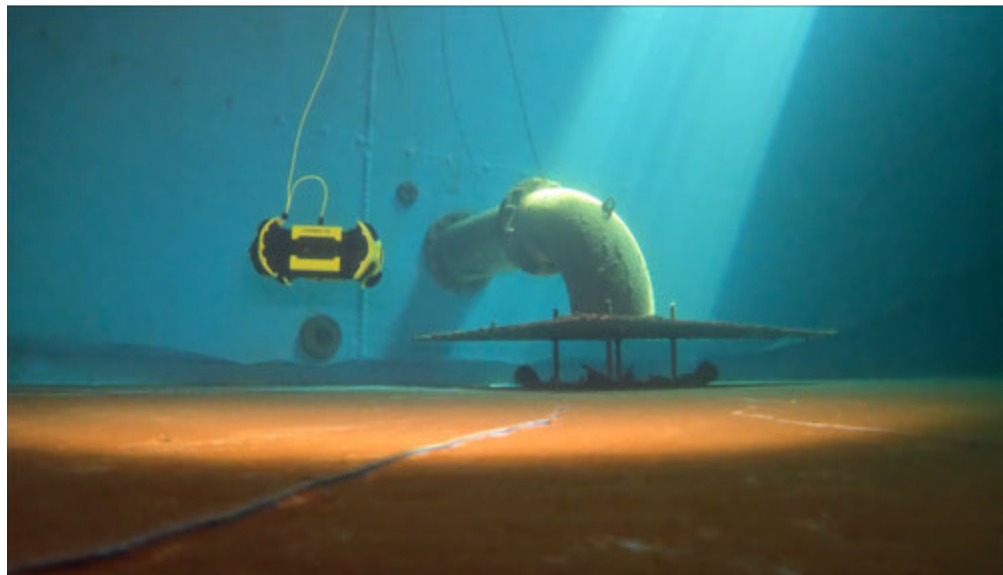
Sediment may enter with incoming water or form from corrosion products, ageing materials and fine particles. Filters capture only particles within their effective rating, so fine sand can pass during pump tests and settle near the suction. Water hardness, alkalinity, pH and temperature influence scale: acidic water can increase corrosion risk, while alkaline, calcium-rich conditions can encourage deposits on liners and walls. Water samples explain chemistry but cannot show whether the floor is clean or the lining intact.

A robot can inspect areas difficult to assess from the hatch, including the floor, suction and accessible fittings. It can estimate deposits and capture images of accessible wall and liner surfaces. Video cannot establish steel thickness or reveal what lies behind a liner; reports should distinguish observations from measurements. Repeatable images help determine whether targeted cleaning, further examination or a drained repair is appropriate. Deposits near the suction can reduce usable volume or affect water draw, making their location as important as their quantity.

Cleaning while preserving water

A robot can remove sediment and scale without emptying the tank, using suction and tools suited to its lining and condition. Where equipment allows, extracted water is filtered and returned. This reduces replacement needs and prevents deposits drying and hardening on the floor. Liner-safe tools and controlled contact matter: aggressive brushing can damage the surface.

Some robot-assisted operations still lose around 3–5% of stored



water. R&O's ongoing research aims to recover and return more, with the goal of eliminating this residual loss. Under reported conditions, the system has cleaned two 500m³ tanks in about three hours. Time and recovery depend on layout, access and deposits.

Keeping the tank full can eliminate diver entry for the cleaning task. When the robot completes cleaning without diver entry, in-tank diver exposure to that task is eliminated. Qualified divers can still carry out hands-on work: for example, temporarily plugging or isolating a pipe for valve maintenance while the robot provides visual monitoring. This requires a site-specific method and suitable safety controls.

A robot does not make every drain-down unnecessary. Rigid steel debris, severe deterioration, direct-access repairs, or requirements set by the applicable standard, insurer or authority may still call for an

empty tank. Robotic work can target interventions and avoid unnecessary draining where permitted; it is not a universal exemption.

Where corrosion can start

The tank shell is only one part of the system. Suction pipes, vortex inhibitors, inlets, overflows, test-return lines and supports may be immersed or sit near the waterline. Pipework can be thinner than the shell and made of different materials. Where galvanised steel meets stainless steel, brass or cast iron, galvanic corrosion may develop at flanges, valves or gauge connections. Wall supports, liner penetrations and scale inside immersion-heater sleeves also deserve attention.

A failure can reduce usable water or affect pump performance. A perforated suction pipe or detached vortex plate may draw air or debris towards the pump.



A robot can inspect accessible pipework and document sediment around the suction. Some vehicles take ultrasonic thickness readings with an appropriate calibrated sensor; competent interpretation is still required. The roof underside and roof-to-shell joint need separate inspection because they are above the robot's underwater working area. Condensation and repeated air-water exposure can also affect the top ring and roof-to-shell joint, so visual checks from the hatch complement the robot's underwater coverage.

Tank construction changes what the robot should look for. In a reinforced PVC-lined tank, an intact liner separates water from steel. Tears, abrasion, bulges, folds holding sediment and clamped penetrations are key signs. If the liner is damaged or detached, water may reach steel behind it, where corrosion is hidden. Cleaning should be gentle around folds, seams and the floor-to-wall junction.

In a galvanised tank sealed with mastic, steel contacts the

water and the zinc layer provides protection; water chemistry affects how quickly it is consumed. Rust staining at bolt heads or sheet edges and deterioration around mastic joints may be relevant signs. Epoxy-coated and glass-fused tanks need attention to coating damage around edges, bolts and fittings. Deposits should be removed without worsening surface condition. Findings should inform repair, resealing, relining after assessment or replacement—not simply conceal a defect. If relining or patching is considered, first assess existing corrosion and prepare the surface; a cover should not conceal an active defect or replace structural assessment.

Water conservation as a permanent maintenance principle

Water conservation should be part of ongoing tank operation, not just cleaning day. Avoiding unnecessary draining preserves water and limits repeated air-and-water exposure of steel. Other choices can help: return filtered diesel-pump cooling water where the system is designed for it, use suitably filtered water when filling a closed-loop tank, and consider water circulation for frost protection where appropriate.

These choices must fit the installation. Water samples, operating logs and internal images provide more context together. Unexplained water loss, recurring deposits or visible corrosion can then be compared with the maintenance and testing history.

Building a useful maintenance record

Robotic inspection and cleaning gain value when each visit adds to a clear record. Identify the tank, date, operating conditions and method; show areas viewed; label images by location; and record deposits removed, water recovered, visible changes and recommended actions. Separate direct observations from suspected defects and note inaccessible areas.

Baseline images and repeat views make changes easier to recognise. Over time, records help explain water loss, prioritise repairs, plan outages and budgets, and compare maintenance methods. This traceability supports consistent quality-management processes, including those aligned with ISO

9001. A consistent format also helps different maintenance teams understand earlier findings and follow whether recommended actions were completed.

Before work starts, agree operating conditions, alternative water supply if needed, isolation and reinstatement steps, lifting and electrical controls, water handling and emergency measures with the owner and fire-safety stakeholders. Clean and disinfect equipment between tanks to avoid carrying contamination. The method must meet requirements for that installation.

Robots therefore improve maintenance through a connected set of benefits: they help teams see inside a full tank, clean targeted areas, reduce avoidable water loss and limit the need for diver entry into the tank. Combined with sound water management and a consistent maintenance record, this creates a more informed way to protect the tank and its fire-water function while addressing corrosion before it becomes a larger problem.

APRO INDUSTRIE

APRO Industrie has designed and manufactured bolted steel tanks for fire protection, drinking water and industrial applications since 1987. Its profile reports more than 20,000 installations in over 50 countries. APRO introduced an early generation of robotic sprinkler-tank cleaning in 2011.

R&O

R&O is a French company developing and deploying robotic solutions for tank maintenance. After more than 1,000 robot-assisted tank cleanings, its work with APRO Industrie draws on field experience to develop equipment suited to tank interiors, including liner folds and the controlled removal of deposits. Ongoing research also targets improved water recovery.

Scan or click a QR code to watch the robots in action.





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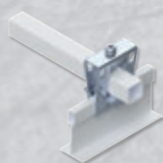


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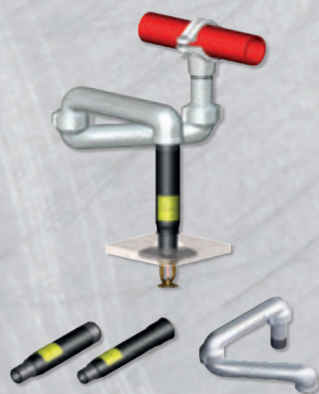
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Supporting a more sustainable future for fire protection

Sustainability is becoming an increasingly important consideration across the construction sector. As developers, consultants and contractors seek greater transparency on product environmental performance, manufacturers are expected to provide independently verified data to support specification and procurement decisions.

For the fire protection industry, Rapidrop believes this presents an opportunity to demonstrate not only life safety performance, but also environmental responsibility.

Sustainability becomes a priority in fire protection

The fire sprinkler industry has always played a critical role in protecting life and property. However, as sustainability targets become increasingly important across the built environment, manufacturers are being asked to provide greater visibility into the environmental impact of their products.

Today, project teams increasingly assess the lifecycle impact of the products and systems incorporated within a building. As a result, architects, consultants and contractors require reliable environmental data to support sustainability reporting, green building objectives and informed specification.

This growing demand has elevated the importance of Environmental Product Declarations across the construction sector.

Rapidrop achieves first EPD

At Rapidrop, we are proud to announce the achievement of our first Environmental Product Declaration (EPD), covering the Rapidrop RD Series Sprinkler range.

What is an Environmental Product Declaration?

An Environmental Product Declaration (EPD) is a standardised, independently verified document that provides information about a product's environmental impact throughout its lifecycle.

Based on a comprehensive Life Cycle Assessment (LCA), an EPD evaluates every stage of a product's journey, including raw material extraction, manufacturing, transportation, use and end-of-life considerations.

Developed in accordance with internationally recognised standards and independently verified by third parties, EPD's provide a credible basis for



comparing products using consistent environmental criteria while helping manufacturers identify opportunities for improvement.

This milestone marks an important step in our wider sustainability strategy and the beginning of a programme that will see EPDs introduced across our major product groups.

As the only major global manufacturer of fire sprinkler solutions headquartered in the United Kingdom, this achievement reflects our commitment to transparency, sustainable manufacturing and continuous improvement. It also strengthens our ability to provide customers throughout Europe, the Middle East and Africa (EMEA) with independently verified environmental data to support their project requirements.

Rapidrop's first EPD: RD Series Sprinklers

Rapidrop's first EPD has been awarded for the RD Series Sprinklers, one of the company's flagship product ranges and a trusted solution used across fire protection projects worldwide.

The assessment provides verified environmental data, giving customers greater confidence when specifying products for environmentally focused projects.

The RD Series Sprinkler EPD is the first step in a wider programme to introduce EPD's across key Rapidrop product families.

This commitment reflects our long-term vision of supporting the fire protection industry with both high-performance life safety products and the environmental data required to meet evolving sustainability objectives.

Why EPD Certification matters in the Fire Sprinkler industry

EPDs provide transparent, verified product data that can be incorporated into sustainability assessments, environmental reporting frameworks and green building certification schemes.

For consultants and contractors, EPD-certified products provide confidence that environmental information has been independently reviewed. For manufacturers, the process delivers valuable insight into material sourcing, manufacturing processes, logistics and operational efficiency.

The advantage of UK Manufacturing

As the only major global manufacturer of fire sprinkler solutions based in the United Kingdom, we maintain exceptional control over our products, processes and manufacturing operations.

While many organisations rely on complex international supply chains involving multiple manufacturing partners, Rapidrop benefits from significant in-house design, engineering and manufacturing capabilities. This enables us to accurately measure environmental performance, maintain rigorous quality standards and implement improvements efficiently.

It also provides the visibility and traceability required to undertake detailed lifecycle assessments and develop robust Environmental Product Declarations.

Complete control from concept to manufacture

Rapidrop manages the product development process from concept through to manufacture, enabling close collaboration between engineering and production teams.

This integrated approach supports efficient material utilisation, waste reduction and continuous process improvement, while ensuring products are designed for performance, reliability and manufacturing efficiency.

The EPD process demonstrates the value of this model by providing measurable environmental data across the product lifecycle.

Supporting Customers Across Europe, the Middle East and Africa

Rapidrop's UK manufacturing base allows us to efficiently support customers across Europe, the Middle East and Africa while maintaining direct oversight of quality, technical support and environmental performance.

As sustainability requirements continue to evolve, customers increasingly require suppliers who can provide both proven product performance and credible environmental data. The RD Series Sprinkler EPD helps address this need and forms the foundation for additional product declarations across the Rapidrop portfolio.

Demonstrating environmental responsibility through action

The achievement of an EPD is far more than a certification exercise. It represents a commitment to understanding and managing environmental impact through measurable performance metrics.

The lifecycle assessment completed for the RD Series Sprinklers provides valuable insight into our

manufacturing processes, sourcing activities and operational performance. These findings will help guide future sustainability initiatives and identify opportunities for continuous improvement across the business.

For Rapidrop, sustainability is not a one-time achievement but an ongoing commitment.

Looking to the future

The RD Series Sprinkler EPD represents an important milestone in Rapidrop's commitment to environmental transparency and product lifecycle accountability. As sustainability continues to shape the future of construction and fire protection, environmental transparency will play an increasingly important role in product selection and project delivery. By combining trusted fire protection solutions with independently verified environmental data, Rapidrop is helping customers meet evolving sustainability requirements while supporting the future of responsible construction.

Our first EPD demonstrates more than environmental compliance. It highlights the strength of our UK manufacturing operation, showcases the benefits of our vertically integrated business model and reflects our commitment to continuous improvement.

Most importantly, it reinforces our determination to support the future of sustainable fire protection through trusted products, trusted data and complete transparency.

What this means to Rapidrop

The EPD process has provided valuable insight into the materials, energy consumption and transportation

“The RD Series Sprinkler EPD represents an important milestone in Rapidrop’s commitment to environmental transparency and product lifecycle accountability.”

activities that contribute most significantly to our products’ environmental impact. It has also helped identify opportunities to improve data quality, strengthen supply chain visibility and support future efficiency improvements.

These learnings will shape the rollout of EPDs across additional Rapidrop product ranges in the coming years, helping us build a more comprehensive understanding of environmental performance throughout our portfolio.

The RD Series Sprinkler EPD is available to customers on request.



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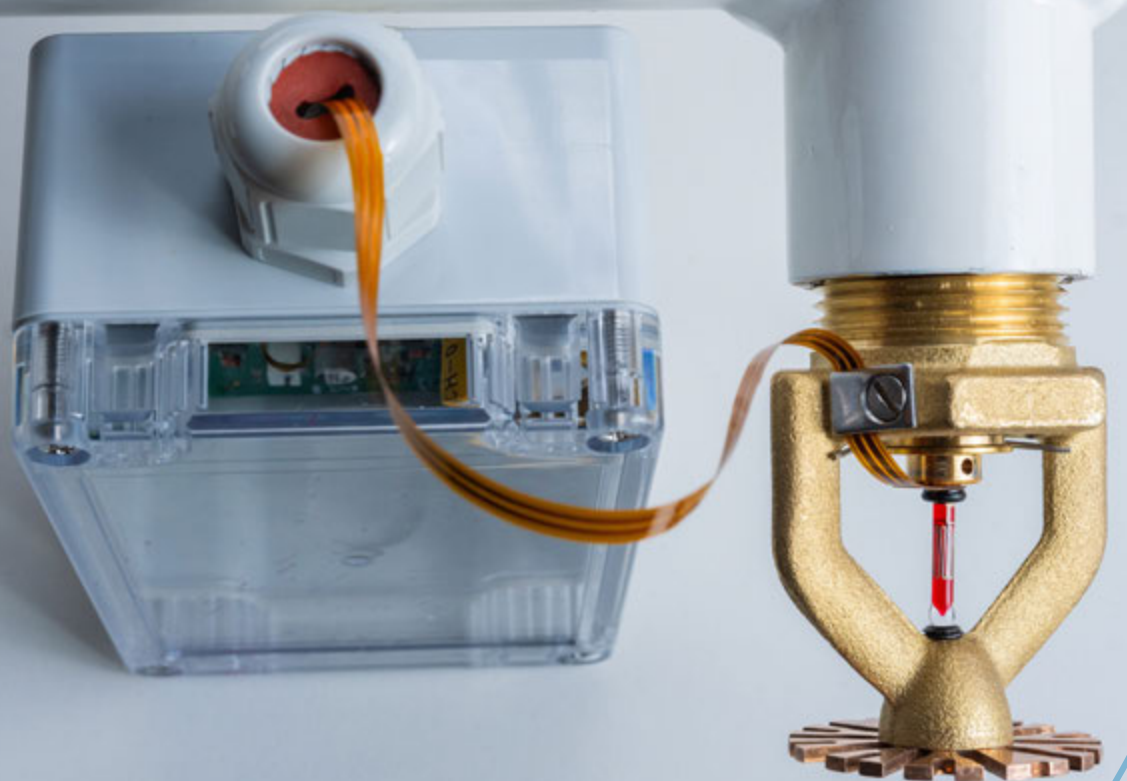
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The solution for extreme fires, the next evolution of sprinkler technology!



**Dipl.-Ing. (BA) Johannes Falk,
Head of Product Management
& Development, Fire Protection
Solutions Group**

Conventional sprinkler systems suppress fires where the fire is already well established. However, more efficient approaches exist when it comes to limiting smoke spread or protecting particularly combustible materials. Intelligent SmartFit® sprinklers, digitally connected to the fire alarm control panel, enable automated and intelligent fire protection that can be adapted to individual project requirements.

Traditional sprinkler systems often reach the limits of their performance, which are defined by long-established design standards and guidelines. In many cases, the only available solution is the implementation of structural measures. These are often extremely expensive and may not be feasible in existing buildings. In addition, local conditions such as seismic zones can present further challenges. In such environments, structural measures such as suspended ceilings are not only costly but, in some cases, simply impossible to implement. As a result, certain materials cannot be stored at all. For many projects, this represents a significant limitation or may even make the project unviable. One potential solution is the intelligent SmartFit® sprinkler developed by EuroSprinkler AG, part of the Fire Protection Solutions Group.

To investigate this concept, the Fire Protection Solutions Group conducted a series of fire tests in 2025. The hazard scenario consisted of a mixed floor storage arrangement containing flammable liquids in plastic and glass containers with volumes of up to one litre, as well as aerosols in containers up to 500 ml. Additionally, the target area included mixed commodities such as candles and further flammable liquids in smaller packaging sizes. The stored goods were arranged to a maximum height of 2.40 m, with a target array separated by a 2.40 m-wide aisle. The tests were conducted beneath a ceiling height of 13.70 m.

Fire Test 1: Conventional Sprinkler System

The first test was conducted using a conventional sprinkler system equipped with twelve installed ESFR K360 sprinklers operating at a water pressure of 4.1 bar. The objective was complete extinguishment of the fire within a maximum test duration of 60 minutes.

The fire was manually ignited in the centre of the stored commodities. Fire development was rapid, with the flammable liquids enabling fast and extensive flame spread. The first sprinkler did not activate until more than four minutes after ignition. By this stage, several aerosol containers had already exploded. Fire spread extended across four pallet loads of stored goods, and successful suppression by the sprinkler system was no longer realistic.

The test had to be terminated after only ten minutes of fire development because the sprinkler system was unable to maintain control of the fire.

At this point, the target array had already become involved. Even with the emergency extinguishing system



“Because SMART sprinklers can be electrically activated, there is no need for fire-generated heat to warm and rupture a thermal release element.”

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activated, it took a further 60 minutes before the fire was sufficiently controlled for firefighters to carry out final extinguishment operations. Throughout this period, repeated aerosol explosions occurred, preventing safe access by fire crews due to the significant risk to personnel.

Conventional Sprinkler Systems Are Insufficient for This Challenging Scenario

In this scenario, the installed sprinkler system responded too late because of the large ceiling clearance. By the time the first sprinkler activated, the fire had already reached a magnitude where extinguishment by a single sprinkler could no longer be expected.

Furthermore, activation of the first sprinkler cooled the surrounding area to such an extent that neighbouring sprinklers were unlikely to reach their thermal activation temperatures. This is precisely where the SMART Sprinkler offers an alternative.

Because SMART sprinklers can be electrically activated, there is no need for fire-generated heat to warm and rupture a thermal release element. Consequently, phenomena such as sprinkler skipping or the general cooling of the surrounding environment are no longer critical factors for the SMART sprinkler system. In addition, the addressable nature of the SMART sprinkler allows protection of adjacent storage areas by proactively activating additional sprinklers before fire spread can occur.

Fire Test 2: Optimised System Using SmartFit® Sprinklers

For the second test, K200 SmartFit® sprinklers were installed in combination with a multi-sensor fire detection system. The detector generated a fire alarm based on a combination of increasing temperature and smoke detection.

This alarm signal was transmitted via the fire alarm control panel to the SmartFit® sprinklers. The location of the activated detector determined both the number and position of the sprinklers selected for operation. Upon confirmation by a second fire detector alarm, the SmartFit® sprinklers were released and electrically activated.

Prior to testing, the system was configured so that nine sprinklers would operate following a confirmed fire alarm. As in the first test, the water supply pressure was maintained at 4.1 bar, and the objective was complete extinguishment. Ignition was again performed manually at the identical location.

After only 1 minute and 50 seconds, the SMART sprinklers were activated and began fire suppression. At that time, the flames had not yet reached the top of the stored commodities. Unlike the conventional sprinkler



arrangement, the fire therefore had no opportunity to fully develop before suppression activities commenced.

Following successful extinguishment, achieved in less than five minutes, it was determined that the fire had been suppressed before the stored commodities themselves became involved in the fire. The fire detectors identified the developing incident and activated the SmartFit® sprinklers while only the wooden pallet supporting the stored goods had begun to burn. As a result, the only fire damage observed was limited to this single wooden pallet.

Fire Test 3: SmartFit® Sprinklers Without Fire Detection System Support

The third test was conducted under the same conditions and with the same number of SmartFit® sprinklers installed according to the identical hydraulic design.

The key difference was that the first sprinkler had to activate thermally, after which its signal initiated the electrical activation of the additional sprinklers.

The fire development initially resembled that observed during Test 1. Again, it took almost four minutes before the first sprinkler activated thermally. By this stage, a significant fire had already developed. However, the simultaneous activation of nine sprinklers successfully prevented any further fire spread.

After 15 minutes of sprinkler operation, the fire was brought under control. After a further 15 minutes, visible fire remained only beneath collapsed stored commodities. This residual fire was also successfully controlled by the sprinkler system.

The SMART sprinklers therefore demonstrated the capability to combat a fire that would have been effectively uncontrollable for a conventional sprinkler system. Through a significantly more targeted application of water and, where necessary, substantially higher water densities, even extreme fire scenarios can be addressed effectively.

An additional advantage of the SMART sprinkler concept is its ability to be tailored precisely to the expected fire risk. Even during the design phase,

SmartFit® technology can ensure that the correct amount of water is delivered precisely where it is required. Through intelligent activation algorithms, fire attack begins directly across the entire fire area rather than only above the hottest point of the fire.

The flexibility of the SmartFit® sprinkler creates numerous additional areas of application. Because every sprinkler has an individual address and a precisely known position, fire development can be accurately monitored and assessed.

This capability enables firefighting personnel to identify safe access routes directly to the fire area without the delays typically associated with reconnaissance operations. In high-rise buildings or facilities housing particularly vulnerable occupants, this can provide a critical time advantage measured in minutes.

In addition, the individual controllability of each sprinkler makes it possible to establish smoke-free escape routes by selectively activating sprinklers within predefined zones while maintaining tenable conditions along evacuation paths.

SMART Sprinklers can also be installed above high-risk process equipment as a virtual deluge zone within existing facilities. This approach eliminates the need for dedicated pipework networks and separate alarm valve stations for a relatively small number of sprinklers.

As a result, the system not only becomes more economical but also significantly more flexible. The area intended for sprinkler activation during a fire event can be adapted as operational requirements change, and sprinkler groupings can be redefined or rearranged without the limitations typically associated with conventional deluge systems.

SMART sprinklers are therefore not limited to extreme fire scenarios, although the technology provides significant advantages under such conditions. SmartFit® sprinklers offer flexible and highly individual design possibilities and can provide added safety value in almost any project. The SMART sprinkler represents the next evolution of sprinkler technology and addresses many of the key challenges facing the modern fire protection industry.

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From periodic inspection to continuous supervision...

How automation can improve sprinkler system reliability

Ludger Tegeler, Senior Advisor - Technical Relations/Specifications/Standards
FM Insurance Europe S.A., Frankfurt

Sprinkler systems have demonstrated their robustness over many decades, but their reliability cannot be taken for granted. Regular inspection, testing and maintenance remain essential because these systems may stand idle for years and must then operate correctly at the moment of a fire.

Reliability begins with approved components. Published test and approval standards, independent performance testing and factory production control establish whether components deliver the required functionality and reliability. Approval databases make this information transparent to end users, designers, contractors, insurers and authorities. Yet approved components alone do not ensure that an installed system will remain operational throughout its service life.

The reliability challenge

Closed control valves and malfunctioning fire pumps remain recurring causes of sprinkler system impairment or failure. At the same time, shortages of skilled personnel, increasing labour costs and the industrial demand for automation are placing pressure on conventional inspection programmes. The challenge is not simply to reduce the inspection effort. It is to improve reliability while using qualified personnel more effectively.

Automation can support this objective only when it performs the required inspection or test at least as reliably as the conventional process. It must not introduce a new failure mode or adversely affect the availability of the fire protection system. The primary purpose is not labour reduction for its own sake, but the reduction of exposure to human error through consistent, repeatable and documented supervision.

Remote inspection and automated testing are different

EN 50710 specifies requirements for the provision of secure remote services for fire safety and security systems. These systems include fixed firefighting systems such as sprinkler systems. NFPA 915 defines a framework for remote inspections and tests using audiovisual devices or other technologies for remote verification.

Remote inspection still requires qualified personnel and equipment capable of delivering the information needed for a reliable assessment. During a fire-pump test, the observer may need to evaluate packing-gland flow, vibration, pressures and ambient conditions. Additional sensors may therefore be

“Remote inspection still requires qualified personnel and equipment capable of delivering the information needed for a reliable assessment.”

necessary. While remote observation can improve access to expertise and documentation, it may still require a qualified person to focus on each test and may not always produce the expected simplification.

Automated inspection and testing go further. NFPA 25 permits automated inspection equipment to replace a required visual inspection when it meets the intent of that inspection. It also distinguishes between checks before a pump test and observations while the pump is running. A test must not start when pre-test checks identify a fault and must terminate when unacceptable conditions occur. Automation must therefore do more than start a pump on a timer.

Long before FM Approval Standard 1330 was published, FM Approval Standards 1321 and 1323 for fire-pump controllers included requirements for a periodic programme timer. They also established the principle that an automatic test must not cause a running pump to shut down when a fire-protection demand occurs.

Where NFPA 25 requires automated inspection or testing equipment to be listed, the listing applies to the relevant system or components and their intended automated function.

Fire-pump testing is only part of the system

Periodic pump testing is important, but it is only one element of sprinkler system supervision. Control valves also require regular inspection because an incorrectly positioned or closed valve can isolate part or all of a sprinkler system. An accepted automatic pump-testing system does not, by itself, justify extending the inspection interval for valves or other components.

Any reduced inspection frequency must be supported by clearly defined technical requirements and formally recognised by the applicable maintenance framework. Reduced frequency should be earned through verified functionality

and reliability, rather than introduced merely as an administrative cost-saving measure.

Enhanced-security supervision enables new maintenance concepts

FM Data Sheet 2-81, Fire Protection System Inspection, Testing and Maintenance, illustrates this performance-based principle. It permits the inspection interval for control valves to be extended to six months when FM Approved supervisory switches with enhanced-security features are used. The additional performance requirements are verified under FM Approval Standard 3135 for valve supervisory switches.

Continuous supervision at an enhanced-security level enables maintenance concepts requiring substantially less routine on-site labour without compromising reliability. Instead of arranging a weekly physical valve inspection, an owner can bring qualified personnel on site every six months, provided the approved supervision concept and all applicable requirements are fulfilled.

This is not the elimination of inspection. It is a change from frequent manual observation to continuous, independently verified supervision combined with periodic qualified inspection and maintenance. It responds directly to industrial requirements for automation, remote supervision and efficient use of specialist personnel.

FM Approval Standard 1330

To address skilled-labour availability, rising costs and the need for greater system reliability, FM developed Approval Standard 1330 for fire-pump monitoring and automated testing systems, published in February 2024.

The standard requires that the automated test system must not adversely affect the starting or continued operation of the fire pump when there is a fire-protection water demand. A fault in the automated

system must not impair the sprinkler system. If a fire demand occurs during a test, the test sequence must not shut down the running pump. Occupational-safety features must be provided, the relevant requirements of FM Data Sheet 2-81 must be addressed, and a test must neither start when the pump is outside its normal operating condition nor continue when measured values exceed acceptable limits.

The manufacturer must propose reasonable thresholds for abnormal readings, and FM Approvals must validate them. These thresholds are intended to stop the test before the pump unit can be damaged while preserving operational safety.

The standard takes a performance-based approach. Required functions must be demonstrated under critical system conditions, including automatic testing in accordance with FM Data Sheet 2-18. The assessment addresses the reliability of the complete system and its individual components. Redundancy and fail-safe principles apply to critical functions so that the automated installation preserves the independence and availability of the fire protection system.

Supporting risk engineering and industrial needs

FM Approvals supports the Risk Engineering activities of FM Insurance Europe S.A. by providing independently verified product and system performance information. Approval standards create the technical basis on which risk engineers, owners and other stakeholders can assess whether an automated solution provides the required functionality, reliability and safeguards.

For industry, this provides a practical response to the demand for automation and supervision. Qualified personnel can concentrate

on exceptions, findings and corrective action instead of repetitive routine observations. At the same time, automated records can demonstrate what was tested, which conditions were present and how the equipment responded.

Properly designed automation can reduce dependence on the consistent manual execution of repetitive tasks. Its value depends, however, on validated functions, fail-safe behaviour and a maintenance concept that clearly defines how deviations are detected and corrected.

Transparency, traceability and accountability

Improved supervision creates more than operational efficiency. It makes responsibilities and system condition transparent. Inspection results, alarms, measured values and maintenance activities can be recorded and retained as evidence that the owner has fulfilled the responsibility to keep the sprinkler system operational.

This traceability supports facility operators, insurers and authorities by providing objective evidence of operational readiness and conformity with the recognised maintenance concept. It also clarifies when a deviation occurred, how it was detected and whether corrective action was taken.

Approval and maintenance requirements can support documented conformity with the applicable technical framework. The records do not transfer the owner's legal responsibility and do not, by themselves, establish legal compliance in every jurisdiction, but they make performance of the required activities demonstrable.

From fewer inspections to better supervision

The future of sprinkler inspection and testing is not defined by fewer meaningful inspections, but by

better supervision. Performance-based automation, supported by independent approval and recognised maintenance requirements, can increase reliability, reduce exposure to human error and provide transparent evidence of conformity.

A credible automated system must confirm that equipment is ready before a test begins, monitor all safety- and performance-critical conditions during the test, respond safely to abnormal conditions and produce reliable records of the test and its outcome.

In an environment characterised by skilled-labour shortages, increasing operational complexity and growing demands for accountability, enhanced-security supervision and automated stand-alone pump testing offer a structured route from periodic manual checks to continuous system assurance without compromising the reliability expected from sprinkler protection.

Technical references

- EN 50710, Requirements for the provision of secure remote services for fire safety systems and security systems.
- NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.
- NFPA 915, Standard for Remote Inspections and Tests.
- FM Approval Standards 1321 and 1323, Fire Pump Controllers.
- FM Approval Standard 1330, Fire Pump Monitoring and Automated Testing Systems.
- FM Approval Standard 3135, Valve Supervisory Switches.
- FM Data Sheet 2-18, Automatic Sprinkler System Inspection, Testing and Maintenance.
- FM Data Sheet 2-81, Fire Protection System Inspection, Testing and Maintenance.

JOIN THE EFSN & MAKE A DIFFERENCE

Membership of the EFSN connects you directly with the European movement calling for legislation to install water-based automatic fire suppression systems for the benefit of all European citizens. Discover and share what is happening throughout Europe and help support and shape the message of The Network – dedicated to saving life, property and the environment.

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Jeroen De Smedt, CEO of the Profit Group, reflects on the organisation's 20-year journey and its ambitions for the future

The story of the Profit brand began in Belgium in 2006 with a family business supplying couplings and fittings. Since then, Profit has evolved into an international, technically driven group specialising in engineered piping solutions. Today, the Profit Group comprises three companies: Piping Logistics in Belgium, Pro Piping Products in Romania and Matos Plus in France. They combine product development; in-house R&D; certification programmes; quality assurance; European prefabrication; international distribution and local market support.

The group supplies a wide range of Profit products for fire protection and HVAC applications, supported by a large stock in Europe, supply-chain expertise and personal service in more than seven languages. Serving customers in more than 60 countries, Profit combines European expertise with international reach. Its ambition is to become the European benchmark for high-quality, certified and innovative engineered piping solutions, while making installations safer and building long-term industry partnerships.

1. How has the relationship between the Belgium head office, the Romanian production site, and the French commercial hub shaped the organisation's success?

The strength of the Profit Group lies in the complementary roles of its three locations. Piping Logistics in Belgium provides the strategic and operational foundation, bringing together product



development, sourcing, stock management and international distribution. Pro Piping Products in Romania adds European production expertise in prefabricated sprinkler pipes and project-specific solutions. Matos Plus in France strengthens our position in the local markets and brings us closer to our customers.

Together, the three locations connect market knowledge, technical expertise, production and distribution, allowing us to grow internationally while retaining specialised knowledge and close customer relationships in each market.

2. What role has the Belgium head office played in setting the vision, culture, and direction of the wider group?

The Belgian head office sets the strategic direction of the Profit Group and coordinates long-term planning, product development, in-house R&D, supply-chain management and international distribution.

It also safeguards the entrepreneurial mindset, personal approach and customer focus that have shaped the Profit brand from the beginning. By combining strategic coordination with cultural continuity, it provides the structure needed for future growth while preserving direct decision-making and close customer relationships.

3. How has the production site in Romania developed over time, and what are you most proud of in its contribution to the organisation?

Our Romanian site has developed into a specialised European production centre for prefabricated sprinkler pipes and project-specific piping solutions. It combines automated production, digital production preparation, engineering support and dedicated quality control.



We are especially proud of its ability to unite industrial efficiency with the flexibility required for individual projects. The knowledge and commitment of the Romanian team have strengthened our production capabilities and given us more direct control over manufacturing and quality. Their work helps customers reduce on-site preparation, shorten installation times and manage complex projects through practical, ready-to-install solutions.

4. What makes the commercial hub in France important to the organisation's connection with customers and markets?

Matos Plus brings the Profit Group closer to customers in one of Europe's key markets. It provides a local point of contact and gives the group direct insight into the French market.

This creates an important two-way connection: customers benefit from the group's product range, stock, technical expertise and global capabilities, while feedback from the market helps us understand local requirements and identify future opportunities. This local presence allows us to provide more relevant, personal support and strengthens the connection between our European capabilities and the customers who use them.

5. How do the three locations work together day-to-day and what has helped build trust and collaboration across countries?

Day-to-day cooperation begins with sharing information. The French team brings local customer requirements and market developments into the group; the Belgian head office coordinates product, supply-chain and distribution activities; and the Romanian team contributes production expertise when prefabricated or project-specific solutions are required.

Clear responsibilities, open communication and shared goals keep the locations aligned. Trust has grown by resolving practical requirements together, exchanging knowledge and recognising the expertise each team contributes. Across countries, transparency, collaboration and mutual respect are essential to building one integrated Profit Group.

6. What challenges has the organisation faced during its first 20 years and how have those challenges strengthened the business?

Over the past 20 years, one of our main challenges has been adapting to a sector that has become increasingly demanding in terms of certification, technical documentation, product availability and supply-chain continuity.

These demands encouraged us to diversify our sourcing, invest in stock, strengthen our technical capabilities and gain more direct control over production and quality. They also prompted us to work in a more structured way while preserving our responsiveness, personal service and customer focus. As a result, the organisation is better prepared for further growth and changing market needs.

7. Looking back over the past 20 years, what moments best capture the organisation's journey and evolution?

Our journey is best captured by a series of important steps rather than one single turning point: the creation of the Profit brand in Belgium in 2006, the transition



from supplying products to developing Profit-branded solutions, the establishment of our in-house R&D department and expansion to more than 60 countries.

European prefabricated production in Romania and the addition of Matos Plus as our French commercial hub marked the next stage. Each milestone added expertise and capabilities, gradually shaping today's integrated Profit Group, with strengths across product development; production; quality assurance; distribution and local market support.

8. Which values or principles have remained constant since the organisation was founded?

Customer focus has remained one of our most important principles. Our commitment to "fitting your needs" reflects our willingness to understand the technical, commercial and logistical requirements of customers and provide solutions that genuinely support their activities.

Quality, technical expertise, flexibility and long-term partnerships have also remained central to the organisation. Although our scale, product range and international presence have changed considerably, our entrepreneurial mindset and personal approach have remained consistent throughout the past 20 years.

9. As you celebrate the 20th anniversary, what message would you like to share with employees, customers, partners and stakeholders?

Our 20th anniversary is a shared achievement. We thank our employees in Belgium, Romania and France for their knowledge, commitment and contribution. We are equally grateful to our customers for the confidence they place in us, and to our suppliers, partners and stakeholders for supporting our development.

These relationships have been essential throughout Profit's 20-year journey. We are proud of what we have achieved together and look forward to beginning the next chapter of the Profit Group.

10. Looking ahead, what opportunities, ambitions, or changes do you believe will define the organisation's next 20 years?

The next 20 years will be shaped by product innovation, digitalisation, sustainability and the continued international development of the Profit Group. Our ambition is to be recognised as the European benchmark for engineered piping solutions, supported by certified, high-value products and a one-stop shop for the fire protection industry.

We will continue investing in in-house R&D, prefabricated solutions, digital and scalable operations, a robust multi-source supply chain and responsible production and sourcing. While the business continues to evolve, the philosophy behind it remains the same: combining technical expertise, quality and long-term partnerships to create practical value for customers and contribute to safer, more efficient installations worldwide.



The growth continues

Inge Devalez – Country Manager BFSN

3rd edition another success

On 1st October 2026, the BFSN National Sprinkler Congress took place for the third time at the Wintercircuit in Ghent. This edition was fully booked and attracted significant interest from the sector. Leading experts shared their insights on topical issues such as fire protection for car parks, PFAS-free foam technologies, data centre protection, and fire safety for energy storage systems (BESS). There was also extensive coverage of recent new regulations for healthcare facilities and innovative developments within the sector.

Moreover, the BFSN conference provides a key networking platform for both our own members and a diverse range of participants from related sectors, including fire services, government bodies, consultancies, insurers, and architects. In addition, our numerous sponsors had the opportunity to share product-specific and technical expertise during various breakout sessions.

Once again the event proved to be an excellent opportunity to gain knowledge, exchange professional

“BFSN can once again look back on a fantastic year. Our organisation continues to grow and expand”

experiences, and network with colleagues in the field. We are already looking forward to the next edition in October 2027!

Further growth of the BFSN platform

BFSN can once again look back on a fantastic year. Our organisation continues to grow and expand. In addition to key players in the sprinkler market—including installers, distributors, inspectors, insurers, training centres, and engineering firms—major end-users are also represented within our organisation. The BFSN knowledge platform is thus being further rolled out, increasingly serving as the foundation for supporting and promoting the collective interests of our members.

Over the past year, Inge Devez, National Manager of BFSN, has further expanded the organisation's representation through participation in standards committees and technical committees, as well as within its extensive partner network. These partnerships serve as a key cornerstone and offer opportunities to achieve shared goals. Existing collaborations with FireForum; the Flemish Firefighters Association (BVV); Ghent University (IMFSE); JOIFF and SFPE-Benelux were consolidated. New partnerships were established with the Port of Antwerp-Bruges and Impact Builder, alongside BFSN's participation in the COOCK+ project "Knowledge Desk on Batteries and Fire Safety" (a consortium comprising VITO, KU Leuven, AP University of Applied Sciences, Agoria/FireForum, and FLUX50).

Furthermore, a significant step was taken towards renewed collaboration with Agoria Fire Technologies (AFT). As our two organisations share members, interests, and key issues, a renewed partnership based on common objectives offers increased leverage for both our organisations.

Sharing knowledge – an enduring priority

Disseminating knowledge about sprinklers remains a top priority for BFSN. Building on last year's success—which saw a training course organised in collaboration with FM Global—the association once again offered a high-quality training programme this year.

On March 26th and 27th 2026, a group of approximately 50 participants attended the "Navigating NFPA 13 and Application of Fire Sprinklers" course at Blue Point in Antwerp. Over the course of two days, Jim Lake, Director of Training at IFSA, shared his extensive expertise regarding the correct application and interpretation of this standard. Such initiatives are highly valued by members, and BFSN is committed to organising similar training courses in the future.

The fire service remains a key focus and on 7th February we addressed an audience of around sixty fire prevention specialists at a seminar in Ypres, speaking on the topic "Sprinklers and the Fire Service: A Shared Interest in Fire Prevention." The question that arose most frequently was practical in nature: what are the correct procedures during an intervention in a building equipped with sprinklers? This is precisely where the shared interest lies. On 7th March, we gave a presentation to the West Flanders Fire Service regarding the fire safety of battery energy storage systems (BESS). On 7th and 8th October, BFSN will participate in the annual fire service congress "Vlammen naar de Toekomst" (Flames into the Future), and on 25th November we will take part in the international conference "Fire Safety & Resilience in Underground Structures," organised by the Brussels fire service zone SIAMU and Interparking.

Economic outlook for the construction sector

At the request of IFSA, BFSN has once again prepared a comprehensive report outlining the economic outlook and expected developments within the Belgian construction sector. According to recent data from the International Monetary Fund (IMF), the current moderate growth in Belgium reflects a cautious economic recovery shaped by international uncertainties and domestic political challenges.

Within the construction sector, infrastructure, energy, and industrial projects are currently showing strong momentum. The residential construction sector,

however, is lagging behind for the time being, despite the high demand for housing. In Flanders alone, it is estimated that as many as 500,000 new homes will be needed by 2035, alongside a requirement to carry out energy-efficiency renovations on one million existing homes. Consequently, the sector has long advocated for a shift in housing policy—one that integrates spatial planning; mobility; biodiversity; the aging population and affordability.

Fire safety plays a crucial—yet all too often overlooked—role in this context. Belgian fire safety legislation is structured around the basic standards set out in the Royal Decree of 7 July 1994 but a major issue is that these standards do not apply to existing homes. This is creating an increasingly structural disparity: new construction projects must comply with strict fire safety regulations, whereas older (and fire-unsafe) buildings fall outside these requirements—with potentially disastrous consequences. The fire on the Left Bank in Antwerp serves as a painful, recent example of this; several people lost their lives despite the rapid and professional response of the local fire service. The building belongs to a generation of residential towers that predate current fire safety standards.

The current situation urgently calls for a revision of the legislative framework to make fire safety an integral part of broader housing policy—particularly regarding renovation mandates and social housing—while taking into account socially vulnerable groups such as the elderly, people living alone, and individuals with disabilities. BFSN is actively addressing this issue by acting as an intermediary and sharing expertise with government





bodies and policymakers. We are firmly convinced that sprinklers have a vital role to play; sprinkler systems offer a powerful solution to the heightened fire risks found in aging and densely populated residential areas. Indeed, sprinklers—including those installed via retrofitting—provide both a preventive and a compensatory solution within the broader context of fire-safe and sustainable living.

Regulation: between progress and regression

Retail stores: an achievement under pressure. In 1967, the Innovation department store in Brussels burned down, claiming the lives of 251 people. That disaster gave rise to a rule that seemed self-evident for nearly sixty years: such large retail stores had to be protected by an automatic fire suppression system. That rule, set out in Article 52 of the ARAB (General Regulations for the Protection of Workers), is now being called into question. A legislative proposal from the Federal Public Service Employment, Labour and Social Dialogue Department (FPS WASO) aims to amend the code on Health and Safety at Work and repeal Article 52 of the ARAB. In the realm of fire safety, “lessons learned” are never set in stone. What was once learned from a painful experience must be explained, substantiated, and defended to new generations time and again. On behalf of its board and members, the BFSN took the initiative to draft an open letter to the High Council for Fire and Explosion Prevention (FPS Home Affairs), outlining its concerns. Supported by various fire services and partner organisations, we hope this initiative will draw the necessary attention to this issue.

Revision of industrial regulations: an opportunity. The coming year will be pivotal for the future role of sprinkler systems within the framework of Belgian regulations. Various working groups are currently addressing potential fundamental revisions regarding the application of sprinklers in industrial buildings and new industrial typologies. In this process, the BFSN advocates for the

recognition of sprinklers as an essential fire safety tool for protecting people, property, and the environment. At the same time, we inform and support the High Council—including by formulating proposals—to ensure, for instance, that the vital protection sprinklers already provide is not lost.

Healthcare: a breakthrough for residential sprinklers. The design standards for facilities serving people with disabilities and youth care services are now available for consultation on the VIPA website. They aim to ensure a minimum equivalent level of safety, with a particular focus on limiting smoke exposure and ensuring safe evacuation. The regulations are based on the use of residential sprinklers. Publication and entry into force are scheduled for early 2027. Together with VIPA and with the support of the EFSN, the BFSN will share knowledge about residential sprinklers with fire services, architects, government authorities, and care facility operators.

Parking facilities and technical notes. The new regulations for parking facilities with electric vehicles have been postponed and are expected in early 2027.

Ambitions for 2027

The period between BFSN's founding in May 2011 and its current state represents fifteen years of growth-oriented ambition. Since the appointment of the new board in 2024 and the arrival of Inge Devallez as National Manager, BFSN has gained significant momentum, seeing a rise in both membership and partnerships. By securing a permanent seat in various working groups, BFSN is able to make a tangible impact and serve as the voice of the sector. Furthermore, through the organisation of conferences and training programs, BFSN has established itself as a unique platform for sharing knowledge and expertise regarding the use of sprinklers as an active fire safety measure. In a short time, BFSN has thus evolved into a valuable networking organization within Belgium. 2027 will mark a pivotal moment for BFSN, as we aim to sustain our organisation's growth and further embed our mission.

We set standards in loss prevention – successful in Europe, accepted and renowned worldwide.

The Inspection Services of VdS assess more than 30,000 fire prevention and protection systems worldwide every year. The testing services of the Inspection Services include fire prevention and protection systems such as fire detection and fire extinguishing systems.

VdS has over 110 years of combined fire prevention and protection expertise, covering a wide range of system technologies. VdS also offers approval procedures for new protection concepts that have not yet been described in the VdS guidelines for planning and installation. Joint solutions for VdS-approved safety are developed under the premise of extinguishing effectiveness and reliability. In addition to the VdS guidelines, national and international standards can also be used as a basis for testing.



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A celebration of innovations in fire safety

Youcef Ouammou, EFSN Representative, France

The French industry stands out for its innovative solutions that combine high performance, simplicity, and environmental respect. In the field of fire protection, several cutting-edge technologies are transforming sprinkler network management—enhancing reliability while reducing costs and ecological impact. Discover these innovations shaping the future of fire safety in France...

UXELLO Innovations

1.1 Low Carbon Footprint Tube

Although steel is essential to modern life, its CO₂ emissions significantly contribute to global warming. Steel production alone accounts for 10% of worldwide greenhouse gas emissions.

Our new low-carbon footprint tube is manufactured from recycled raw materials, significantly reducing dependence on virgin resources and minimising waste. The manufacturing process also features



a furnace powered by renewable energy sources such as wind, hydroelectric, and potentially solar panels. Thanks to this innovative approach, we reduce CO₂ emissions by 70% during production.

1.2 Fluoroperçage

The fluoroperçage represents a French innovation that sustainably transforms the manufacturing of fire protection networks. Originating from proven automotive industry technologies, it is an exclusive Uxello innovation, patented in 36 countries. Its principle is simple and unique: directly create the thread that will accommodate the sprinkler head inside the tube, without adding material, welding, or risking leaks. The tube thus becomes a fully integrated assembly component.

Benefits for your installations:

- Maximum reliability
- Hydraulic performance
- Reduced footprint
- Increased productivity
- Enhanced durability

1.3 Uxel'eau Solutions

Every year, millions of litres of drinking water are wasted in France due to regulatory drainage of fire reservoirs. This often overlooked waste poses a real environmental challenge for building managers and local authorities.



Uxel'eau Solutions is an autonomous, dynamic filtration system designed to drastically reduce this wastage. Powered by intelligent solar technology, the device:

- Reduces water wastage by up to 91%
- Consumes three times less energy than conventional systems
- Keeps tanks frost-free with optimized energy efficiency

Christophe Laborde, Uxello Innovations

EQUANS Innovations

2.1 Sprink'Eco: An innovative sprinkler protection against freezing

To address the risk of freezing in sprinkler networks, operators traditionally choose between nitrogen blowouts, glycol use, or maintaining the building's frost protection via heating and insulation. These solutions often involve significant constraints regarding sizing, maintenance, energy consumption, or operational costs.

To meet these challenges, Axima Fire Safety developed Sprink'Eco, an innovative solution that protects sprinkler networks from freezing by circulating low-temperature heated water. This alternative allows the system to remain water-based without the constraints associated with glycol or nitrogen systems.

How Sprink'Eco works: Sprink'Eco relies on two principles: water circulation and warming. It is installed on each control station separately to preserve sprinkler operation. The equipment complies



with testing, reliability, and performance standards of relevant networks.

Using a circulator, water flows only in the exposed zones when outdoor temperatures require it. This circulation prevents the formation of stagnant water pockets vulnerable to low temperatures. Additionally, the water is heated via an exchanger to reach a minimum of 5°C.

The necessary energy can come from an existing or dedicated boiler, or from waste heat recovery (e.g., from a refrigeration unit or industrial process).

Advantages of Sprink'Eco:

- Reliability and safety: Ensures network availability by preventing freezing, circulating heated water only when needed
- Reduced constraints: Fewer control stations, no glycol maintenance, no nitrogen systems
- Performance and durability: Preserves sprinkler system operation and limits internal corrosion
- Cost efficiency: Lower maintenance and investment, suitable for various industrial or logistics sites

2.2 SprinkBox®: Connected intelligence for fire safety

To address the increasing demands for system availability, risk control, and maintenance optimization, Axima Fire Safety developed SprinkBox®, a connected monitoring solution.

This technology allows real-time monitoring of fire protection systems, automatic alerting in case of malfunctions, and detailed analysis of anomalies' origins. It acts as a true interface between field equipment and operational teams, converting technical data into actionable information to anticipate issues and respond promptly.

Key Features:

- Enhanced responsiveness: Instant alerts via email or SMS during activation or critical anomalies
- Increased availability: Continuous



surveillance, early detection of deviations

- Optimized maintenance: Remote diagnosis, targeted and scheduled interventions, minimizing unnecessary trips
- Automated documentation management: Logging, archiving, and easy consultation
- Customisable interface: Personalised dashboards and multisite management

Economic and Ecological Impact:

- Eliminates the use of paper logs (traditional strips)
- Streamlines corrective actions, reducing costs and errors
- Over 500 active users, monitoring over 120,000 sprinklers

Hervé Roche, Equans Innovations

CLF SATREM Innovations

CLF SATREM develops innovative and responsible solutions to support ecological transition and optimise fire protection system performance.

3.1 E-MANO: A digital pressure gauge for network monitoring

Until now, sprinkler system pressure monitoring relied on tape or float gauges requiring weekly replacement.

E-MANO, developed by CLF SATREM, is a connected digital gauge that automates this process. It records pressure data every 10 milliseconds, providing reliable and immediate measurements in compliance with APSAD, FM, NF EN, and NFPA standards.

Advantages:

- Automatic alerts for anomalies
- Accessible and exportable history (PDF, XLS, CSV)
- Secure cloud storage, accessible 24/7
- User-friendly interface on computers and smartphones



- Compatible with all types of systems (water, air, glycol, deluge)

Impact:

Significantly reduces manual operations, saves time, improves traceability, and ensures rapid response to issues.



3.2 Vacuum Air Pump: Innovation for field operations

This solution addresses a specific need: performing complete drainage of sprinkler networks, especially when drain valves are hard to access.

The principle is to bring water to an accessible point. The vacuum pump creates a depression in the network, allowing water to flow toward the sprinkler room.

CLF SATREM enhanced this system with a recovery mechanism, particularly for treated waters or those containing residues (antifreeze, PFAS, iron).

Advantages:

- Reduces handling
- Enables better control of operations
- Proven on a major European installation, including PFAS transition projects

3.3 Nemo – Subaquatic robot for fire reservoir maintenance

Nemo is an underwater robot designed for inspection and cleaning of water storage tanks, reducing the need for draining and lowering water consumption.

This technology also minimises operational constraints related to re-filling and reduces overall operational impact. It aligns with the resource preservation approach while ensuring system performance.



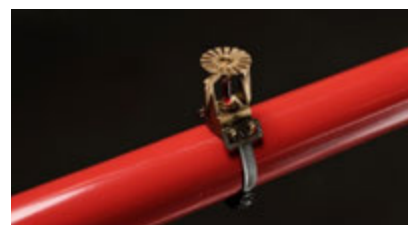
Main Benefits:

- Lower water consumption
- Reduced draining and filling operations
- Fewer operational constraints
- Optimised maintenance interventions

Rodolphe Bassi, CLF SATREM Innovations

SAVE Innovations

Since their inception, AAI and SFR have placed innovation at the core of their development. Their goal is to evolve fire protection solutions by offering simpler, more efficient, and field-adapted responses.



4.1 Fast Sprinkler

Rolland's Fast simplifies and accelerates the prefabrication and installation of sprinklers. It is used daily by our teams. Installed directly on the pipe, it eliminates welding or assembly phases in the workshop using a support collar.

Advantages:

- Time and labour savings
- Reduced carbon footprint
- Proven solution, over two years of deployment

4.2 Hubl'eau

Recently, SFR developed a control hatch for sprinkler tanks, enabling quick visual inspection of the tank's bottom during semi-annual checks.

Advantages:

- Eliminates the need for divers or drones
- Facilitates anomaly detection, especially leaks
- Reduces maintenance costs and complexity



FM Approvals

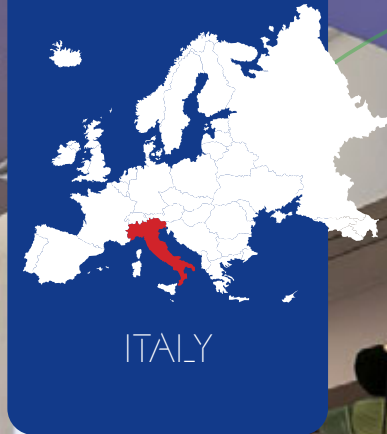
**Resilient loss prevention is
backed by scientific research**



An FM Approvals certification confirms how property loss prevention products perform when faced with real-life perils like fire, flood, wind, and other emerging threats.

Our globally-recognized certifications span fire protection products, building materials, electrical systems and emerging technologies like automation, cybersecurity, and renewables.





The Italian landscape

by Giorgio Franzini, IFSN

The fire protection landscape in Italy is undergoing an interesting period of transformation. Buildings are changing, the technologies used within them are changing and, above all, the risks are changing. Electrification, photovoltaic systems, energy storage systems, data centres, electric mobility, increasingly tall buildings and facilities characterised by growing systems complexity are creating challenges that cannot always be addressed simply by applying design criteria developed for traditional scenarios.

It is against this background that the activities of the Italian Fire Sprinkler Network (IFSN), have developed over the past year. Rather than simply representing a succession of conferences, seminars and training courses, these initiatives reflect a clear direction: increasing knowledge of automatic water-based fire protection systems and, above all, helping the market understand their role within the overall fire safety strategy.

A common thread running through many of these activities is the shift from viewing sprinkler or water mist systems simply as “fire protection systems” to seeing

them as fire control systems capable of influencing the development of a fire scenario from its earliest stages.

Controlling a fire at an early stage means limiting the involvement of combustible materials, reducing the rate of heat release growth, limiting the production of smoke and heat and, ultimately, gaining time! Time for occupants to evacuate, for emergency responders to intervene, and to prevent an initially localised event from developing into a fully developed fire.

This principle is particularly important in buildings where evacuation or fire brigade intervention presents specific challenges: healthcare facilities, high-rise buildings, underground levels, car parks, complex buildings, and large industrial and logistics facilities.

From emerging risks to a different fire protection culture

Many of the topics addressed by IFSN during the year stem directly from the evolution of risk.

The energy transition is perhaps the clearest example. Photovoltaic systems, lithium-ion batteries, BESS, electric

mobility and new methods of energy generation and storage are essential elements of the decarbonisation process, but at the same time they introduce fire scenarios that require specific assessment.

This issue was also addressed at the second IFSN National Conference, where experiences relating to photovoltaic systems, BESS, data centres and water mist were compared, with a focus on the characteristics required of modern fire protection systems.

The same reasoning has guided IFSN's work on car parks. The increasing presence of electric vehicles does not necessarily mean that established fire protection principles should be abandoned, but it does require us to verify whether existing strategies remain adequate in light of the characteristics of modern vehicles and the potential mechanisms of fire spread.

It is therefore no coincidence that the current revision of the Technical Rule for Car Parks within the Italian Fire Prevention Code is one of the most interesting regulatory developments under way, also addressing the changes associated with the growing use of vehicles powered by new energy carriers.

A greater role in Fire Safety Design

Looking at the evolution of the Italian Fire Prevention Code in recent years, there has been no general extension of mandatory requirements for sprinkler or water mist systems. The Code continues to adopt an approach structured around different levels of protection performance. In particular, Levels IV and V introduce automatic fire protection respectively for portions of an activity or for the activity as a whole.

Specific Technical Rules (the so-called *Regole Tecniche Verticali*, or RTVs) then apply this approach to individual occupancies. Depending on building characteristics, elevation, floor area, use and the presence of specific-risk areas, automatic fire protection may become necessary in offices, hotels, schools, commercial premises, healthcare facilities, historic buildings, car parks and entertainment venues.

The question a designer should ask is therefore not so much, "Where are sprinklers mandatory?", but rather, "What designs become possible when a building is protected by automatic fire protection systems? It is in this context that sprinkler and water mist systems can become genuine enabling measures: measures that, by favourably influencing the fire scenario, can make it possible to adopt design configurations that would otherwise be more difficult to justify.

This concept can already be found within the structure of the RTVs, where, in certain circumstances, the presence of automatic fire protection allows means-of-escape or fire compartmentation arrangements that would otherwise not be viable. This principle is important because it changes both the economic and design perspective. A sprinkler system should not be regarded solely as an additional cost imposed at the end of the design process. When considered from the earliest stages, it can become one of the variables through which the building's overall fire safety strategy can be optimised. This approach is particularly valuable in complex buildings and the existing building stock, where changes to geometry, compartmentation or means of escape may be technically difficult or economically burdensome.

One of IFSN's key missions is precisely to promote this change in perspective, helping generations of designers accustomed to a prescriptive approach adopt a broader design philosophy in which active fire protection is regarded as a design resource rather than an economic burden.

An increasingly articulated technical standards framework

At the same time, the technical standards landscape is also changing rapidly. Following the adoption of EN 12845 Parts 2 and 3, the Italian standards body UNI updated UNI EN 12845:2020 in 2026 to align it with the new Parts 2 and 3 and with UNI EN 17451 concerning fire-fighting pump sets.



UNI EN 12845-2 addresses applications of particular importance to logistics and high-density storage. Of even greater relevance in Italy is UNI EN 12845-3, which covers the seismic design of sprinkler systems. Meanwhile, the sector is eagerly awaiting the future EN 12845-1, in which IFSN has participated directly, within the relevant UNI working group, in reviewing the prEN and preparing the Italian comments submitted to CEN.

Water mist is undergoing a similar process with the EN 14972 series and its associated fire test protocols creating an increasingly structured European framework. IFSN's training experience during the year has highlighted a particularly important need: the market must understand that water mist technology cannot simply be assessed using parameters borrowed from sprinkler systems. Selecting an appropriate system requires knowledge of the relevant fire test protocols, the conditions under which the tests were performed and how representative those tests are of the hazard to be protected. This is a cultural shift before it is a regulatory one.

Against this background particular importance also attaches to the clarification issued in 2026 by the Italian National Fire and Rescue Service, which reaffirmed the possibility of using internationally recognized standards and technical documents. For sprinkler systems, references cited alongside UNI EN 12845 include NFPA 13, FM Data Sheet 2-0 and CEA 4001; for water mist, NFPA 750 and FM Data Sheet 4-2 are cited alongside UNI EN 14972-1.

All of this requires competence: the more standards and technical tools are available, the greater the designer's responsibility in selecting and applying them correctly. Building this competence within the Italian market is therefore another key area in which IFSN is focusing its efforts.

“Looking at the evolution of the Italian Fire Prevention Code in recent years, there has been no general extension of mandatory requirements for sprinkler or water mist systems.”

From the system to its entire life cycle

Another issue that is becoming increasingly prominent is the long-term reliability of fire protection systems. Installation and commissioning represent only the beginning of a fire protection system's life. A perfectly designed system that is not properly maintained may progressively lose its ability to perform the function for which it was installed. Inspection, Testing and Maintenance was accordingly one of the key themes that also emerged at Fire Sprinkler International in Paris in April.

The progressive implementation of Italy's qualification scheme for fire protection maintenance technicians is moving in the same direction, shifting attention from initial compliance alone towards the ability to ensure the effective availability of protection measures over time. Design, installation, commissioning, inspection and maintenance thus become parts of a single process.

The next step: Turning knowledge into competence

This is precisely the context in which IFSN's programme for the coming months is taking shape. The training developed in cooperation with Italian professional engineering bodies will progressively be transformed into structured learning pathways. The experience gained with water mist provides a first model, while the NFPA 13 course planned for the autumn opens a second stream focused on international standards. The objective is progressively to develop modules covering EN 12845, system components, seismic design, commissioning and maintenance.

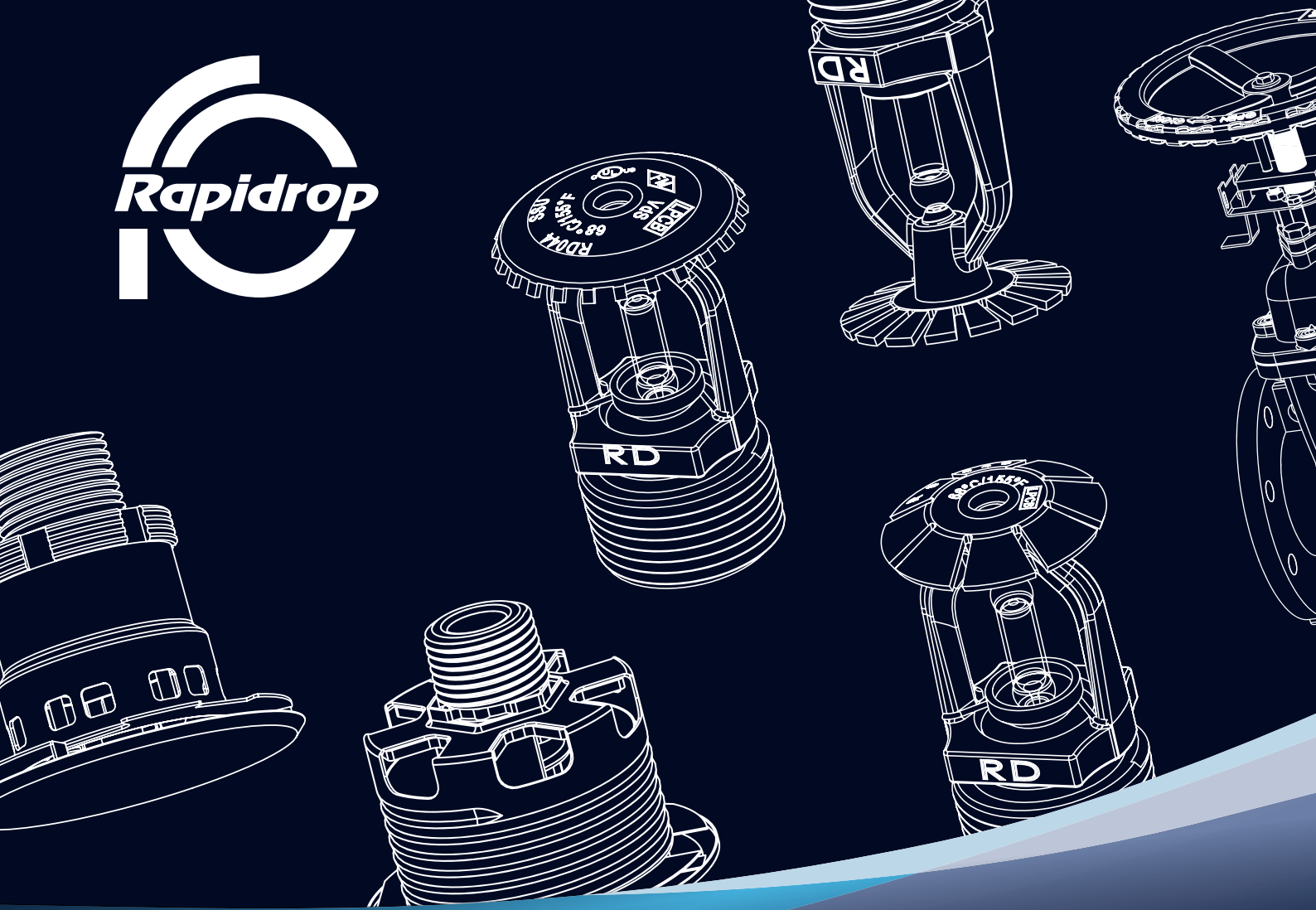
In parallel, the discussion of emerging risks will continue: car parks and electric mobility, healthcare facilities, data centres and, increasingly, high-rise buildings. The international seminar dedicated to high-rise buildings, held by Jim Lake, director of Training at IFSA, represents the beginning of a workstream that is intended to continue through future initiatives.

The challenge is to ensure that automatic water-based fire protection is considered from the very beginning of the design process, assessing not only its ability to control a fire but also its impact on the overall fire safety strategy. From this perspective, sprinkler and water mist systems cease to be simply systems added to a building and become design tools through which it is possible to create more resilient buildings, manage emerging risks and enable architectural and functional solutions that would otherwise be more difficult to achieve.

This is probably the most important cultural shift that the Italian fire protection sector will have to address in the coming years.



Image: © Onlyfabrizio | Dreamstime.com

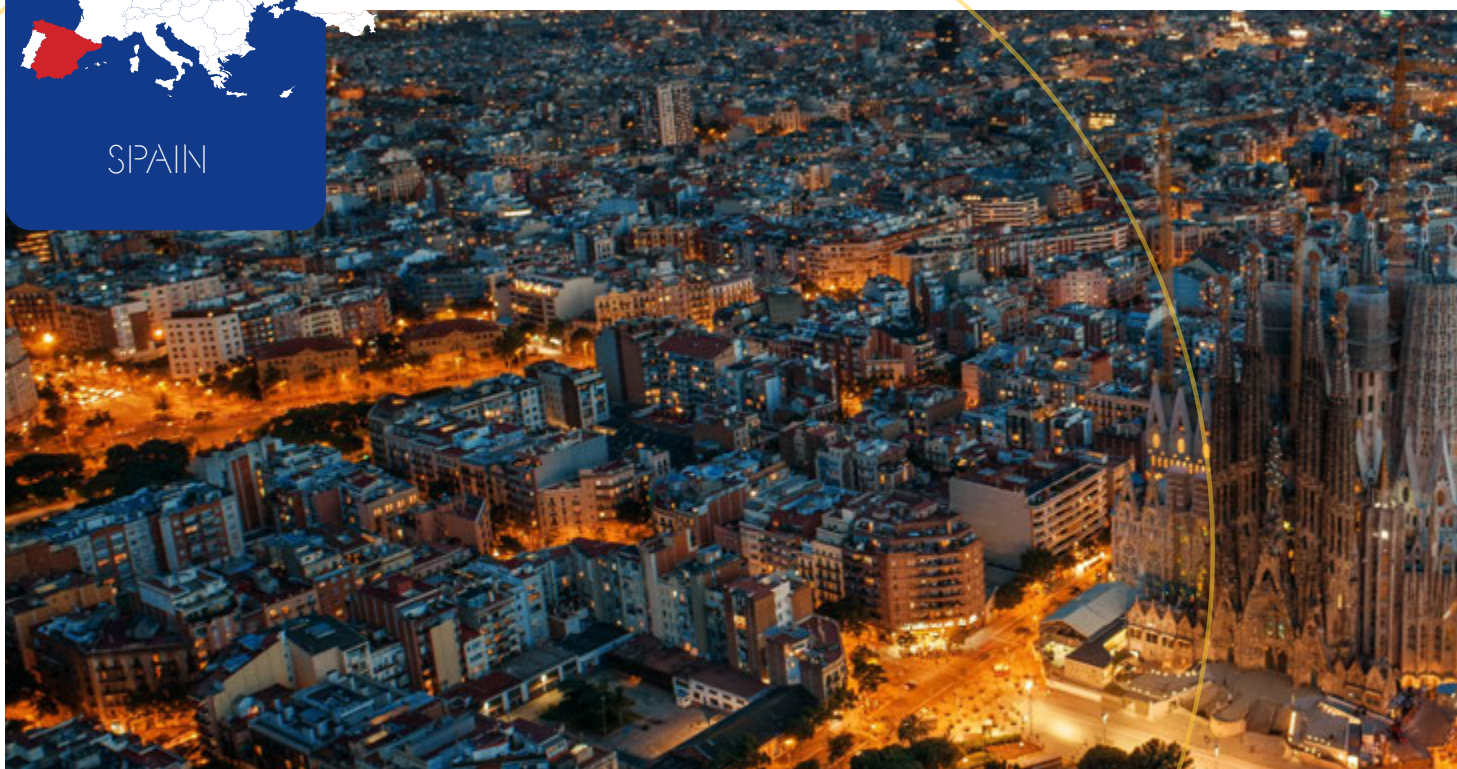


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Heightened awareness and advances in Iberia

By Alfredo Alvarez, Spain & Portugal representative, EFSN

Another year has passed since last Iberian market report and I am delighted to give you some insights on latest developments for Spain and Portugal.

But first you might remember from the 2025 report that the Spanish Industrial Code was published early in the year, showing increased requirements for water-based fixed fire-fighting systems to protect warehouses and industrial buildings. Shortly after, a working group was organised by the Industry Ministry (MINTUR) to clarify the Code content through Annexes II and III. Comments on the annexes are being reviewed at present.

Also in 2025 a joint proposal to the Parliament for an in-depth review of the building code was presented by main associations, and a location for fire tests was found in Spain and supplied with a residential sprinkler system.

And suddenly, 20 years after its last review a draft of the Spanish building code (CTE) came out for public enquiry through the Scientific Science Council (CSIC) just before the end of 2025. The CSIC supports the Housing and Urban Agenda Ministry (MIVAU) by collecting and reviewing all comments on the draft.

The main changes for water-based fixed fire-fighting systems in the draft related to a new requirement for them to be fitted in new car parks over 1500 m² and in those with more than one level below ground. You might also remember that in April 2025 two firefighters were killed in an underground car park in Alcorcón, Madrid as a consequence of a fire generated by an EV crashing at level -2.



In Portugal the last revision of the building codes goes back to 2008, similar to Spain. Though it is also time for a review, sprinkler protection has been required in underground car parks there for over two years.

Our comments to the Spanish building code enquiry were sent to cover the need for sprinkler systems care homes and in residential buildings not just in the parking area below but for the entire building. We gave technical arguments to justify our proposals and indicated some legislative requirements that could be relaxed when sprinklers are installed in residential buildings. Recent building fires from Spain and Portugal with 10 or more victims have come from residential buildings that house the most vulnerable.

To produce more data and local analysis to support our campaigns we have focused on the next three areas of work over recent months:

Residential sprinkler fire test study

To demonstrate the benefit of sprinklers and with the support of the local authority three real fire tests with residential sprinklers took place at an out of use firefighter training tower during Q1 & Q2 of this year.

One test in February followed by two more in May evaluated residential system performance. Some fire data was collected. In all three tests sprinklers controlled or extinguished the fire before it propagated, reducing to a minimum the level of damage caused.

The Málaga Province Fire Fighting Consortium (CPB-Málaga) has recently published a favourable result with images of the study in the specialised 112 Emergency magazine.

Now that we have the building ready and protected with sprinklers, CPB intends to conduct at least one more test this autumn. On this occasion more data will be collected to help determine room tenability in the presence of sprinklers. Lessons learnt from previous tests will be put into practice.

Cost and benefit analysis

To support a proposal to CSIC to protect the rest of the building with water-based fire-fighting systems, now that they will be required in the parking area as per the draft Spanish Building Code. We have obtained figures to calculate the additional cost required to complete building protection with the water supply available from the parking area, finding out that the additional cost will not be too much. The Association of fire-fighter technicians (APTb) has undertaken the work related to sprinkler benefits for users and fire-fighters. Plans for the next months include sharing the analysis with main City Councils as part of Spanish fire safety & awareness weeks organised by APTb.

And our third priority, one that is very important:

Fire protection guidance for homes for the elderly

To position water-based fixed firefighting systems in the first line of defence as the main technology that demonstrably prevents fire deaths. The guidance is expected to be published by APTb and Mapfre Foundation before year end.

Having made good progress on the above areas of work, early this summer we followed up last December's comments sent during the Building Code enquiry phase with the CSIC.

During our visit, Málaga residential sprinkler test videos were shown to the CSIC. Fire duration before sprinkler actuation, number of sprinklers activated on each fire, scenes after the fire showing reduced damage; and most importantly, the reaction of the firefighters when recording the sprinkler protected scene after the fire. All this information raised interest from the CSIC in water-based automatic suppression systems, leading to some questions being asked for the first time.

We finished our meeting advising the Council of the plans to conduct more tests and with the commitment to supply them with the cost and benefit analysis by APTb.

Also during the last twelve months, we managed to write some technical articles for specialised magazines, give presentations in different Spanish regions and visit some Portuguese companies and the Portuguese fire industry association. We discovered that Spanish campaigns may well apply to our neighbour. We also gained two new stakeholders from Spain and one from Portugal, with more to come.

As a separate note, the first recognised Spanish Professional Qualification was an important point left behind from last year's report and in Q2 2026, the association Cefreven, obtained a certification by the Madrid Industrial local Authority to become an approved training centre for fire system installers and maintainers, as required by Royal Decree 513/2017.

In the next few months publications sent to CSIC will be followed up, another test with the CPB will take place in Málaga and I will participate in the fire safety & awareness weeks with the APTb.

I look forward to see you at the NH Collection Eurobuilding in Madrid next April for Fire Sprinkler International.



Developments in the Dutch sprinkler market

John van Lierop, Country Manager, EFSN and VSI

The Dutch sprinkler market continues to develop despite challenges such as environmental and nitrogen-emission constraints, grid congestion and the limited availability of land for development. The Netherlands is very densely populated, and the scarcity of building land, combined with rising construction costs, is slowing construction activities. At the same time, denser and taller construction means that sprinklers are increasingly considered. Developments such as timber construction, the growing number of vulnerable and less self-reliant occupants, and the energy transition are also driving demand for sprinkler and water mist systems. Experience also shows that greater knowledge of sprinklers among consultants and competent authorities makes it easier for sprinklers to be accepted as an equivalent to the passive measures in the building code.

Developments in building regulations

Dutch building regulations may be facing significant changes. Various studies and practical experience indicate that the current regulatory framework, with its strong emphasis on passive fire protection measures, does not provide an adequate level of fire safety for some of the developments mentioned above.

The issue has also attracted political attention. In July 2026, the Dutch Tweede Kamer adopted a motion calling on the government to carry out a comprehensive review of the principles underlying the Besluit bouwwerken leefomgeving (Bbl), the Dutch Building Decree. The review is to address the four priorities identified by the Dutch fire service. This development creates new opportunities for the sprinkler industry. Rather than focusing primarily on measures to limit the consequences of a fully developed

fire, greater attention is being given to controlling the fire at its source through early detection and suppression.

https://sprinkler.nl/bouwregelgeving_aandacht_bronbestrijding/

Sprinklers in timber buildings

The Dutch standard NTA 6125 Building with Timber, Phase 1 was completed at the end of 2025 and approved by a small majority of the working group. However, the process of incorporating the standard into Dutch building regulations has stalled, while a broader debate has emerged about the underlying principles of Dutch fire safety regulations. The positive development is that the Dutch fire service already uses the standard as a reference for building permits.

Under NTA 6125, timber buildings up to 13 metres high that are protected by sprinklers do not require additional fire-resistant encapsulation of the timber. Up to 20 metres, the same applies to fire compartments of no more than 150 m². Up to 35 metres, sprinklers can also be applied, although partial protection of the timber structure, for example with gypsum board, remains necessary. The Dutch sprinkler association, Verenigde Sprinkler Industrie (VSI), believes that sprinklers can provide further benefits and that should be recognised in phase 2 of NTA 6125. Although phase 2 has started, insufficient government funding has caused delays, and currently only a limited number of work packages can be carried out.

To further substantiate the contribution of sprinklers, VSI has commissioned research comparing the safety level of structures protected by fire-resistant encapsulation with structures protected by sprinklers. In addition, VSI is further developing the technical details for sprinkler installations in timber buildings.

High buildings

The Bbl scope extends to 70m. Above that buildings are almost always sprinkler-protected under the Dutch guideline for high-rise buildings but below they generally are not. In 2026, the Netherlands Institute for Public Safety (NIPV) published its third study into the fire safety of higher buildings. It concluded that buildings between 20 and 70 metres require additional fire safety measures to achieve the same level of safety as lower buildings. In particular, the possibility of safe fire service intervention is lower than desired. Buildings above 70 metres, by contrast, achieve a higher level of fire safety because of additional measures such as sprinklers. VSI advocates a risk-based approach in which sprinklers play an important role. Among other initiatives we have made an animated video to explain and raise awareness of the fire safety risks associated with higher buildings: <https://sprinkler.nl/hogere-bouw-bewustwording/>

Car parks

Sprinklers are mandatory in car parks beneath higher residential buildings and healthcare buildings. The new Dutch standard NEN 6067, Fire Safety of Car Parks, is due to be published shortly. This risk-based standard provides a range of possible solutions, including sprinklers and water mist systems. Compared with other solutions, these systems perform much better within the risk-based methodology.

The report 'Sprinkler Protection of Small Car Parks: A Risk-Based Approach', made by engineering consultancy Peutz, was also published. VSI commissioned the study because current design requirements for small car parks

“Denser and taller construction means that sprinklers are increasingly considered”

can result in relatively high investment costs for the water supply. In practice, this encourages developers and consultants actively to seek alternatives to sprinkler protection. The study concludes that applying Ordinary Hazard Group 1 (OH1) in small car parks does not result in an unacceptably higher residual risk. The assessment follows the risk-based approach of NEN 6067, focussing beyond the probability of a fire occurring to the probability of fire spreading from one vehicle to multiple vehicles.

Sustainability and the role of sprinklers

Sustainability, and particularly the reduction of CO₂ emissions, is becoming increasingly important in building design. BREEAM, Life Cycle Assessments (LCAs) and Environmental Product Declarations (EPDs) are used to assess the environmental performance of materials and buildings. The Dutch government uses the MilieuPrestatie Gebouwen (MPG), which differs from the European standards. Building installations, including sprinkler systems, will be incorporated into the Dutch National Environmental Database (NMD), which provides the data used for these calculations. The Dutch government has asked VSI to contribute to the inclusion of sprinkler systems.

One factor that can disadvantage sprinklers is that sustainability calculations take account of the environmental impact of the sprinkler installation itself, while the positive contribution of sprinklers to sustainability is generally not recognised. A major fire results in material losses, waste, demolition, transport, repair or even complete reconstruction, all of which generate significant additional environmental impacts and CO₂ emissions. Sprinklers can prevent or substantially reduce many of these consequences.

VSI and EFSN are therefore advocating a broader approach to sustainability and fire safety, with assessments that also consider the avoided environmental damage and CO₂ emissions if sprinklers are fitted. This is becoming increasingly relevant with developments such as circular and bio-based construction and the growing use of timber. <https://sprinkler.nl/sprinklers-de-ontbrekende-schakel-in-duurzaam-bouwen/>

Regulations for hazardous substances

In the Netherlands, guidelines for protecting people and the environment against risks associated with hazardous substances are set out in the Publicatiereeks Gevaarlijke Stoffen (PGS). Examples include PGS 15 for the storage of packaged hazardous substances and PGS 37-2 for the storage of lithium-ion energy carriers. During the past year, revisions of PGS 14, PGS 15 and PGS 37-2 have started. PGS 14 describes the different types of

fire suppression systems and the conditions required for their effective operation. As part of the revision, the objectives and performance requirements of these systems are being rewritten taking in account pre-incident planning and final extinguishment. Through VNO-NCW membership (Dutch business organisation), VSI participates in the PGS 14 and PGS 37-2 working groups.

Sprinklers have an important role to play. By controlling a fire at an early stage, they not only limit fire damage but can also reduce the release of hazardous substances and combustion products, as well as of contaminated firefighting water. In practice, industry considers some assumptions concerning fire probability and the resulting prescribed measures to be overly conservative. It is therefore important to establish the appropriate balance based on evidence and actual risk.

Transition to fluorine-free firefighting foam

The transition from fluorinated to fluorine-free firefighting foam is an important development for the fire protection industry. European legislation is phasing out the use of PFAS-containing firefighting foams.

However, the transition to fluorine-free alternatives involves more than simply replacing the foam concentrate. Different foam properties can affect the design, operation and performance of fire protection systems. Cleaning and modifying existing systems also require careful consideration. VSI supports the industry in this transition through development and sharing of knowledge. In February VSI organised a webinar on the transition to fluorine-free firefighting foam, followed by podcasts. <https://sprinkler.nl/schuimpodcast/>

Sprinklers and smoke compartments

The Netherlands has specific regulatory requirements for smoke compartments. During a fire, sprinkler cooling limits temperatures and consequently reduces pressure differences between the fire compartment and adjacent spaces. This avoids the limit of smoke spread. Previous research commissioned by VSI confirms that sprinklers can provide an alternative to some of the measures normally required to comply with the Dutch smoke control standard, NEN 6075. During the past year, further work has been carried out on the revision of NEN 6075, including provisions for sprinklers. The revised standard is expected to be published for public consultation later in 2026. This could provide simpler and more cost-effective smoke control with fewer fire dampers, particularly in buildings such as hospitals, care homes and hotels.

Sprinklers in historic buildings

In the Netherlands hundreds of historic buildings, mainly churches, were partially equipped with sprinkler systems at government expense from around 1935 until the 1980s. The desire to preserve these systems and make more knowledge available about the protection of historic buildings has led to cooperation between the sprinkler industry and the Dutch government. VSI has conducted research into the application of sprinklers and water mist systems in historic buildings. The Cultural Heritage Agency of the Netherlands (RCE) has incorporated this information into its knowledge platform. As a result, information on sprinklers and water mist is now also available through an official government source for building owners and others involved in protecting cultural heritage.

Cooperation with the fire service

VSI previously initiated a project with NIPV which resulted in the publication of 'Operational Guidance for Fire Service Intervention in Sprinkler-Protected Buildings', together with associated fire service training modules.

This cooperation has now been extended. We are working on operational guidance for more complex buildings, including information for the fire service on facilities with Automated Storage and Retrieval Systems (ASRS). We also encourage the use of technical measures and pre-incident planning to support effective fire service intervention.

Monitoring and remote control

Developments in monitoring and remote control of sprinkler systems are progressing rapidly, and the benefits for the various stakeholders are clear. Several VSI members already provide solutions that allow complete sprinkler systems to be monitored and remotely tested. A VSI working group is developing a normative framework for monitoring and remote control, based on the principle that the reliability and effectiveness of sprinkler systems must remain at least equivalent to current levels. The ultimate objective is to incorporate these principles into a European standard. International cooperation is therefore being sought, existing standards are being reviewed, and work is underway towards submitting a proposal to CEN.

Quality assurance

The high reliability of sprinkler systems in the Netherlands is supported by independent inspection and certification under accreditation. Since last year, new certification schemes for the installation and maintenance of sprinkler systems have been in force, and water mist systems have also been included.

Personnel qualifications are receiving increasing attention. VSI has developed competence profiles for all key roles within the sprinkler industry, many of which are referenced in the certification schemes. The objective is to integrate these competence profiles into future versions of the certification schemes.

Finally

Sprinkler systems are increasingly becoming an integral part of fire safety solutions. Automatically controlling or suppressing a fire at its source is inherently more effective than relying solely on measures intended to limit its consequences. Nevertheless, there are still many applications like care homes and apartments where sprinklers are rarely used, even though they can make a significant difference in preventing casualties, limiting damage, improving sustainability and protecting business continuity. VSI represents the Dutch sprinkler industry and promotes the application of sprinkler systems. It works closely with other European sprinkler associations under the umbrella of the European Fire Sprinkler Network (EFSN).

Through our initiatives, VSI and EFSN develop and spread knowledge about sprinkler applications. Through cooperation with a wide range of fire safety stakeholders and our active contribution to the development of standards, we are confident that buildings can become safer and more resilient, while delivering greater value at lower overall cost. An overview of sprinkler applications, opportunities and supporting research is available at: <https://sprinkler.nl/overzicht-van-de-toepassingen-van-sprinklers/>

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A year of sustained activity

Alasdair Perry, Chief Executive, British Automatic Fire Sprinkler Association

The first eight months of 2026 have been exceptionally active for the British Automatic Fire Sprinkler Association (BAFSA). Across the United Kingdom, our work has combined policy engagement; independent research; technical leadership; workforce development and public communication.

The common purpose has been to strengthen confidence in automatic water-based fire suppression and ensure decisions affecting the sector are grounded in evidence, competence and practical experience.

This activity is supported by an industry with considerable reach. Research completed by BAFSA during 2026 identified that BAFSA members represent a clear majority of the UK sprinkler sector by number and, more significantly, an estimated 92% of its total market value. Although the

methodology necessarily involves assumptions, the work gives BAFSA a much clearer evidence base when representing the sector to government, regulators and other stakeholders.

Turning operational experience into evidence

BAFSA has continued to develop its Sprinkler Saves work, using real incidents to demonstrate what automatic suppression achieves. The fifth annual Sprinkler Saves Review was published in 2026 and distributed to members, fire and

rescue services, building control bodies, parliamentarians and other stakeholders. Recent examples have included a Scottish warehouse fire brought under control and a South Wales retail fire controlled by the operation of a single sprinkler head. These cases make the benefits of sprinklers tangible: early control limits fire growth, protects occupants and firefighters, reduces disruption and helps preserve buildings, businesses and communities.

We also commissioned Optimal Economics to examine national fire incident data for England covering 2018/19 to 2023/24 and assess what the available evidence could reliably tell us about the performance of sprinklers and watermist systems. The dataset recorded 2,924 fires in which a sprinkler or watermist system was present, of which 2,438 (83%) involved sprinklers. The research found that the watermist category encompassed

fundamentally different technologies and applications, including building-wide systems, personal protection systems and portable or manually operated equipment. Once these differences and the limited number of directly comparable incidents were considered, Optimal Economics concluded that the available data could not support a robust comparison of sprinkler and watermist effectiveness.

BAFSA's membership includes organisations active in the manufacture, design, installation and maintenance of watermist systems, and we are committed to working constructively with our watermist members and the wider watermist industry. Our objective is not to promote one water-based suppression technology at the expense of another, but to support the appropriate selection and use of systems based on the risk, application, relevant standards, independent certification and credible evidence. The research has helped clarify the limitations of the current incident data and provides a stronger basis for continued dialogue, collaboration and future evidence gathering across the water-based fire suppression sector.

The continuing campaign for safer schools

Sprinklers in schools remain a major campaign priority. Scotland and

“Sprinklers in schools remain a major campaign priority. Scotland and Wales already require sprinklers in new schools, but the position in England remains inconsistent.”

Wales already require sprinklers in new schools, but the position in England remains inconsistent. During 2026, BAFSA supported the National Fire Sprinkler Network's parliamentary event at the House of Lords and promoted independent cost-benefit research showing the substantial economic and social consequences of school fires.

BAFSA has taken that evidence to the wider fire sector, including a presentation at Fire Safety Matters Live in Coventry, and has supported correspondence with parliamentarians following fires in their constituencies. Our case is straightforward: the cost of a serious school fire extends far beyond rebuilding. It includes lost education, relocation, transport, community disruption, carbon impacts and pressure on already constrained public services. Requiring sprinklers in new schools is a proportionate

investment in resilience and educational continuity.

Policy, regulation and standards

BAFSA has remained closely engaged with the UK's post-Grenfell building safety reforms. Through the All-Party Parliamentary Group on Fire Safety and Rescue, we contributed to a June discussion with the leadership of the Building Safety Regulator on regulatory performance, competence, construction products and the proposed Single Construction Regulator. BAFSA also gave oral evidence to the House of Lords Justice and Home Affairs Committee during its inquiry into fire safety in prisons.

Technical standards remain central to our work. The revision of EN 12845 is potentially one of the most consequential developments for the commercial sprinkler sector. BAFSA established a dedicated group bringing together members and expertise from the Fire Protection Association, BRE and RISCAuthority to scrutinise the emerging text and its implications for UK practice. Our Technical Committee and specialist groups have also continued work on tanks, water conservation, pump-water heating, TB203 and the proposed BS 9996 on the commissioning and maintenance of integrated fire safety systems.

The withdrawal of FIRAS from water-based suppression certification schemes also required sustained engagement. BAFSA has worked with certification bodies, UKAS and affected companies to support an orderly transition while maintaining the principle that appropriate independent third-party certification is essential to confidence in design, installation and maintenance. This principle applies across water-based suppression technologies and supports responsible growth throughout the sector.



Competence and a growing learning offer

The scale of BAFSA's learning activity continues to grow. By July, the Learning Centre reported more than 1,000 CPD enrolments, over 800 registrations for the introductory Awareness of Automatic Fire Sprinkler Systems programme and healthy participation across Level 2, Level 3 and Level 5 qualifications. Direct Claim Status was retained following external quality assurance, while additional assessor and quality capacity has been developed to support growth.

During 2026, BAFSA launched the ABBE Level 2 Award in the Application of Legislation and Regulation in Fire Sprinkler Installation and advanced a broader Working in the Fire Sprinkler Sector qualification. Eligibility for the residential installation pathway has been widened for appropriately qualified and experienced plumbers. A new social-housing CPD programme has also been launched, and work has progressed on higher-risk and fully hydraulically calculated design learning for non-storage occupancies, with further development planned for high hazard and ESFR design.

These programmes sit within a wider competence strategy. BAFSA chairs the Active Fire Protection Sector-led Group and the Fire Sprinkler Group within the industry's post-Grenfell competence arrangements. The objective is to connect occupational competence frameworks, recognised qualifications, continuing professional development and card schemes into credible career pathways, from new entrants to experienced designers and specialists.

Research, sustainability and collaboration

Emerging risks and environmental performance have become increasingly prominent. BAFSA is working with the Fire Protection Association, BRE, EFSN and other partners to research the effectiveness of sprinkler systems in controlling fires involving lithium-ion batteries. The project is funded by BAFSA, with additional funding provided by Electrical Safety First through a grant awarded in 2025. Further testing is planned for January 2027, ahead of the publication of the final report. This collaborative work aims to move



Greater Manchester FRS confirmed that three sprinkler heads prevented a fire in a college preventing fire spread.

the discussion beyond assumption and establish a credible evidence base to inform future guidance, risk assessment and system design.

BAFSA has also begun working with the Alliance for Sustainable Building Products on a potential environmental roadmap for the sprinkler sector. The proposed work would examine emissions across manufacturing, transport, installation, maintenance and end-of-life, identify data gaps and develop practical decarbonisation interventions. Crucially, it must also reflect the environmental benefit of preventing large fires: avoided reconstruction, waste, emissions and interruption are part of the full sustainability case for sprinklers.

Our relationship with EFSN has been particularly valuable in this work and in the wider exchange of technical and policy experience. The challenges facing the water-based suppression sector - changing standards, new technologies, workforce competence, sustainability and the need for better evidence - do not stop at national borders. BAFSA wants to deepen that exchange and to work with sprinkler and watermist organisations, manufacturers, installers, researchers and certification bodies wherever there is a shared commitment to evidence, competence and quality.

Looking ahead

The remainder of 2026 will see BAFSA continue the schools campaign, progress lithium-ion battery testing, strengthen competence pathways, develop advanced design training and engage with regulatory and standards reform. We are also reviewing our membership structure and requirements to ensure that they remain clear, inclusive and firmly connected to competence, certification and quality.

That review includes considering how BAFSA can engage more effectively with the breadth of the water-based fire suppression industry. We value the expertise and contribution of our existing watermist members and want BAFSA to provide a constructive home for organisations committed to the appropriate and responsible use of watermist. Collaboration does not require industry to avoid difficult technical questions; it requires us to examine them openly, use evidence carefully and work together to improve outcomes.

The volume of activity is significant, but the direction is consistent. BAFSA is seeking to be a representative body that does more than advocate: one that commissions evidence, develops people, tests assumptions, supports high standards and works constructively across the UK, Europe and the wider international water-based suppression community.

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CASE STUDY

Why Toronto standardised on Vapour Corrosion Inhibitors for all Dry & Pre-Action Systems

The City of Toronto manages roughly 2,500 facilities, making long-term reliability of its fire and life safety systems a major priority. After experiencing recurring corrosion problems in several dry sprinkler systems, including facilities with more than 100 pinhole leaks, the City began evaluating ways to reduce corrosion and avoid costly system replacements. Those efforts ultimately led Toronto to add Vapor Pipe Shield™ (VPS), from General Air Products, to its Master Specifications, which set the technical requirements for its construction and refurbishment projects, for new dry pipe and pre-action sprinkler systems, as well as major system replacement projects.

One of the most severe examples occurred at a 250,000-square-foot facility, approximately 23,000 m², where corrosion had progressed to the point that the entire dry sprinkler system needed to be replaced. During the replacement, the City installed heavier-wall steel piping (Schedule 10 to Schedule 40) and added VPS as part of its corrosion mitigation strategy. According to Ryan Duggan, Director of Safety & Compliance for the City of Toronto, the system has remained stable for approximately four years since the installation.

Vapor Pipe Shield helps protect dry and pre-action sprinkler piping by introducing vapor corrosion inhibitors, or VCIs, into the system through an in-line device installed between the air compressor and the dry pipe valve. As the system is pressurised, the VCIs travel with the system air and disperse throughout the piping network. These inhibitor molecules adsorb to internal metal surfaces, meaning they collect on the surface of the metal, creating a protective molecular layer that helps reduce corrosion throughout the piping system.

The City of Toronto had evaluated other corrosion-control technologies, including nitrogen, but found that equipment cost, space requirements and retrofit complexity could make some solutions difficult to implement across such a large and diverse building portfolio. VPS provided another approach that could be incorporated into both new and replacement systems with relatively little additional space or infrastructure.

Following the success of the initial installations, Toronto began incorporating VPS into additional projects. These included dry sprinkler systems in police facilities, parking garages, and major system replacement projects at solid waste facilities. In one case, a facility experienced more than 150 pinhole failures and was scheduled for a complete system replacement that would also include VPS.



The results ultimately led the City to move beyond using VPS on individual projects and adopt it as part of a broader corrosion-control strategy across its facilities.

For Toronto, the decision is fundamentally about protecting infrastructure over the long term. Installing corrosion protection during construction or refurbishment represents a relatively small upfront investment compared with the cost, disruption, and maintenance associated with repairing leaks or completely replacing sprinkler piping later.

Duggan summarised the City's approach simply: investing in corrosion prevention today can help avoid substantially larger expenses in the future. Based on the performance of its installations to date, the City views Vapor Pipe Shield as a practical, scalable solution for extending the service life of dry and pre-action sprinkler systems across its building portfolio.

Generalairproducts.com

Climate goals are changing building assemblies

The push to reduce energy consumption is a primary driver of changes in modern building design. Model building guidance and net-zero initiatives, require buildings to maintain consistent interior temperatures and reduce how much outside conditions affect the inside environment – all to maximize energy efficiency.

Higher R-values (the measure of a material's resistance to heat transfer) are also becoming more common. Achieving these performance levels can require as much as 18 inches of insulation within a roofing assembly.

Much of that additional insulation is lightweight foam, which provides excellent thermal performance but is also combustible. As insulation thickness increases, so does the amount of combustible material present in the building envelope.

New fire protection challenges

Today's buildings also incorporate weather-resistant, air and vapour barriers that add a localised fuel load to the assembly and trap heat inside. While these material and design changes are necessary for modern construction, they introduce fire protection challenges that many existing codes and guidance were not originally designed to address:

- Increased use of concealed cavities within exterior wall systems.
- Roof assemblies now have thicker layers of combustible insulation, and additional membranes
- Rooftop photovoltaic systems add risks such as fire spread and additional fuel loads... FM Approvals Examination Standard 4484 for Retrofit Coatings for Roof-Mounted Rigid Photovoltaic Module Systems helps address these risks.

Better fire standards for a climate-resilient building

To address these challenges, alongside updates to NFPA 285, FM Approvals combines research, property loss investigations and realistic fire scenario testing to design building system standards that reflect how today's roofs and

walls could behave when exposed to fire.

FM 4411 (Cavity Wall Systems) was developed to evaluate complex exterior wall assemblies, including insulation, weather-resistant barriers, attachment systems, concealed cavities, and exterior cladding.

FM 4880 (Class 1 Fire Rating of Building Panels or Interior Finish Materials) evaluates insulated wall panels and interior finish materials to determine their contribution to fire growth and heat release.

FM 4881 (Class 1 Exterior Wall Systems), FM 4471 (Class 1 Panel Roofs) applies the same systems-based philosophy to panel roof assemblies.

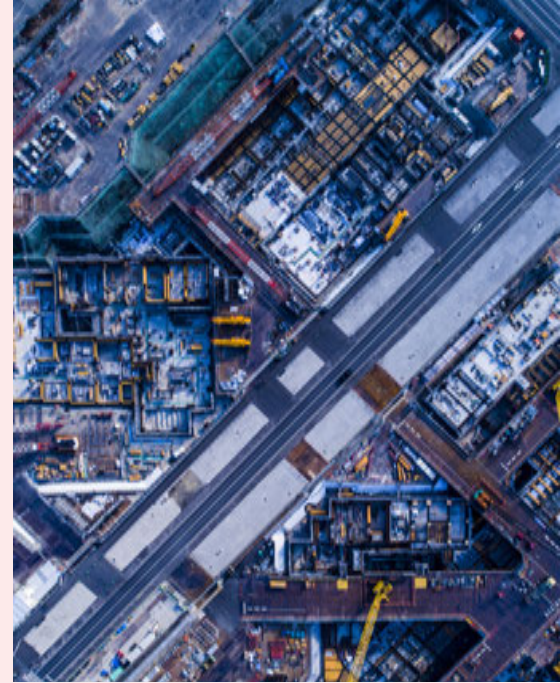
The FM Approvals testing and certification process and standards account for the complexity of modern construction. Tailored to evaluate building systems' unique fire risks, testing may include a combination of material characterisation, full-scale fire testing, wall or roof fire tests, and more.

Climate change is also changing fire protection

Climate change is reshaping fire protection considerations beyond the design and construction of buildings. As drought conditions intensify, water availability shifts, and expectations for facility performance increase; stakeholders are reevaluating both the water supplies that support fire suppression systems and the efficiency with which those systems operate.

Two important trends are emerging:

- **Planning for more reliable water supplies:** More facilities are incorporating on-site water storage tanks and dedicated water supplies to ensure adequate fire protection, even when public infrastructure is under stress.
- **Improving sprinkler system efficiency:** Through engineering and full-scale fire testing, FM Approvals has helped advance the availability of FM Approved fire protection products, including water mist systems, that provide effective



suppression while using water more efficiently.

Protecting more than buildings

Climate resilience is about maintaining an organisation's continuity after a major event when it may lose production capacity, inventory, jobs, supply chain continuity, and the ability to be an important economic contributor to the surrounding community.

FM Approvals' approach to climate-resilient engineering uses scientific research and testing to identify where building systems and assemblies may fail against hazards such as fire, wind, hail and flood. Then, FM Approvals periodically adjusts standards to align with these hazardous conditions, so manufacturers of loss prevention solutions can develop products that are more resilient for building systems.

For more information on property loss prevention testing and certification, explore FM Approvals' examination standards and visit the Approval Guide to find listings of all FM Approved products.

fmapprovals.com



Call for Papers

Fire Sprinkler International 2027, Madrid, 21-22 April

Fire Sprinkler International 2027 is the premier event in the sprinkler calendar and the largest conference in Europe dedicated to sprinkler and water mist technology. 600 delegates from around the world came to Paris in 2026 and we expect a strong attendance next year in Madrid. We are now calling for abstracts for papers to be presented at the conference. Abstracts should be submitted to

brinson@eurosprinkler.org by 11 December 2026. For more information go to:

<https://firesprinklerinternational.com/wp-content/uploads/2026/10/>

[FSI-2027-Call-for-Papers-EN95.pdf](#)

Fire Sprinkler International 2027 es el evento principal en el calendario de sistemas de extinción automática a base de agua y la conferencia más grande de Europa dedicada a la tecnología de rociadores y de agua nebulizada. Este año, 600 delegados de todo el mundo vinieron a París y esperamos una gran asistencia el año próximo en Madrid.

Ahora es el momento de enviar los resúmenes de artículos para su selección y ser presentados en la conferencia. Los resúmenes deben enviarse a brinson@eurosprinkler.org antes del 11 de diciembre de 2026. Para más información, consulte: https://firesprinklerinternational.com/wp-content/uploads/2026/10/FSI-2027-Call-for-Papers_SP54.pdf



A smarter approach to Pump Room maintenance with FireProCare

Fire pump controllers play a critical role in fire protection systems, but managing their maintenance can be complex. Records may be stored in different locations, equipment information can be difficult to access, and service teams may not always have the latest information when they arrive on site. FireProCare brings these essential elements together in one intuitive, multi-platform solution.

Compatible with Tornatech and Firetrol fire pump controllers, FireProCare gives fire protection professionals greater visibility into their systems while supporting a more proactive approach to maintenance. Accessible from a mobile device or computer, the platform helps users organize controller information, monitor equipment health, and manage maintenance activities from virtually anywhere.

Connected controllers are visually represented on an interactive map, simplifying system oversight across multiple locations. Users can also access service histories and maintenance records, helping them track completed work, identify trends, and make more informed decisions.

For improved diagnostics, the FireProCare Visualizer presents controller events and data in an easy-to-understand graphical format. This gives service teams access to valuable information before and during a site visit, helping them identify potential issues more efficiently and reduce operational disruptions.

FireProCare also simplifies system organisation and documentation. Its Digital File Cabinet provides one secure place to store important pictures, and videos. Pump Room Management Tools let users organise controllers, pumps, drivers, and other critical equipment while improving maintenance planning, scheduling, and record-keeping.

By centralising maintenance history, documentation, equipment information, diagnostic tools, and service resources, FireProCare improves efficiency, enhances user accountability, and supports equipment reliability throughout the controller's life cycle.

Whether working in the field or at a desk, fire protection professionals can use FireProCare to stay organised, gain greater control over their maintenance programs, and make system information easier to access.

FireProCare represents the future of preventive fire pump controller maintenance.

fireprocare.com

Europe's shift to Nitrogen corrosion control



For decades, the European fire protection sector accepted internal pipe corrosion as an inevitable operational cost. Sprinkler contractors routinely returned to properties to patch pinhole leaks, flush out rust sludge, or entirely replace prematurely degraded systems. Today, a fundamental shift is occurring across the continent. Driven by strict asset protection mandates and updated insurance guidelines, the nitrogen corrosion control category is experiencing unprecedented growth in Europe, transforming how we design and maintain dry and pre-action systems.

The underlying chemistry is undeniable. Traditional systems rely on compressed ambient air, trapping oxygen and moisture inside the piping. According to industry insurance data from FM Global Property Loss Prevention Data Sheet 2-1, fire sprinkler piping containing ordinary air corrode up to 14 to 20 times faster than those maintained with high-purity nitrogen. By introducing an on-site nitrogen generator to achieve a 98% or greater gas purity, contractors effectively starve the oxidation process, extending the overall lifecycle of system components by 3 to 5 times.

Furthermore, nitrogen's ultra-low dew point eliminates the moisture that causes catastrophic ice plug blockages in cold storage facilities.

For European sprinkler contractors, this category growth represents a massive commercial opportunity. ECS sees forward-thinking contractors shifting away from reactive maintenance toward proactive, value-added technology integration. Transitioning to nitrogen allows contractors to offer FM approved solutions that lower total cost of ownership for facility managers, minimise business interruption, and secure premium service contracts.

The market has evolved beyond treating corrosion as a localised nuisance. It's now recognised as a critical risk to system hydraulics and life safety. As European regulations tighten and facility owners demand better sustainability, offering nitrogen infrastructure is no longer a niche service. It is a competitive necessity. By embracing this opportunity, contractors can safeguard European infrastructure, enhance system reliability, and unlock robust new revenue streams.

ecscorrosion.com

Minimising fire risks in Photovoltaic Installations with PVProtect

As the world transitions to greener technologies with the installation of photovoltaic panels and the increase in electricity prices, Viking EMEA launches Viking PVProtect, a comprehensive system designed to safeguard roof structures from fire hazards and to mitigate risks.

PVProtect is a specialised water-based fire protection system that safeguards the roof structure from the potential of fire spread and subsequently the operations within the building envelope, particularly those with combustible insulation materials. Because photovoltaic panels are installed in series, a single ignition point can develop into a long continuous flame. PVProtect is specifically engineered to stop this linear spread before it causes extensive damage.

The system provides a complete approach that not only detects, locates, and suppresses fires but also alerts emergency services. It is divided into two distinctive parts: the first relies on specially developed and patented water spray nozzles, while the second works with traditional Viking valves and water spray components.

Highly sensitive heat detection sensors ensure rapid intervention. This quickly identifies abnormal temperature increases and pinpoints the location of the threat. The system then automatically activates targeted suppression to the affected zone, preventing and suppressing fire growth. Water flows through the pipework and is evenly distributed via the patented PV nozzles. At the same time, a warning signal is triggered to support safe personnel evacuation.

PVProtect offers several key strengths:

- Effective protection against extensive fire damage to the roof structure
- Improved insurability for buildings with photovoltaic systems
- Reduction of follow-up costs from operational downtime
- Automatic detection and suppression of incipient fires
- Cost-effective integration with existing sprinkler systems
- Even water distribution across the roof surface via PVProtect nozzles

As photovoltaic installations become increasingly common, more insurers



are recommending such systems as an effective countermeasure against the heightened fire risk. Recent fire incidents in Europe have highlighted these risks, as cables, connectors, and electrical components remain exposed to changing weather conditions and become more vulnerable over time. PVProtect addresses these challenges and is the first VdS-approved system with automatic fire suppression for photovoltaic installations.

viking-emea.com/industry-solutions/pvprotect/

New H502t Residential Fire Pump Controller

Harrijess Ltd has introduced the H502t Residential Fire Pump Controller, engineered to meet the intent of EN12259 12 and BS9251:2021. Featuring a full colour touchscreen, dual pressure switch monitoring, flow switch supervision, and intelligent jockey to fire mode operation, the controller delivers clear status indication and reliable automatic starting.

With configurable settings, SD card data logging, and multiple starting method variants (DOL, star delta, soft start, VFD), the H502t series provides a modern, standards aligned solution for residential fire pump installations.

harrijess-ltd.odoo.com





Fire Sprinkler International 2027

NH Collection Eurobuilding,
Madrid

Wednesday 21st and
Thursday 22nd April 2027

www.firesprinklerinternational.com

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