

# sprinkler OUTLOOK

Issue 4/2024

Net Zero  
construction

EN 12845-2

Retrofitting  
industrial  
buildings

Cold storage  
protection



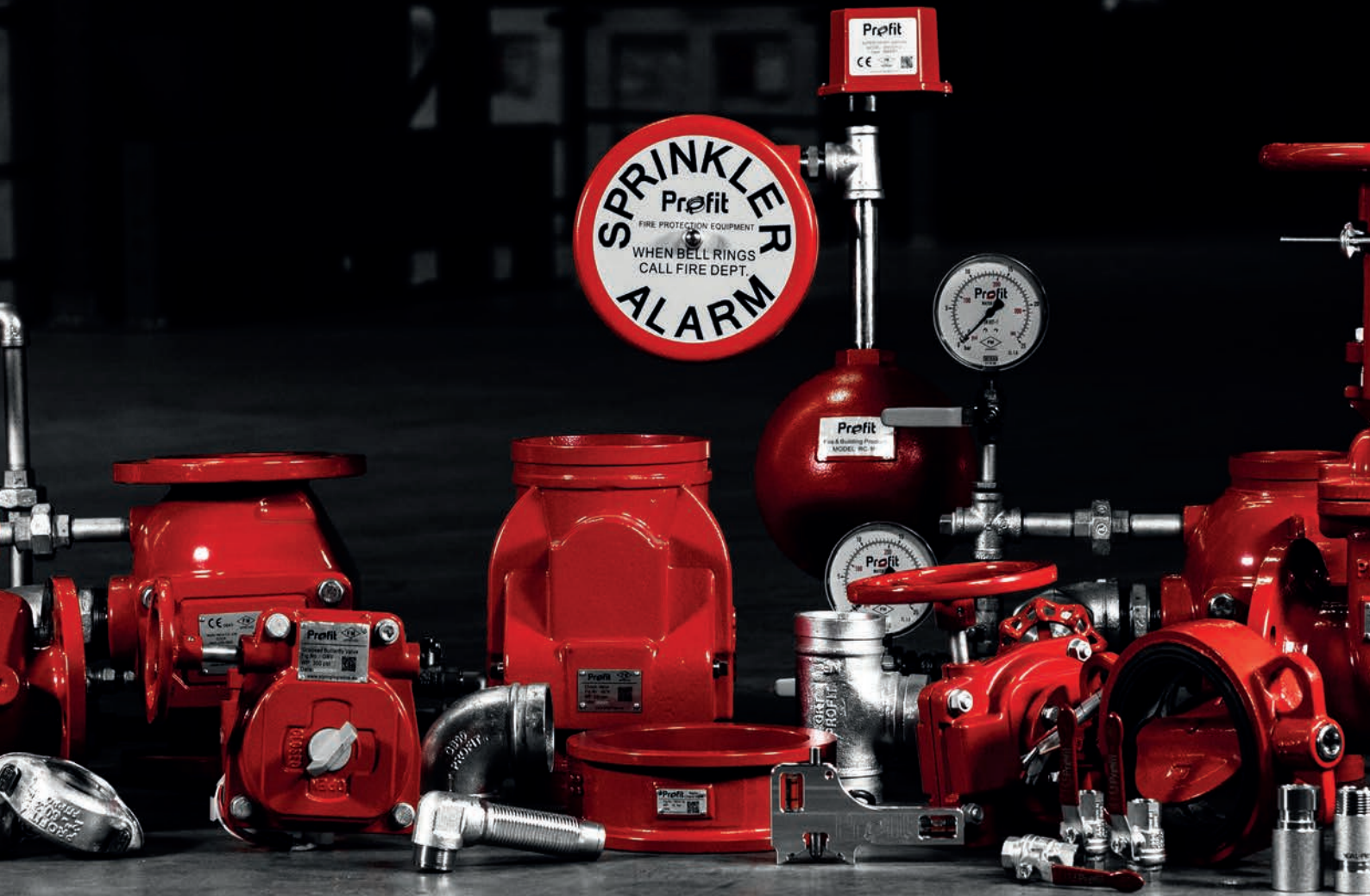
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# OUTLOOK

issue 4/2024

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Welcome to the fourth edition of Sprinkler Outlook! In this issue we focus on the environment, a topic in the news every day and very relevant to fire protection. Jim Glocking opens with a discussion of how environmental labelling schemes for buildings not only encourage the use of combustible materials which increase their vulnerability to fire, they also disincentivise the installation of sprinklers, which could compensate for that new vulnerability. Till Nicola of Johnson Controls discusses the latest status on the phase-out of fluorinated foam concentrates and updates to CEN standards to introduce performance criteria to assess non-fluorinated foam concentrates, as well as how to design systems that use them. Repurposing an existing building produces far less waste and environmental emissions than demolition and replacement. Where the repurposed building does not comply with fire safety regulations sprinklers are a frequent compensatory measure. Johan Hoogeweg of DGMR discusses his experience of sprinkler retrofits.

More than seven years after the disastrous fire that claimed 72 lives, the final report of the Grenfell Tower Inquiry was published in September. Ali Perry of BAFSA and I discuss what impact it may have, including on sprinklers. EN 12845-2, the new European design and installation standard for ESFR and CMSA sprinkler systems, will definitely impact sprinklers. One of its authors, Stuart Lloyd of Zurich Insurance, gives an insight to its development and content. Sprinkler protection of cold storage warehouses presents several design challenges. Phil Gunning of Victaulic analyses potential solutions and offers useful design tips. In our campaigns for the wider use of sprinklers we often reference their high reliability. Ludger Tegeler of FM writes that system reliability rests on proper testing and maintenance, highlights common failures and introduces innovations to reduce the burden of testing, without compromising reliability.

The core mission of the EFSN is to develop the widespread use of sprinklers across Europe. We do this through national campaigns and are making great progress. Since last year Inge Devalez has become the National Manager of the Belgian Fire Sprinkler Network and Giorgio Franzini the Coordinator of the new Italian Fire Sprinkler Network. We have national updates from them, as well as from Youcef Ouammou for France, John van Lierop for The Netherlands, Alfredo Álvarez for Spain and Ali Perry for the UK.

I hope you enjoy this edition of Sprinkler Outlook!

*Alan Brinson*

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The Arboretum campus  
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the view from the entrance  
building, March 2022.  
Courtesy of WO2.

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The Publisher and Editor do not necessarily agree with the content and opinions in editorial contained in Sprinkler Outlook.

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# An enabler for Net Zero construction

Based upon his presentation in Dublin at Fire Sprinkler International on 'Emerging risks and their impact on fire safety', Professor Jim Glockling discusses why designers need to alter their view of fire sprinklers as being an unnecessary carbon burden, to being an essential enabler of the use of other sustainable materials and methods for net benefit.

Happily, debate on the necessity of a Net Zero future was consigned some time ago to a small population of conspiracy theorists but debate on carbon-accounting methods? Now that's a different matter. The truth is that such calculations can be done in a myriad of different ways with different starting and finishing points, and each will be more or less attractive to each stakeholder in the game. It's simple to say that the electrification of all road vehicles helps the UK achieve Net Zero, but if the entire supply chain is accounted for 'globally', it might be the case that CO<sub>2</sub> emissions are just being shifted around the globe to split the

world's nations into the 'low' and the 'mega-polluters' with a global mean that gives little more than parity, or even worse, results in greater overall pollution. I have no idea, but I'm sure models exist to show this to be both the truth, and a falsehood and depending upon your stance on electric vehicles, I'm sure you will favour one or the other (or more likely like myself, you hope electric vehicles improve the world because you have bought one and they are just nicer cars to drive than petrol or diesel).

You might think that carbon-accounting calculations for construction within the UK would be much simpler, and to a degree

you would be right. The reliance on materials sourced from overseas is much less than for the exotic material needs of electric vehicles. Most materials are 'home-sourced', such as concrete and steel, and there are plans afoot to reduce the UK's need to import timber of a quality needed for building construction (latest government figures show around 14 million m<sup>3</sup> of wood was used in construction in 2023 of which over 60% was imported). The increased use of timber in construction, as laid out in the government's policy paper "Timber in construction roadmap", is viewed as a lynchpin to reducing the UK's carbon emissions, to which the built environment currently accounts for around 25%.

The carbon-accounting practices at most companies today are at a level where cost accounting was 40 years ago, before the widespread use of integrated transaction or enterprise resource planning (ERP) systems and the development of broadly accepted standards to ensure apples-to-apples comparisons. Schemes like BREEAM do exist that give a framework in which to record the checks and balances of meeting sustainability and commercial goals in the creation of buildings that are efficient, warm, affordable and sustainable, but even that remit

can be seen by some as being blind to some real-life challenges. The BREEAM scheme supports decarbonisation by:

- Minimising carbon emissions in the new development, refurbishment, and operation of assets.
- Providing assessment methodologies for carbon emissions, including embodied carbon.
- Encouraging the use of onsite renewables and providing credits for energy and carbon reduction.
- Providing third-party verification of carbon emission assessment.

And herein lies the problem and the reason for this article – any endeavour with such a single-minded pursuit (carbon emission reduction) may completely ignore the issues it creates for others – no matter how worthy and honest the intention it does not mean that others are going to 'leave their brain at the door' to accommodate the output without challenge or need for alteration.

An underestimated stakeholder in the construction supply chain is the insurer. Underestimated possibly because historically construction methods and regulations supported a common goal of typically favouring the use of materials that cannot be ignited and do not burn, and

even if the unthinkable did happen the major fuel load came from the contents and chances are there would be enough of the building and business remaining to put right. But consider now how a Net Zero design focus and associated marking scheme can change what the insurer is confronted with:

- Reward for replacing non-combustible structural components, such as concrete and steel, with combustible timber
- Reward for using highly combustible insulating materials (polystyrene gets a BREEAM A+ rating) and in greater quantities
- Reward for not lining timber surfaces in plasterboard
- Reward for greening walls and roofs
- Reward for building in energy generation systems
- Reward for including complex energy recovery systems
- Reward for not including anything thought not to be essential for compliance – which might include sprinkler systems.

.... and all this against a background of:

- No consideration of property damage within our regulations – their focus is to ensure 'evacuation before collapse only'
- A reducing fire & rescue service resource



- An increasing cost of fire
- A greater susceptibility of timber to water exposure (in the residential environment insurance losses to escape of water events is greater than fire and security combined – when considering the use of timber in multi-storey applications this could multiply many fold).
- Climate change – intense weather effects: flooding and drought

Whilst it almost seems distasteful to be highlighting the challenges of these admirable initiatives the government is acutely aware that the proliferation of low-carbon construction is not happening at the pace required and the provision of insurance has been identified as a significant component of that. The ‘Timber in construction roadmap’ outlines the opportunities and barriers to the use of timber in construction in England, centred around seven priority themes:

- **priority theme 1:** improving data on timber and whole life carbon
- **priority theme 2:** promoting the safe, sustainable use of timber as a construction material
- **priority theme 3:** increasing skills, capacity, and competency across the supply chain
- **priority theme 4:** increasing the sustainable supply of timber
- **priority theme 5:** addressing fire safety and durability concerns to safely expand the use of engineered mass timber
- **priority theme 6:** increasing collaboration with insurers, lenders, and warranty providers
- **priority theme 7:** promoting innovation and high performing timber construction systems

To the paper’s credit it understands that insurance is not a right and that the insurers’ concern are real, and not a knee-jerk reaction to the unknown – the solution lies in physically addressing the very real risks rather than ‘educating the insurers’ in their own jobs of risk management – something they are already very good at.

The truth is that the use of combustible materials in the structure, insulation, and cladding of large buildings contravenes the very basic principles of risk control and insurance provision and in changing from traditional building materials and methods, the assumptions made supporting many of the calculations currently used to

reduce the cost of insurance and ease availability are invalidated.

In simplified terms, few buildings are insured on the basis of ever being totally lost to fire. Instead, a calculation is made based upon the likely extent of spread, and this is termed the Estimated Maximum Loss or EML. In a typical 20 storey building, an EML of 20% might be calculated to include the loss of the fire floor, damage to 2 storeys above to smoke damage, and one below to water damage (4 floors of 20 or 20%). The premium is therefore set with a maximum expectation of only losing 20% of the building. Unsurprisingly, it is very difficult to allocate an EML of anything other than 100% to a building that is made of combustible materials that might collapse under fire, that is clad or ‘greened’ in combustible materials, or that uses methods that might allow fire to spread within combustible voids in ‘hollow-wall’ designs.

For these reasons, many buildings proposed for construction in mass timber revert at a later date in the process to traditional concrete and steel designs once the insurance hurdles are understood. But it does not have to be this way. Acceptance of the insurance challenges at the earliest stages of design gives the best opportunity to ameliorate insurers’ concerns and principal amongst these (with other measures) will be the provision of a fire sprinkler system.

The mass timber fraternity has gone to great lengths to avoid fire sprinklers and to demonstrate construction systems capable of ‘self-extinguishment by design’. This tenuous stunt might well be possible in the laboratory, but in the chaos of real-world fires, and against the background of doggedly determined smouldering into unreachable voids, and concern about firefighter safety, access and capability in the timber scenario, there is nothing in this that warrants anything more than a cursory glance from those for whom the building’s survival matters. So why is the inclusion of sprinklers a problem? Well, you might need to look no further than the Net Zero scoring schemes already discussed and the designer’s wish to compete in this area to produce ‘the greenest building yet!’.

Mass timber design gets no further than the drawing board because of insurance for good reasons. Some designers view the

use of concrete (any concrete), as defeat, even though there are very good reasons to use it in many places. In a similar vein, the only measure of compliance, life-safety, may not require a sprinkler system to conform so its unwelcome carbon contribution is avoided.

What keeps these designs on the paper they are drawn is not recognising that an uninsurable building is a building that cannot be built and that there is no place for radical singlemindedness on this point. An intelligent balance of methods and materials is required to produce a low carbon building that can be built ... But there is no means of ‘scoring’ for this within the BREEAM or any other Net Zero type framework. If you can only get a ‘A’ for a hypothetical building, what’s the point?

The solution comes back to carbon-accounting for sprinklers on a fair and equitable basis. If the comparison for baselining the benefit of sprinklers is a building that cannot be built – sprinklers will only appear as a deficit. A better baseline would be comparing the carbon credentials of a concrete or steel building with a timber building enabled into construction reality by the provision of sprinklers – suddenly they rightly start to look a lot more attractive and be thought of more favourably by designers and the Net Zero community alike. Similar arguments prevail for selected use of (low-carbon) concrete and insights such as this are presented with the ‘Mass Timber Insurance Playbook’ freely published by the Alliance for Sustainable Building Products.

That much referenced document is viewed as the definitive guide to insurance issues and provides the framework to ameliorate the challenges in a way meaningful to established insurance methods. Whilst sprinklers are heavily referenced, further guidance specific to the ‘enabling’ capabilities of sprinklers is required in a dedicated document specifically aimed at the design community where it is hoped it would make similar impact. It’s not been created yet, but plans are afoot – watch this space. In the meantime adaptation of Net Zero scoring schemes to ‘balance the seesaw’ between building sustainability and resilience is urgently needed. On all counts a score of 80/80 benefits the world better than 100/0.



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# Final Grenfell report makes powerful points

**Over seven years after the disastrous fire that claimed 72 lives, the final report of the Grenfell Tower Inquiry was published on 4th September this year. Ali Perry, Chief Executive, BAFSA and Alan Brinson, Executive Director, EFSN have collaborated to explore to consider the observations and crucially note that aside from its recommendations about cladding, the report focusses on processes rather than fire safety.**

It has taken too long to reach this point and frustratingly, the police have said it could be another 18 months until charges are brought. While thoroughness is a worthy goal, so is timeliness. That said, the report is an excellent document, well-written in plain English and makes

powerful points. Frankly it is damning. The executive summary runs to 50 pages and has been translated into over a dozen languages, including some European languages: French, Italian and Spanish. While this is about a disaster that took place in England, it should be read beyond the UK to consider whether any of the observations in the report and the recommendations it makes apply to other countries.

We have quoted extensively from the report in this article, not least because in most cases we could not have found better words. The authors read a statement about their work, which can be viewed online. They first stated they had concluded that all the deaths were avoidable. In their report their first conclusion is, "that the fire at Grenfell Tower was the culmination of decades of failure by central government and other bodies in positions of responsibility in the construction industry to look carefully into the danger of incorporating combustible materials into the external walls of high-rise residential buildings and to act on the

information available to them.’ As well as highlighting lax regulatory oversight, the report states that, ‘One very significant reason why Grenfell Tower came to be clad in combustible materials was systematic dishonesty on the part of those who made and sold the rainscreen cladding panels and insulation products.’

Signs of a problem went back as far as 1991, when a fire which started in rubbish outside the Knowsley Heights tower near Liverpool spread into the rainscreen cladding and spread to all 11 storeys. Government officials knew there was a problem with combustible cladding panels but did nothing. The government department ‘was poorly run’ and ‘displayed a complacent and at times defensive attitude to matters regarding fire safety.’ The report continues, ‘The effectiveness of the Building Regulations division was undermined by a failure to include among its responsibilities monitoring the effectiveness of the Building Regulations and statutory guidance and the development of new methods of construction and the use of new materials and by a lack of sufficient resources to enable it to identify and record risks to public safety arising from the use of unsuitable materials. Nor did it have sufficient resources to ensure that the guidance in Approved Document B was kept up to date and fit for its purpose. The division was not afforded the priority it deserved and was not given the resources and expertise it needed to carry out the demands on it.’ In England the Building Regulations are short statements of principle goals. Of the five fire safety building regulations, B4 states, ‘The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.’ A similar sentence covers roofs. Approved Document B (ADB) is the government guidance on one way to comply with the fire safety Building Regulations. For B4 it runs to 18 pages.

On the management of the Building Regulations division the report states, ‘There were serious and longstanding failings of leadership at the highest levels’ and ‘The government must take responsibility for the systemic failures that played a significant part in enabling the Grenfell Tower fire to occur.’ Political negligence was a contributory factor, ‘the government’s deregulatory agenda, enthusiastically supported by some junior ministers and the Secretary of State, dominated the department’s thinking to such an extent that even matters affecting the safety of life were ignored, delayed or disregarded.’ So-called ‘light touch regulation’ was in vogue. Given that it did not work in accounting or banking it was highly unlikely to work in construction. We hope that this discredited concept will forever be consigned to the bin.

A consequence of light touch regulation was that fire risk assessments, which were supposed to identify fire safety issues in a building, did not (and still do not) have to be conducted by someone independently recognised as competent. Even today there are no requirements for those engaged in providing fire protection services to hold any accreditation of their competence. It seems likely that this will change for fire risk assessors and those who provide fire engineering consulting services. Whether installers of sprinkler systems will require third party accreditation, something we have long called for and which is required in many other European countries, is uncertain.

Barely an hour after publication of the report Sir Kier Starmer, the new British Prime Minister, apologised in

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**“that the fire at Grenfell Tower was the culmination of decades of failure by central government and other bodies in positions of responsibility in the construction industry to look carefully into the danger of incorporating combustible materials into the external walls of high-rise residential buildings and to act on the information available to them”**

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Parliament on behalf of the government to all victims and those affected by the tragedy. He told Parliament that the government would respond to all 58 recommendations within six months and each year would provide an update on progress on the implementation of those recommendations it had accepted.

Aside from its recommendations about cladding the report focusses on processes rather than fire safety. Perhaps this was inevitable when it was written by lawyers. It calls for a construction regulator, who would not only regulate construction products, their testing and certification but also regulate and oversee building control (the building approval process), license contractors to work on higher risk buildings (currently defined as residential buildings over 18 m high), monitor the operation of Building Regulations and ADB and advise the Secretary of State (cabinet minister) on the need for change, carry out fire safety research and exchange fire safety information. The report also recommends that the scope of higher risk buildings be urgently reviewed and possibly extended to account for the presence of vulnerable people. ADB should urgently be reviewed, as should other Approved Documents (there are over a dozen) ‘and amended annually or promptly whenever developments in materials or building methods make that desirable’. The last proper review of ADB was completed in 2006. England is not the only jurisdiction in Europe with old fire safety regulations or guidance.

The report only makes one recommendation for ADB, ‘New materials and methods of construction and the practice of overcladding existing buildings make the existence of effective compartmentation a questionable assumption and we recommend that it be reconsidered when Approved Document B is revised.’ We believe that if a designer cannot rely on effective compartmentation sprinklers become essential, in particular for a stay put strategy in response to a compartment fire. Other notable recommendations are that:

- ‘the profession of fire engineer be recognised and protected by law and that an independent body be established to regulate the profession’
- ‘the government establish a system of mandatory accreditation to certify the competence of fire risk assessors’
- regarding ‘the government’s ambition to create an independent College of Fire and Rescue’... ‘the government establish such a college immediately’

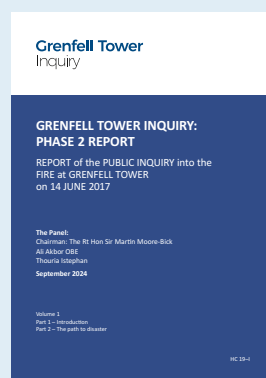
Many commentators have noted that the Institution of Fire Engineers already has a scheme to accredit fire engineers and that the Fire Service College for decades has provided firefighter training. It is surprising that neither is mentioned, even to criticise them, in the justification for these recommendations.

While it is true that if everyone knows what they are doing and is properly supervised the result should be that buildings are safe, this is an indirect route that will take time to bed in and yield results. Although it is essential that this route is followed it should be balanced by a more direct route to specify certain measures, including some redundancy. Passive fire protection, the traditional approach taken to building fire safety in the UK and on which Grenfell Tower solely depended, aims to limit fire spread and to provide building occupants with a smoke-free escape route. Sprinklers help with all of that and do not present a common point of failure with the passive measures, so affording redundancy. Yet they are still not required in many new buildings in the UK. While it is true that since the Grenfell Tower disaster England has made some significant changes in its regulatory fire safety guidance for new residential buildings, it is still possible here to build hospitals, schools, high-rise hotels, enclosed car parks, large public buildings, theatres, restaurants and large industrial buildings without sprinklers. This is not state of the art fire safety.

For existing buildings the picture is even worse. A number of people have pointed out that there is no mention of sprinklers in the Phase 2 report, despite Sir Martin Moore-Bick writing in the Phase one report, 'I cannot make any recommendation at this stage about the installation of sprinklers in existing buildings, although the government's response to previous recommendations will form an important part of the investigation to be carried out at Phase 2.' That did not happen. Through the All Party Parliamentary Fire Safety & Rescue Group senior politicians have been made aware of this omission. The Phase 2 report shows that a desire to cut costs was behind many of the failures it identified; one perspective might be that concern about the cost

to retrofit existing buildings is why this issue has been avoided in the report. We know that officials believe that if the government were to require sprinklers to be retrofitted, the government would be expected to pay. Meanwhile the new UK government claims it is short of funds and will have to increase taxes. Money should never be a reason to relax fire safety. We are not lawyers but we note that in parts of the United States and Canada sprinklers have been compulsorily retrofitted in buildings and it has not been the authorities who have had to pay.

Sir Martin ended his statement by reading the names of the 72 people who died in the Grenfell Tower disaster. It was hard not to be moved by the damning evidence of the failure of an entire sector. At the same time we are glad to be representing sprinkler systems, a tool that provides a safety net to make up for failures in many other measures.



<https://www.grenfelltowerinquiry.org.uk/phase-2-report>

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***“The government must take responsibility for the systemic failures that played a significant part in enabling the Grenfell Tower fire to occur”***

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# EN12845-2...

## A new European design standard for CMSA and ESFR systems

A new European sprinkler installation standard for application of Early Suppression Fast Response (ESFR) and Control Mode Specific Application (CMSA) sprinkler systems has just been approved by CEN member countries and will be published imminently. In this article, Stuart Lloyd, Lead - Fire Protection Engineering, Zurich Resilience Solutions, explores the relevance and value of this new standard, the development process and some key messages and insights around successful application of the solutions presented.

The title is EN12845-2 'Fixed firefighting systems—Automatic sprinkler systems—Part 2: Design and installation of ESFR and CMSA sprinkler systems', and it will position itself as a really important milestone standard for a multitude of reasons.

For those people that are very familiar with guidance protection of storage using large orifice sprinklers, you will no doubt have noticed some significant changes in recent years, and equally some changes will likely have gone unnoticed by many less prolific users, because once a project is finished it is often just left with the end user to maintain appropriately. In principle, anyone involved in the fire protection arena will support the value of a sprinkler

system as an ideal, citing the benefits of raising alarms, fighting the fire immediately, supporting escape for occupants and saving property from destruction by fire.

However, there is a blunt reality to sizable investment in sprinkler systems. Legislation requiring sprinklers, where present, is helpful, but even today sprinkler systems are often considered an unpalatable purchase by business. After all, these systems are not used daily and do not directly contribute to business income unlike machinery, processes, power and communications, which are all considered essential.

The true value of a suitable sprinkler system is its ability to protect the business from fire. Another key value, that is often forgotten, is that a suitable sprinkler system enables risk transfer to insurers. A suitably designed, installed, and maintained sprinkler system that meets the needs of property and business insurers is often a prime reason or objective for systems to be installed. The value of the investment can be recognised and the customer's brand reputation and market position are more secure.

Locations may not be attractive to insurers without suitable protection for the risk profile, leading to expensive insurance or difficulties in

gaining suitable insurance coverage. In addition, a sprinkler system that can be recognised by insurers can make the risk attractive to a wider community of insurers driving down the cost of insurance, potentially providing a return on the investment. It is this element to protect customer locations and limit losses that drives insurers to push for sprinklers in many premises and is also what influences many corporate policies, it's no coincidence!

The backbone of the reputation of sprinkler system performance and insurer validation dates back to the very first sprinkler system standards and continuing development globally. Today's world of storage and distribution coupled with increasing automation is a fast-changing risk profile, we have been beyond simple roof sprinkler systems with varying densities for some time already. The pace of change is too quick for some standards to keep up, including the current EN 12845.

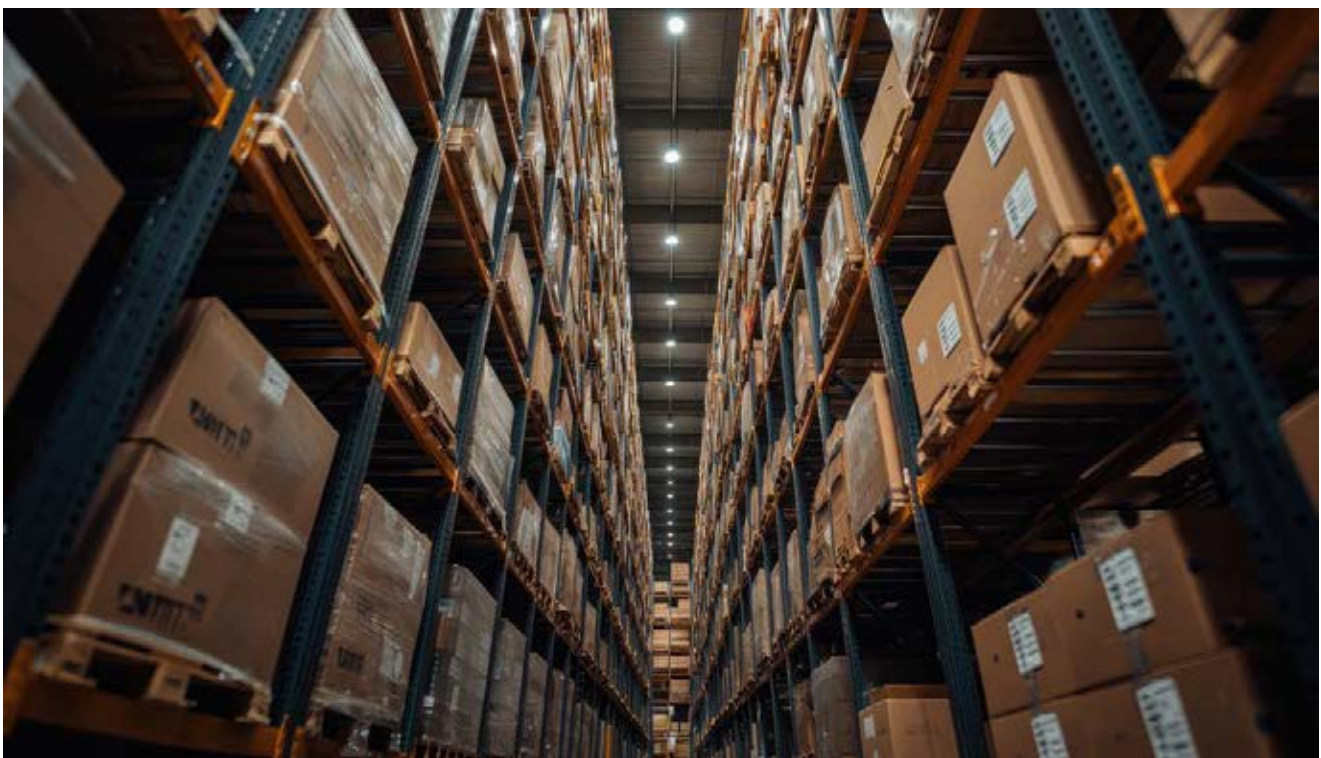
**How did we find a solution for Europe?**

A few years ago, it was decided that a separate EN 12845 standard (part 2) was needed to support ESFR and CMSA design options. The prime reason for this was to support the many new options and be prepared for future updates that could be

quickly incorporated without the need for a re-write of a complete sprinkler standard for all types of systems and locations. It can be published and maintained more efficiently going forward, providing the stability and relevance required for all.

Initially the whole committee was included to offer input, which was both helpful and time consuming with frustrating conversations in equal measure. We have some very passionate and engaging members providing input based on their insights. We are also fortunate to have participants with an immense level of commitment, experience, insight and access to other key committees, research groups, test data and manufacturer support. At this point, it is important to recognise those people who engaged as a task group with the support of the whole committee. It is these people who carefully analysed the latest design options and test data available along with the respective detailed guidance for each solution where necessary.

Those people that formed the task group were as follows, with some detail of their European national representation, additional relevant standards/research activities and experience beyond European CEN standards.



- **Stuart Lloyd** – UK (Global Lead– Fire Protection at Zurich Resilience Solutions) NFPA 13 committee member and current chair of the NFPA Research Foundation Property Insurers Research Group (PIRG). Zurich is a member of the PIRG.
- **Ludger Tegler** – DE (Operations Chief Engineer at Factory Mutual) European lead for FM data sheet development and application. FM is a member of the PIRG.
- **Bo Hjorth** – SE (Albacon) NFPA 13 committee member.
- **Ed McCarson** – BE (Regulatory Compliance Engineer at Victaulic) Works with multiple approval bodies for products.
- **Karim Karzazi** – FR (Technical Centre Leader at AXA XL) Convenor (chair) of EN 12845. AXA XL is a member of the PIRG.
- **Bjoern Schaumburg** – (Specialist Technical Author at EFSN) Experienced compliance author of multiple standards for DIN (Germany).

These individuals took the initial EN 12845-2 draft that was sent for formal vote and comment, planned a series of multiday face-to-face meetings over the course of about eight months to produce a final proposal for design and installation of ESFR and CMSA sprinklers. The task group worked through the comments received as part of the previous voting process and presented progress reports with the latest drafts after each meeting to all national standards body representatives for review and comment. After four in-person meetings and some follow up calls and emails, the final version was presented for submission and formal vote, which it has now passed.

### Validation of design options

You will be clearly aware that we have been living on the back of US-based design guidance and full-scale fire tests, typically performed at Underwriters Laboratories (UL) and Factory Mutual (FM). Testing is mostly undertaken by NFPA Research Foundation (including Property Insurers Research Group), FM approvals and FM’s underwriting business and of course sprinkler manufacturers, predominantly based in the US.

Those with a keen eye and regular users of US-based standards or FM data sheets will be aware that a lot has changed, especially in

recent years. New solutions have evolved, as have new larger orifice sprinklers to support higher ceilings found in many new warehouses. More data means more insights, some may have missed or may be surprised if they compare design schemes for ESFR at ceiling heights up to 13.7m from five years ago to today’s requirements in NFPA 13. Many design options have been removed or significantly modified from NFPA 13 2019 to the 2022 version, similarly with FM data sheets that receive more regular updates. The fire test programmes have evolved to be more representative of the real-life challenge and the design options that have been removed were identified as no longer suitable as they failed the new test protocols. Re-testing and extended test programmes resulted in new solutions or removal of original requirements. As a result many insurers aware of these changes have changed their view on many older systems and guided customers to make necessary changes.

Reflecting on the group of people above in the task group, we have strong representation and experience of standards development for storage occupancies using these specific sprinklers, as well as access to recent key test data and other research insights that have supported listings, design solutions, changes to previous guidance, new technology and supporting installation requirements for some schemes. Where queries have emerged amongst the task group, we have been able to review data, use our network and share key insights with trust to support guidance. We have often challenged each other, all of us have learnt some insights and nuances from this process. But most importantly we have presented solutions, in what we believe is the clearest possible format, for application of various EFSR and CMSA protection schemes.

### Why should you select this standard over others?

At this present time, EN 12845-2 represents the most complete current set of options for storage protection using full-scale fire test data in any standard or published guidelines and is positioned to be updated quickly when necessary. This clearly supports the best interests of the end user, reputation

of consultants and installers, and crucially, can support the transfer of risk to insurers.

But as with any installation standard, careful attention to detail and compliance is essential. We feel this standard makes the journey clearer for all that apply it. To support installation of EFSR and CMSA storage protection schemes, some key changes are necessary to ensure that sprinkler systems are specified, designed and installed in the same parameters to which they have been proven to perform in full scale fire tests. These requirements are not unique to EN 12845-2, they have been carefully included and set out to be as clear as possible.

### Key criteria for compliant installation

The first major change is one that is well overdue for sprinkler standards outside of the USA, moving from four to five general categories of goods. For many years now, plastics have become more prominent in our world as both products and packaging. The current EN 12845 use of only four categories of goods is bluntly not a suitable system to differentiate plastics and it is not appropriate to try and convert modern (last 30 years) test data from US testing laboratories and design schemes to 4 groups. To support this need, a flow chart has been included into EN12845-2 to support identification of goods classification which includes expanded and non-expanded plastics in boxes/cartons or as exposed products. Anyone familiar with US based standards and data sheets will navigate this easily; we should also expect to see this approach going forward when the new version of EN 12845 is eventually released.

This brings us nicely into the discussion of ‘Can EN12845-2 be used before EN 12845-1 is published?’ The short answer is yes, and we would strongly recommend that it is. To support the need for adoption of part 2, the current version of EN 12845 is being adjusted with an amendment. This will state clearly the need to ignore the existing Annex N and Annex P guidance and direct users to apply EN 12845 part 2 with the new approach to categorisation of goods stored. The current version of Annex N and P in EN 12845 contains faults related to metric conversions and schemes based on obsolete test programmes



presenting the potential for inadequate protection.

For EFSR and CMSA, you will find simplified rules for obstruction criteria. Research was conducted in recent years under a project by the Property Insurers Research Group supported by the NFPA Research Foundation; this found that original obstruction criteria could be relaxed for many situations. But, one word of caution, just like the design schemes in EN 12845-2, what is published is the proven limit of scope, there is no room for deviation in these performance-based design standards. This is also particularly true of the inclusion of 9 and 10 ESFR sprinkler designs originally found in FM datasheets.

These schemes have been presented in clear separate tables (10 and 11) in EN 12845-2 to avoid presenting confusing and potentially conflicting design requirements for the same ceiling heights. It is absolutely imperative that the additional requirements (clause 6.6.1.2.2), that support the reduced number of sprinklers operating in the design requirements are complied with. These align with FM data sheet requirements, and we feel that they are clearly presented in EN 12845-2 facilitating easy and correct implementation of these requirements. Experience has shown that the specific design requirements for the application

of reduced number of heads are often not applied correctly. These requirements for 9/10 head ESFR designs include:

- Ventilation system shut down upon detection of fire by flame detectors at ceiling or linear heat detection in rack, where ventilation exceeds 1.5 m/sec or is not known
- Where ESFR heads are closely spaced, the 9/10 head design must cover at least 71 m<sup>2</sup>, or include more heads in the design
- Additional requirements for obstructions above rack storage, requiring in-rack sprinklers
- Parameters for ceiling construction to be non-combustible material and unobstructed construction.

### Challenges with EN standards and important advice

Some people may be aware of the constraints of specific rules set out by CEN standards for language or requirements that can or cannot be included. Bjoern's experience and support was key to being able to turnaround this standard so quickly, being able to write sections and clauses in a compliant manner from the outset. However, some hurdles cannot be cleared, and this limits the ability to offer clear guidance that frustrates both committee members and users of CEN standards. It is not possible

to say 'use listed sprinklers, valves, etc'; it is also not possible to direct users to refer to any additional requirements of a manufacturer's data sheet. That said, I would implore you to use listed equipment and carefully follow additional requirements of manufacturer's data sheets.

Many a ESFR and CMSA sprinklers have specific requirements that reflect the parameters as they were proven in fire tests, such as temperature ratings, distance from ceilings and what aisle widths are required for compliant application. These could not be captured in the standard as they are manufacturer specific; this is a particular challenge for the very large k factor heads and ceilings above 12.2 m.

The application of ESFR at high ceilings and also with multiple-row racks needs careful consideration. I would urge you to consult with the property fire insurer for the customer if known, or with one that has insights to the insurance industry and supports external customers, to navigate the current standards successfully with the objective of achieving a robust protection scheme that supports tangible benefits for the customer and enables risk transfer to an insurer. They may also be aware of new insights and solutions not yet published.



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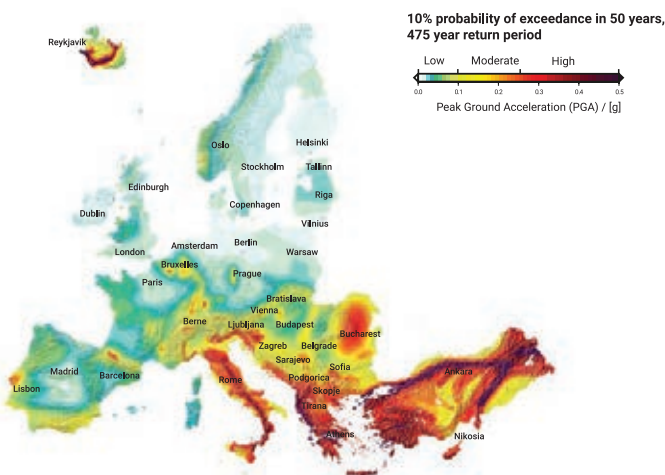
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# Navigating automatic sprinkler system design in cold storage facilities

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The cold chain logistics market in Europe is exploding in growth. A recent study shows that, in part because of the rise in online grocery shopping and home delivery since the pandemic, the European market will more than triple in value from US\$105.5 billion this year to US\$356 billion by 2033. To keep pace with demand, more facilities are integrating automation into their facilities. Automated Storage Retrieval Systems (AS/RS) allow companies to build taller facilities

with narrower aisles to store more inventory than traditional warehouses. AS/RS technology has revolutionised warehousing by enhancing efficiency, accuracy and worker safety and enabling better use of space and resources. As cold storage warehouses adopt new storage arrangements, it's vital that automatic sprinkler system design adapts to meet the unique challenges and requirements of today's warehouse configurations. In this article, written by Philip Gunning, P.E., Business Development Specialist at Victaulic we'll explore common design challenges, considerations, and solutions in cold storage fire protection.

## Types of cold storage spaces/warehouses

Cold storage spaces/warehouses often fall into two categories: box-in-box and conventional (entire warehouse). The temperature in both can range from -34C to 4C, and they each have unique characteristics that affect automatic sprinkler system options, especially when determining whether to use a ceiling-only sprinkler system or in-rack sprinklers.

### What is a box-in-box?

In box-in-box facilities, the cooler or freezer area is located within a larger building. The box-in-box may be part of a temperature-zoned facility where multiple rooms (or “boxes”) inside the same building are set to different temperatures to allow for the storage of products with varying temperature needs (e.g., frozen foods in the freezer and chilled goods in adjacent coolers). Typically, the larger building will be equipped with an overhead wet-pipe sprinkler system and will use dry-type pendent sprinklers to penetrate the freezer’s insulated metal panel ceiling.

### Fire protection challenges in box-in-box warehouses

The fire protection advantage of a box-in-box construction is the ability to use dry-type Early Suppression Fast Response (ESFR) ceiling-only sprinklers. These are fed from the wet-pipe system and typically do not need supplemental in-rack sprinkler protection.

The challenge with box-in-box applications is when sprinkler pipes penetrating through the insulated metal panels are not properly sealed. When this happens, escaping cold air can lead to condensation and ice build-up around the sprinkler, rendering it inoperable. Seals can also be compromised when maintenance or other employees walk on top of the freezer.

### Solutions

Sprinkler assemblies with separate pieces, intended to seal pipe penetrations, are more likely to come apart and allow cold air to escape. The risk of condensation developing is significantly reduced when contractors install a one-piece sprinkler assembly with a bracket. This permanently and securely attaches the sprinkler assembly to the top of the insulated metal panel, creating a tight seal. It also eliminates the need for post-installation work that could affect the seal’s integrity.

To address concerns with ceiling deflection, contractors may consider attaching the dry-barrel

sprinkler to the branch line with a flexible hose. The bendable hose allows the sprinkler assembly, which is rigidly attached, to safely move with any ceiling deflection and preserve the pipe penetration seal as employees/contractors work on top of the freezer.

### What is a conventional (entire) warehouse?

Fire protection options and requirements for conventional refrigerated warehouses are more complex than for box-in-box facilities. In this type of facility, the entire building is the box, meaning the sprinkler system piping is located within the cooled space and exposed to temperatures below 4C. NFPA 13 and FM require the use of dry-pipe or preaction systems in these conditions.

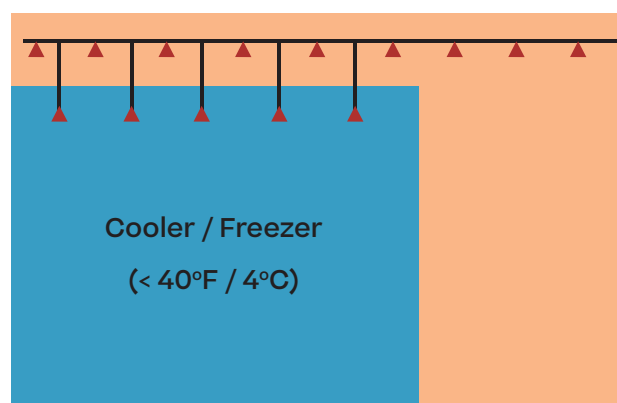
However, NFPA 13 and FM do not allow ESFR sprinklers to be used on dry-pipe or preaction systems. The standards also mandate that ceiling-only sprinkler systems in conventional refrigerated warehouses are limited to Class III commodities and must utilize upright, standard-response, high-temperature sprinklers. As a result, in-rack sprinkler systems must be used when the building exceeds 16.8 metres in height or the commodity classification exceeds Class III in buildings greater than 10.7 metres in height.

### Fire protection challenges in conventional warehouses

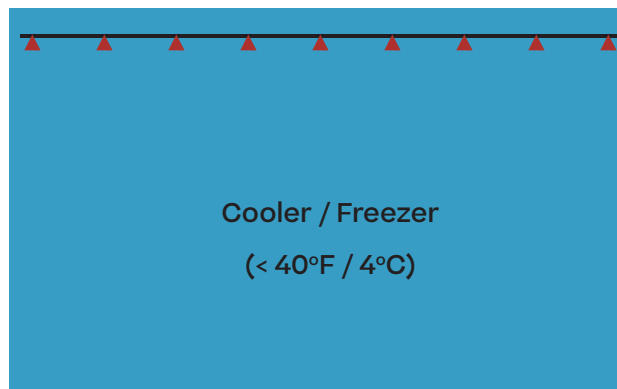
One of the biggest issues cold storage facilities face with in-rack sprinkler systems is sprinkler damage caused by warehouse workers. In the worst case, that damage can lead to water filling all system piping during a non-fire event. If the water freezes, crews must remove system piping, melt the ice and then reinstall the system. This results in a loss of revenue due to business interruption, fire watches and significant costs to get the sprinkler system back in service.

Double-interlock preaction systems with linear heat detection are typically installed to minimise the risk of accidental damage from workers, but this presents its own set of challenges. NFPA 13 and FM regulations state that ceiling-only sprinkler systems protecting Class I through Class III commodities stored on open-frame racks up to 15.2 metres in height must have a maximum water delivery time of 20-25 seconds. That leaves very little time for water to travel from the preaction valve in a heated room to the most remote sprinklers. Large system demands combined with short water delivery time requirements mean ceiling-only sprinkler systems will have smaller coverage areas and more riser rooms

Box-in-Box



### Conventional (Entire Building)



compared to systems utilising in-rack sprinklers. This presents a challenge for facility owners, who want as much real estate as possible available for storage and operations.

#### Solutions

Early communication and coordination will offer the biggest advantage in optimising sprinkler system design in conventional warehouses. Water delivery calculations should be completed as early in the project lifecycle as possible with the use of a UL-Listed software program to enhance accuracy. This approach allows the sprinkler contractor to communicate exactly where and how much space will be needed for the system risers and associated equipment, such as dry-air packs and releasing panels. As the project progresses, if a sprinkler contractor needs more room than originally estimated, that can have a negative ripple effect on other trades and operations. Water delivery calculations will also determine whether the fire pump needs to be started before the preaction valve trips. Calculations have shown that pre-starting the pump can reduce water delivery times up to five seconds.

Another factor sprinkler contractors need to consider is the maximum air velocity at the nearest sprinkler to the HVAC supply duct. Following FM recommendations, if air velocities exceed 0.5 m/s, the HVAC system must be shut down upon heat detection. This ensures the hot air rising from the fire does not get pushed away from the sprinklers that need to interact with the heat to activate. Sprinkler contractors must work with general contractors and refrigeration contractors to determine the maximum anticipated air velocity at the ceiling and, if needed, how to interconnect the sprinkler system with the HVAC system.

#### How do AS/RS warehouses influence sprinkler design?

AS/RS technology allows facility owners to build and operate warehouses with smaller footprints and greater storage density. By automating the process of storing and retrieving goods, the technology drastically reduces the time and effort required to perform daily tasks and lowers accident and injury risk for workers.

The most comprehensive design guidelines for fire sprinkler systems protecting AS/RS can be found in FM Data Sheet 8-34, "Protection for Automatic Storage and Retrieval Systems." Design options are primarily based on full-scale fire testing using various, but not all, types of AS/RS arrangements, commodities, and containers. All protection options require the AS/RS to meet the definition of 'open-racks'; otherwise, in-rack sprinklers are required.

#### Fire protection challenges in AS/RS warehouses

FM Data Sheet 8-34 provides ceiling-only protection options for AS/RS but minimum aisle widths increase as the building height increases. Wider aisles reduce storage capacity, which requires owners to determine what storage/rack arrangement meets their operational needs. If aisle widths are less than required, in-rack sprinklers must be installed with a maximum water delivery time of 40 seconds.

#### Solutions

Sprinkler contractors/designers must obtain all details of the AS/RS arrangement to determine how to categorise (shuttle, mini-load, top-loading, very narrow aisle, container type, etc.). If the storage arrangement and/or commodity type are outside the scope of FM Data Sheet 8-34, designers, through a variance, must use engineering judgement, fire modeling, or conduct full-scale fire testing to prove the design meets the intent of the governing code/standard.

Another solution is to use oxygen reduction systems to potentially omit sprinklers. It is recommended to consult with the insurance underwriter to determine what percent oxygen must be maintained to omit automatic sprinkler systems.

#### Conclusion

In the rapidly expanding European cold storage market, effective fire protection is more critical than ever. The evolving complexities of cold storage facilities — whether box-in-box or conventional (entire warehouse) — require tailored fire protection solutions that can handle the unique challenges posed by freezing temperatures, high-density storage and growing use of automation. Systems that are improperly installed or not designed to handle cold environments can lead to failures, potentially causing serious safety risks and business interruption.

As facility design and technology evolve, sprinkler contractors/designers need to understand how changes will impact fire protection effectiveness so they can make the best design decisions for modern cold storage warehouses.

They also must communicate with the general contractor throughout the project lifecycle about the space required for system risers/equipment and the potential need to interconnect with other building systems. Sprinkler contractors, designers and manufacturers who specialise in cold-storage fire protection can help ensure project budgets and deadlines are met.



## **JOB Smart Bulb:** **Digitalization for Preventive Fire Protection**

Digitalization and connectivity are megatrends that are fundamentally transforming building technology – including in the field of fire protection systems. The innovative Smart Bulbs from JOB Group (Germany) are a perfect example of this. They represent the latest evolution of the Thermo Bulbs, which have proven their reliability billions of times as thermal trigger elements for automatic sprinklers, smoke extractors, vents, and other activation devices.

JOB Smart Bulbs are ampoules with dual activation capability. Unlike the well-known JOB Thermo Bulbs from the same manufacturer, they can be triggered not only thermally but also electrically. These JOB Smart Bulbs combine three intelligent functions: electrical activation, thermal activation and continuous monitoring of each individual ampoule.

The direct connectivity enables new intelligent possibilities for fire protection. The smart technology offers a range of benefits. For instance, direct integration with fire alarm systems enables more efficient fire-fighting: the sprinkler system can localize a fire already at an early stage and trigger a response much faster. This reduces the amount of extinguishing water required and lowers fire-related CO<sub>2</sub> emissions.

Each individual sprinkler can be monitored, making it possible to immediately identify which Smart Bulb was activated, when and where. Additionally, sprinklers can also be activated in a targeted manner. Sensors on the ampoule can trigger activation based on temperature measurements, as is standard with JOB Thermo Bulbs.

The JOB Smart Bulb is available in 3mm and 5mm sizes and typically activates within 2 to 5 seconds. Since their introduction in the 1970s, JOB Thermo Bulbs have become the standard for heat-sensitive glass bulbs in the sprinkler industry. Due to their high quality and reliability, more than 2 billion JOB Thermo Bulbs have been installed worldwide by major sprinkler manufacturers to ensure fire protection and life safety. With JOB Smart Bulbs, the next generation has arrived – ready for the digital age.

### **Contact:**

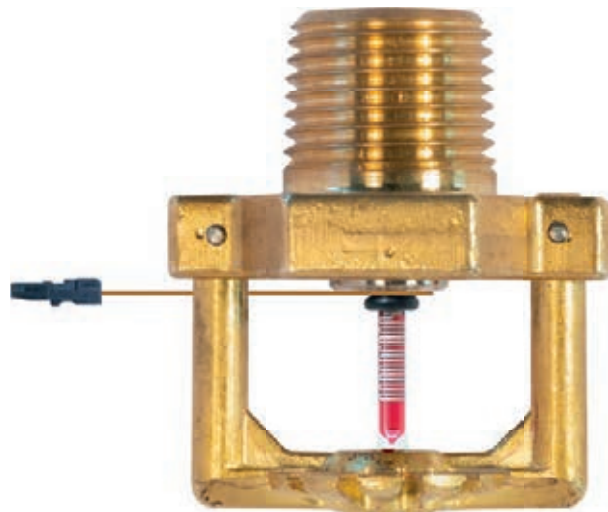
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# The importance of understanding FM Data Sheet 2-81 and a view to the future

This article was written to highlight the importance of fire protection system inspection, testing and maintenance in the context of the end user and the risk transfer industry. It will also explain the developments FM and FM Approvals are seeing on the horizon that need to be embedded in the future of industrial fire protection systems.

So the key question is why is maintenance and testing so important? The FM engineers visit many sprinklered sites and check the maintenance level according to FM Property Loss Prevention Data Sheet 2-81 (FM Data Sheet 2-81) Fire protection system inspection, testing and maintenance. Considering that a sprinkler system protects more than property, the feedback gathered by FM Field Engineering is rather devastating. For nearly 50 % of all visits recommendations have to be made because of gaps in fundamental maintenance and testing. The following points are often found:

1. Pumps not tested weekly – annual testing not documented.
2. No valve list for testing provided or updated.
3. Alignment checks of pump sets are not completed
4. Maintenance contracts are not clear on the extent of activities.
5. Standards applied are mixed: e.g. EN12845 requirements are used for FM systems.

The aim of this article is to clarify and emphasise that the maintenance done by contractors complements testing done by the user. Issues with the maintenance and testing of fire protection have an immediate impact for our clients. They need to take action. For critical items they need to act to ensure that their systems are effective and ready to operate if needed. Longer term it can mean enhancing or adapting their testing and maintenance regime.

An often-hidden aspect to this is also a potential effect on the evaluation of the protection by the insurance companies. It needs to be clear that whatever sprinkler standard is used, the systems need to be maintained and tested on a regular basis. In general, for FM Systems the FM Property Loss Prevention Data Sheets need to be followed as clients have bought a system in accordance with FM Data Sheets. However, FM recommends their insured clients also follow FM Data Sheet 2-81, regardless whether partially installed to a different standard, as we



courtesy of Mecon GmbH

believe it represents best industrial practice. The key buzz words are: reliability and adequacy. Adequacy is focused on the system being designed to meet the identified hazard in accordance with the relevant FM Property Loss Prevention Data Sheet. Reliability is focused on the use of appropriate materials – recognised components. In the case of FM designed systems that means FM Approved components are used (including pipes) and FM Property Loss Prevention Data Sheet 2-81 is followed.

As noted, the ongoing maintenance of systems is vital. However, we live in a world where it is often good to think of how we can work smarter. How technology can be harnessed to supplement and aid what we do to achieve solid outcomes. The same is happening in the field of testing and maintenance. In support of our clients FM and FM Approvals work continuously on the advancements that make the burden of testing and checking easier for our clients, without compromising reliability.

This has seen us working with product developers to consider new techniques and systems to help achieve that reduction in testing. That has led to the introduction of an “enhanced security switch” as a consideration for the frequency of control valve inspections. Using this

ID	ITM Activity & Scope	Frequency	Details
1a	Visually inspect control valves for full-open, secured, and accessible conditions.	Weekly	Record visual inspection results on a form listing all control valves and their locations and areas. See Appendix D for a sample form.
1b	Inspect control valves installed in waterflow alarm sensing lines when the alarm actuates process or building interlocks for full-open and locked conditions.		
1c	Visually inspect enhanced security indicating control valves for full-open, secured, and accessible conditions.	Semiannually	Record visual inspection results on a form listing all control valves and their locations and areas. See Appendix D for a sample form.
2	Physically test control valves for full-open.	Monthly	Record physical inspection

Table 1. Control Valves in Automatic Fire Protection Systems

device means that the checking of the control valves moves from being needed weekly to semi-annually. Obviously, this enhanced security device is tied into

the industrial control system of the site. Please refer to the Approval Guide, as the first FM Approved device is available from a European manufacturer in Germany. FM Approvals is also working to support the automation of weekly pump testing; the approval standard is soon to be established. The world changes. FM and FM Approvals are at the forefront to offer our clients robustly tested solutions to ease the burden of manpower needed for checking and testing, without compromising reliability.

However, at the same time we need to remember that such systems are not a replacement for diligence for each situation, even if they will become the norm and a valuable aid. They will not replace all testing and observations of the performance of systems. More than once the author has seen a wrong adjustment of the pressure relief valve rendering a system unable to supply the demand because the valve opened and the water was not supplied to the sprinkler system.

We all rely so much on the adequacy and reliability of sprinkler systems it pays to use the best tools and maintenance schemes available. The key here is to adopt robustly tested solutions balanced with prudent testing. So, manufacturers are invited by FM Approvals to follow with FM the path for the future.

The author also participates in the development of EN12845 part 1. Here the same is valid. A sprinkler system based on EN12845 also needs to be 100 % maintained and tested in accordance with the standard, otherwise it will not be considered reliable by the authority having jurisdiction. Contractors are advised to have clear documentation of what they have done and what they have not done. FM Property loss Prevention Data Sheets are very clear on what is required and what needs to be documented.

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# The development of fluorinated compounds and surfactants

Firefighting foam was introduced over 100 years ago for flammable liquid protection reflects Till Nicola, Senior Sales Manager Foam Special Projects, Tyco Fire Protection Products. Initially these foams did not contain fluorine. In the 1960s fluorinated compounds and surfactants were developed. These fluorinated compounds are man-made. Fluorinated compounds have unique properties and are still used in many different applications.

## AFFF and fluorinated foams

By adding these new fluorinated surfactants to foam agents the performance of firefighting foam improved significantly. Fluorinated foams such as aqueous film-forming foam (AFFF), fluoroprotein (FP) and film-forming fluoroprotein (FFFP) have unique properties. These foam agents can extinguish by spreading a vapour-tight aqueous film over the surface of the burning liquid – they are effective even if a foam blanket does not form. This mechanism is employed in sprinkler systems and other un aspirated applications. Firefighting concepts, codes, standards and test protocols were written around these high-performing foams and have been applied for over 50 years.

## Environmental Issues and legal restrictions

The downside of these fluorinated compounds and surfactants is that these chemicals are persistent i.e. non-biodegradable. Some fluorochemicals are also harmful to health and the environment. The fluorosurfactants used in foam agents are per- and polyfluoroalkyl substances (PFAS), a large class of thousands of synthetic chemicals. Two of these substances are PFOS and PFOA.

In 2006 the European Parliament had issued a directive and restrictions for PFOS. PFOS never been an active

ingredient in firefighting foams but was present as a contamination biproduct from their manufacture. The restriction and ban of PFOS led to new formulations for foam agents and end users had to replace their foam stocks.

In 2017 the European Parliament published a Directive and restrictions on the use of PFOA. These restrictions again led to formulation changes for foam agents. Long chain C8 fluorosurfactants were replaced by shorter C6 (six carbon atoms) versions. Again, this led to end users having to replace their foam stocks. The transitional period for end users having foam concentrates with more than 25ppb PFOA with full fire water containment ends on 4th July 2025, without containment it already ended on 1st January 2023.

## Outlook

Although there is currently no legislation in place which generally prohibits the manufacturing and supply of fluorinated foams, over the last 12 months several manufacturers of foam agents announced that they are going to stop producing fluorinated foams. This affects AFFF, alcohol-resistant AFFF and fluorinated protein foams such as FP and FFFP.

Moreover, the EU legislature is working on further restrictions for PFAS which could result in a ban on fluorinated foam agents (AFFF, AFFF, FP, FFFP). The potential ban of fluorinated foams and production stop announced by several manufacturers will have significant impact on the use of firefighting foams as non-fluorinated foams do not form the aqueous film that was key in the performance of foam firefighting systems for the past 50 years. Today's demand from the end user, installers and industry is for non-fluorinated foam agents offering a similar performance to fluorinated foams.

## Adaption and change in EN Standards

High performance non-fluorinated foams have been already tested against the relevant European standard for foam agents, EN1568, showing similar ratings and performance to fluorinated foams but a changeover to





these foams is not as easy as it may look at first sight. It is not a drop-in replacement.

In the European standards working group for foam agents, CEN/ TC191/ WG3, and that for foam systems, CEN/ TC191/ WG2, we are currently discussing a revision of EN13565-2 Foam Systems and EN1568 Foam Agents. Various tests and research initiatives have shown that non-fluorinated foams behave differently to fluorinated foams. Expansion ratio is critical to their performance.

Currently the foam hardware is not part of the foam agent testing in European standards. Instead, foam agents are tested according to EN1568 using a standardised foam nozzle which allows different foams to be compared under equal conditions. However, there is currently no consideration of the expansion ratio in the fire test and the actual expansion ratio from the discharge device in a foam system. The test nozzle used in the EN1568 fire test provides a quite good expansion ratio of 8-12, depending on the foam. Actual discharge devices in a foam system may produce much lower expansion ratios. As the expansion ratio is key to the foam agent performance the system may have a completely different performance to that certified against EN1568-3/4.

To overcome this gap the European working groups for foam agents (EN1568) and foam systems (EN13565) have discussed possible solutions. EN1568 is currently under revision and will introduce a new chapter and annex to address foam expansion sensitivity testing. If the expansion ratio decreases, the performance decreases

as well, i.e. it takes longer to extinguish the fire. To achieve the same performance, safety level and extinguishing time with a reduced expansion ratio the application rate needs to be increased. The new additional tests in EN1568-3/4 will deliver this. In addition, the actual expansion ratio of the foam discharge devices needs to be tested with the same foam agent in accordance with EN13565-1. In this way it is ensured that the foam hardware is used at the correct application rate for the expansion ratio of a non-fluorinated foam.

A question which sometimes comes up is why the foam discharge devices used in the system are not tested together with the foam agent in the fire test as is done for sprinklers. The answer is that the test nozzle used for EN1568 has a flowrate of about 10 l/min and while a sprinkler will flow 100/200 l/min this is still manageable. For foam discharge devices that flow 2,000 l/min or more the test fires would become far too large. Fires at that scale are simply too large for standard fire tests. The test centres do not have the facilities and permission to run fire tests at such scale.

### Editorial update

Since Mr Nicola wrote this article Commission Regulation (EU) 2024/2462 has been published. This ends the sale and use of AFFF concentrates for training and testing on 10th April 2026. From that date public fire services can only use AFFF for major-accident hazards involving dangerous substances. From 10th October 2029 AFFF can no longer be sold or used for civil aviation.



# Retrofit of sprinklers in existing industrial buildings

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Many existing industrial buildings are not equipped with sprinkler protection, or the sprinkler protection is not sufficient because of a change in fire risks due to changes in the use of the building. Retrofitting these structures with fire sprinklers mitigates fire hazards and reduces potential damage from fire to the building, equipment and environment. This process

involves the careful integration of new sprinkler systems into existing building frameworks, often in situations where disruption of the process is not allowed or has severe limitations. Here Ing. J.C. Hoogeweg – Fire Safety consultant – DGMR bouw b.v. takes a look at some of the challenges and possible solutions encountered in projects.

## Challenges

During the development of a new building, the sprinkler system can often be optimally integrated so that there is a symbiosis between the sprinkler and the building. In existing buildings this is not possible anymore, so a lot of 'creativity' is required to achieve an effective sprinkler protection.

This requires an excellent knowledge of codes and standards, and an understanding of how certain rules have made it into them. It is also necessary to consider the existing processes that need to continue (e.g. production cannot stop to fit a sprinkler), or the brief moments when production stops.

## The use of codes and standards

When retrofitting fire sprinkler systems in unsprinklered buildings, the same guidelines and standards apply as those for new construction. There is (in general) no design standard for existing buildings. This ensures that retrofitted systems provide the same level of fire protection and reliability as those installed during the building's initial construction.

## Certainties you will run into

When retrofitting fire sprinkler systems in existing buildings, several certainties must be anticipated. First, the cost of installation can be 1.5-2.5 times higher than in new construction due to the added complexities of working within an existing structure. Additionally, the process often takes longer because the installation must be coordinated with the building's ongoing active use, minimising disruption to operations. Structural modifications can be necessary, such as reinforcing the building to support the added weight of the pipes (especially when the roof is also afterwards fitted with PV panels). Finally, finding an appropriate location for a water reservoir can be a significant challenge, particularly in densely constructed buildings with limited available space inside or outside the building.

## Some recommendations

Every building is unique, with its own structural features, usage patterns, and safety requirements. As a result, customised solutions are essential when designing and implementing fire protection systems. In the remainder of this article, we will explore various approaches and lines of thought for addressing the specific challenges that arise in both existing buildings and new construction. These solutions will focus on optimising fire safety while balancing practical constraints such as water supply, space limitations, and structural concerns, ensuring that each building receives the tailored protection it needs.

## Sprinkler piping

In locations where process equipment occupies ground-level space, working from the ground can be particularly challenging. Traditional access methods, such as rolling scaffolds or scissor lifts, are often impractical because they cannot navigate around equipment such as storage racks and production lines. In many cases, costly fixed scaffolding is constructed to provide access, adding time and expense to the project. However, an alternative solution is to employ alpine technicians (or industrial rope access specialists). These professionals can work safely at height using ropes, making it possible to reach difficult areas without the need for bulky scaffolding.



## Water supply

Often, a direct connection to the drinking water supply is not feasible because the required capacity for fire sprinkler systems is not available, requiring the use of a private water reservoir instead. The size and location of this tank can present challenges, but there are several strategies to help overcome these obstacles:

- **Indoor Placement:** A sprinkler tank does not always have to be placed outside. It can be installed inside the building if space allows, offering more flexibility in finding a suitable location.
- **Alternative Shapes:** Tanks do not have to be round. Rectangular steel or concrete tanks can be used, allowing them to be integrated into available spaces more efficiently, such as basements or unused sections of the building.
- **Optimising Tank Size:** By selecting the appropriate sprinkler system design, the required capacity of the water tank can be reduced, potentially minimising the tank's footprint and simplifying installation.

The drinking water or industrial process water supply can also sometimes serve as a supplementary source for the sprinkler system. However, it is important to remember that the capacity is often limited, which may restrict the amount of water available for the sprinklers. Additionally, connections to the drinking water supply can incur high fixed costs from water companies, which can impact the financial feasibility of this solution.

In situations involving rack storage, traditional sprinkler protection systems often include a combination of roof sprinklers and in-rack sprinklers. Because both systems are assumed to operate simultaneously in the event of a fire the water demand can be substantial – a requirement for as much as 1,200 m<sup>3</sup> of water is not uncommon.

The EN 12845 sprinkler standard is often used for design. Sometimes this standard is used because we always use it or it has been prescribed by the parties involved. However, by carefully selecting the appropriate sprinkler concept and design standard, a more efficient balance can be achieved. For instance, FM data sheets offer design options that do not require concurrent operation of both the roof and in-rack sprinklers when calculating the necessary water capacity. This can significantly reduce the amount of water required, making the system more practical and cost-effective while still ensuring robust fire protection. An example for this is worked out below.

### Example of selecting the optimal protection concept

In this example, we assume the following storage configuration: plastic goods (unexpanded plastics in cardboard boxes). These goods are stored on wooden pallets in open-frame double-row racks (<2.7 m, aisle > 2,4 m).

In the example below, we compare two different fire protection concepts. In Situation 1, traditional protection is implemented according to the NEN-EN 12845 [1] standard. Due to the height of the space (15 metres), ceiling level sprinklers and in-rack sprinklers are required. To calculate the required volume of water the system must assume the simultaneous activation of both the ceiling sprinklers and the sprinklers within the racks. This results in a water demand of 268 m<sup>3</sup>.

Situation 1: EN 12845 protection concept:

	# of sprinklers/ design area	Flow / sprinkler	Duration	Water supply <sup>1</sup>
In-rack	3 * 3 = 9	K80 * √2.0 bar = 113 l/min	90 minutes	92 m <sup>3</sup>
Ceiling level	260 m <sup>2</sup>	7.5 mm/min	90 minutes	176 m <sup>3</sup>
			<b>Total</b>	<b>268 m<sup>3</sup></b>

<sup>1</sup> excluding possible hose stream demands and hydraulic imbalance

In Situation 2, the protection is based on the FM Datasheet 8-9 (2.3.6.6) [2]. In this case, it is not necessary to assume the simultaneous activation of both the ceiling sprinklers and the in-rack sprinklers. Instead, the system is designed in such a way that either the ceiling level sprinklers or the in-rack sprinklers can be activated independently, depending on where the fire starts, reducing the demand on water supply and system capacity.

Situation 2: FM protection concept:

	# of sprinklers/ design area	Flow / sprinkler	Duration	Water supply <sup>1</sup>
In-rack	6	250 l/min	60 minutes	90 m <sup>3</sup>
Ceiling level	10	K240 * √0.9 bar = 228 l/min	60 minutes	137 m <sup>3</sup>
			<b>Total</b>	<b>227 m<sup>3</sup></b>

<sup>1</sup> excluding possible hose stream demands and hydraulic imbalance

### 3D is the future?

In existing buildings no situation is the same, so making a well-designed plan is essential for effective fire protection. Errors in the design or prefabrication process not only lead to additional costs for the installer (or client) but also cause delays and disruptions for the building's occupants. A highly effective method to avoid these issues is to scan the building to make a 3D model of the building. This model can then be used to create a precise design for the sprinkler system and fabricate the prefabricated pipe sections, ensuring a more accurate fit and minimising mistakes during prefabricating and installation.

### Conclusion

In conclusion, retrofitting fire sprinkler systems in existing buildings presents unique challenges, from structural limitations to water supply considerations. However, with careful planning, innovative solutions, the use of the right design standards and the use of modern technologies like 3D scanning, it is possible to design and implement effective fire protection systems that enhance safety while minimising disruption and cost.

In many situations, customised solutions will also be necessary because certain circumstances may not fully align with standard regulations. By having a deep understanding of the codes, standards, and their underlying principles, it is often possible to develop tailored solutions that still achieve effective fire protection. This approach allows safety objectives to be met, even when strict compliance with guidelines is not feasible due to the unique conditions of a building or its operations.

[1] EN 12845 'Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance', 2015  
 [2] FM Global (Now FM) 'Property Loss Prevention Data Sheets 8-9' March 2010, Interim Revision January 2022



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# A big year for

## Ali Perry, Chief Executive BAFSA

I am delighted to be writing this article in my second year as the British Automatic Fire Sprinkler Association's (BAFSA's) Chief Executive and it is fair to say that 2024 has been a big year for BAFSA and the sprinkler industry in the UK.

This year marks the BAFSA's 50th anniversary; celebrations were launched in February with an event at the House of Lords attended by many prominent figures from the fire sector along with Members of Parliament and the House of Lords; the celebrations will culminate at our AGM Gala dinner on the 7th of November.

In addition to these celebrations the work to support and develop the sprinkler industry continues. In this article I will discuss BAFSA's focus on competence along with updates for each of Wales, Northern Ireland, Scotland and England.

### Competence

BAFSA has long recognised the importance of the competence of all those involved in our life-saving industry as evidenced by our commitment to training and the fact all our installer and designer members must be third party accredited.

2023 saw the launch of BAFSA's training centre, a culmination of considerable work by BAFSA's members and BAFSA's team, most notably BAFSA's Skills and Development advisor Ruth Oliver. The commitment to improving competence has continued in 2024 with a programme launched to revise all our courses and develop new courses to broaden the external understanding of our industry. We have a new course for installers of both commercial and residential systems and the first of a series of new courses for designers has been introduced catering to experienced workers and new entrants to the industry.

BAFSA is seeking to have our courses recognised as qualifications by the Awarding Body of the Built Environment (ABBE) which is regulated by The Office of Qualifications and Examinations Regulation (Ofqual) and we are delighted our Inspection and Commissioning course has been recognised as an ABBE Level 3 Award in Inspection & Commissioning of Commercial Fire Sprinkler Systems.



Guests watch the BAFSA 50th anniversary video featuring interviews with Ronnie King and Ann Jones

BAFSA has also signed an agreement with the LPCB that our courses and associated competency assessments will replace their current exams; in addition FIRAS have agreed to accept our courses and assessments in place of their exams; we are confident IFC will follow.

This year also saw BAFSA become members of the CPD Certification Service which allows us to run our own continuous professional development (CPD) events. The first course we have had recognised is our new Awareness of Automatic Fire Sprinkler Systems Online Training Course which as the title suggests is an introductory course for those with an interest in fire sprinklers, for example new entrants to the industry and architects, firefighters, building control officers and others within the construction industry.

### Wales

The position remains the same in Wales since the substantial developments of January 2016 with the Domestic Fire Safety (Wales) Measure requiring suitable fire suppression in new build and change of use applications for the following building types.



- New houses and flats
- Care homes
- Rooms for residential purposes (other than in a hotel, hospital, prison, or short stay leisure hostel)
- Registered group homes and sheltered housing

### Northern Ireland

In Northern Ireland, the “Consultation on Fire safety changes to the local Building Regulations” closed on 25th September 2023. The consultation concerned a proposed new regulation, 37B, which would require the provision of suitable automatic fire suppression systems (e.g. sprinklers) within certain types of higher risk residential buildings.

- Buildings containing one or more flats over 11 metres.
- Care Homes/Nursing Homes/Children’s Homes and Family Resident Centres.
- Purpose-built student accommodation with a height over 11 metres.

BAFSA provided a response to this consultation, however the outcome of this consultation has yet to result in any changes to the relevant regulations.

### Scotland

In Scotland the Building and Fire Safety Expert Working Group was established and had its first meeting in February 2024 to consider specific recommendations arising from the Fatal Accident Inquiry into the Cameron House fire in 2017, in which two people tragically lost their lives. The recommendations include:

“The Scottish Government should consider introducing for future conversions of historic buildings to be used as hotel accommodation a requirement to have active fire suppression systems installed.”

“The Scottish Government should constitute an expert working group to more fully explore the special risks which existing hotels and similar premises may pose through the presence of hidden cavities or voids, varying standards of workmanship, age, and the variance from current standards and to consider revising the guidance provided by the Scottish Government and others.”

BAFSA is pleased to be a member of this group and will fully contribute to progressing these recommendations and the consideration of other relevant matters of fire safety.

<https://www.gov.scot/publications/building-and-fire-safety-expert-working-group/>

### England

Labour won a majority in the 2024 general election ending 14 years of Conservative rule. The question being asked from within the fire safety community was would this change in government herald a new approach to the protection of the built environment?

### Care Homes

On 2nd September the Building Safety Minister Rushanara Ali announced changes to legislation which included the introduction of mandatory sprinkler systems in all new care homes across England irrespective of building height. These changes are set to take effect from 2nd March 2025. This change followed a consultation launched by the previous government that ran from December 2022 to March 2023. These changes follow a long campaign by BAFSA and others in the fire safety community.

The dangers of fires in care homes were made clear by the tragic fire at Rosepark care home in Scotland on 31st January 2004, which resulted in the deaths of 14 elderly residents. Scotland learned the lessons from

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**“A compassionate society protects its most vulnerable. Today, I am also publishing an update to Approved Document B that makes provision for sprinklers in all new care homes. Sprinklers enhance fire protection where residents may be reliant on others for help and assistance, especially if a building evacuation is needed”**

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this terrible fire and, since May 2005, each new or altered residential care building has been provided with an automatic fire-suppression system to comply with building regulations.

The lessons of Rosepark do not change as we cross the Scotland-England border, and I would argue these changes should have been made sooner. That said, we welcome the amendments announced.

BAFSA, along with others in the fire-safety community, responded to the consultation on these proposed changes, and it is very positive to see that this collective submission by subject-matter experts has been properly considered and the changes implemented.

### Schools

BAFSA hopes that the requirement for sprinklers in all new care homes in England heralds a new approach by the government towards the protection of the built environment that considers and listens to expert advice. When it came to schools those same subject-matter experts responded to the consultation on proposed changes to Building Bulletin 100 (BB100) which ran from 27th May 2021 to 18th August 2021, recommending sprinklers to be required in all new schools in England. However, the results of this consultation have never been made public and the changes to the draft revised BB100 represent a reduction in the requirement for fire sprinklers in schools rather than an increase. This is hugely disappointing and given those in the fire safety community who contributed to the collective response to the consultation are aware of the contents of that response we can only assume the expert advice it contains has so far been ignored.

In addition to the response to the government's consultation, pressure has also come from the All-Party Parliamentary Fire Safety and Rescue Group (APPFSRG) for the government to reconsider the changes to the draft BB100.

It is the purpose of the APPFSRG “to meet and consider important fire safety and rescue issues with appropriate specialists in these fields, consulting widely with other related agencies to create a safer built environment, contributing to fire safety events both inside and outside Parliament, whilst raising issues of concern to government through its ministers.”

<https://publications.parliament.uk/pa/cm/cmallparty/230405/fire-safety-and-rescue.htm>

This is the same APPFSRG that is referred to in the Grenfell Phase 2 report. While many organisations and bodies named within that report are the subject of significant criticism, the report says in relation to the APPFSRG “Legitimate concerns repeatedly raised by the All-Party Parliamentary Group on Fire Safety

were met with a defensive and dismissive attitude by officials, reflected in the responses of ministers to correspondence. They ought to have considered whether the concerns were well-founded, and if so, what action was required.”

<https://www.grenfelltowerinquiry.org.uk/phase-2-report> See Volume 2.

It might be considered that the legitimate concerns raised by the APPFSRG in relation to sprinklers in schools have also been met with the same “defensive and dismissive attitude by officials”.

I hope that the new government does indeed herald a new approach that will see the submissions of subject-matter experts properly considered and appropriate changes implemented.

### A cohesive approach to fire safety?

In her announcement of the requirement for sprinklers in all new care homes the Building Safety Minister Rushanara Ali stated, “A compassionate society protects its most vulnerable. Today, I am also publishing an update to Approved Document B that makes provision for sprinklers in all new care homes. Sprinklers enhance fire protection where residents may be reliant on others for help and assistance, especially if a building evacuation is needed.”

These comments regarding vulnerability are relevant when considering comments on the protection of vulnerable people in the Grenfell Phase Two report. The report identifies that the Building Safety Regulator currently defines a ‘higher-risk building’ “in the sense in which it is used in the Building Safety Act, that is, a building that is at least 18 metres in height”.

However, the report goes on to highlight that “the nature of the use of a building is more appropriate, in particular, the likely presence of vulnerable people, for whom evacuation in the event of a fire or other emergency would be likely to present difficulty” and adds: “We therefore recommend that the definition of a higher-risk building for the purposes of the Building Safety Act be reviewed urgently.”

These views on the protection of vulnerable people from fire, when taken together with the Grenfell Phase 2 report recommendation that the government bring responsibility for the functions relating to fire safety into one department under a single secretary of state, might just mean a coherent and consistent approach to fire safety incorporating expert advice can finally be realised.

After 29 years in the fire service, I along with many subject-matter experts am convinced of the value of sprinklers and hope the government will finally listen to our advice instead of having the fact it has not done so documented in the report into another tragedy.



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# Ambitious plans for the renewal of the BFSN

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## Inge Devalez, National Manager BFSN

Since its founding in 2011, the Belgian Fire Sprinkler Network, BFSN, has striven to achieve professional competence and reliability within the sprinkler industry and does this by continuously renewing itself. Over the years, the sprinkler industry has become an important player in the world of fire protection and, due to its growth, is an industry that creates high employment.

BFSN achieves the safeguarding of its image through its close collaboration with various stakeholders and its

close collaboration with EFSN as well as its colleagues from surrounding European countries. Through this international exchange, BFSN broadens its vision and gives its organisation international recognition as a valued player in its field.

With the recent change of leadership at BFSN at the end of 2023, an ambitious plan was drawn up for a renewal of the organisation with the aim of being successful in the long term on the one hand and monitoring the quality of the products and services on the other. It was decided to appoint a permanent manager to look after these interests in the future. In March 2024, Inge Devalez was appointed National Manager. With her background as a Fire Safety Engineer and a good understanding of fire safety and current regulations, she is a valuable asset to the organisation and the further development of BFSN.

## BFSN National Sprinkler Congress

Just a few months after her appointment, she organised the first National Sprinkler Congress in Ghent together with the board of BFSN. The museum of fine arts provided the ideal setting for welcoming around 80 participants from various sectors, including governments, fire brigades, architects, insurers, installers, manufacturers and end customers.

Together with national and international speakers, current fire safety topics such as heritage protection and sustainable fire-safe construction were discussed in detail. Jakob Vedsted Andersen, CEO and Chief Commissioner of the Greater Copenhagen Fire Department, gave a compelling presentation on the disastrous Børsen fire in Copenhagen Denmark. This historic building was built in 1619-1623 by King Christian IV and had a public trading function until the 19th century. The building, which contains a large art collection, has an irreplaceable cultural, social and historical value. However, on April 16, 2024, a large fire turned into a disaster and a large part of the historic building was lost. Fortunately, the art collection was largely saved due to enormous efforts made by the fire brigade and the local population. This umpteenth incident in which a historic building was lost is of course also reminiscent of the fire of Notre Dame in Paris and how the fire also broke out there during major renovation works. How such historic buildings can be better protected by, among other things, automatic fire protection systems such as sprinklers and water mist, was discussed during various presentations.

In the Netherlands, specific sprinkler systems have been used in churches since the 1960s. How to deal with these old installations today and what risks there are in churches and historic buildings was explained by our Dutch colleague John Van Lierop (VSI). Together with Renate van Leijen of the National Cultural Heritage Agency, work is underway in the Netherlands on a new publication about fire safety and sprinklers in historic buildings.

In addition to heritage protection, extensive attention was also paid to the challenges surrounding the sustainability of buildings. Themes surrounding the use of flammable materials (including flammable insulation in facades), electric vehicles, batteries, photovoltaics, etc. were explained. Prof. Bart Merci of Ghent University and chairman of the international master's programme in fire safety engineering, gave a presentation on fire dynamics. It was explained, among other things, how the use of flammable materials can lead to rapid fire spread and how the physics of cooling works. For example, the mechanism of cooling by sprinklers can control the spread of fire.

The task of the fire brigade and its views about many challenges were also discussed by Hans Clarysse, chairman of Brandvereeniging Vlaanderen, and Carlos Schellinck, Brussels Fire Department. The Brussels Fire Department recently issued a good practice guide for (heritage) buildings where renovations are being carried out and where fire safety falls outside the normal framework of the application of the Royal Decree on Basic Standards. The Brussels Fire Department, with many heritage buildings in its area, is a pioneer in creating a regulatory framework for the Brussels Capital Region for those buildings where fire safety is not guaranteed by the current regulatory framework in Belgium. With its advice, it prescribes minimum requirements that buildings must meet to prevent fires, guarantee the safety of those present and

facilitate preventive intervention by the fire brigade. The regulations apply to existing buildings where there are multiple independent residential entities. Where renovation takes place without an urban development permit, the fire brigade advises to apply its good practice guide.

## BFSN member of Fireforum and BVV

Since August this year, BFSN has officially become a member of Fireforum, a non-profit organisation. Sharing knowledge and experience among their members is central to Fireforum. It stimulates dialogue between industry, the fire brigade, government and research institutions. On its website and in its bimonthly magazine it provides current news about fire safety, insight into legislation and standards, example stories, innovative projects in active and passive fire protection, good practice guidance, interviews with experts, etc. During the annual Academies and the biennial Congress members and interested parties share in-depth updates on all facets of fire safety. At their member events and "Round Tables" they discuss new themes and debate new developments with their members and stakeholders.

With this membership, BFSN wishes to commit itself to representing the sprinkler industry and sharing knowledge about sprinklers with the members of Fireforum. On November 14th, 2024, BFSN will be present as a participating partner at the biennial FireForum conference in Brussels.

On October 6th and 7th, 2024, BFSN was present at the Fire Brigade Congress in Flanders Expo. This annual conference is organised by the Flanders Fire Brigade Association. This professional organisation for fire brigade care in Flanders unites the personnel from the Flemish emergency response zones and strives for a high-performance fire brigade with well-trained firefighters. Knowledge exchange is one of its main goals. To this end, it organises an annual fire brigade conference and regularly publishes its trade magazine De Brandweer.

On October 26th, BFSN will be present at the commemoration of '200 years of the Deinze Fire Department' where our manager will speak about PFAS and the necessary transition to PFAS-free applications in sprinkler systems.

## BFSN participation in standards committees and working groups

Since this year, BFSN has been participating in the working group on HDEVs organised by Agoria. The future electrification of 'heavy-duty electric vehicles' poses specific risks surrounding, among other things, bus depots. The working group is studying how these depots can be secured so that in the event of a fire, whether or not related to Li-ion batteries, the rapid spread of fire between the parked buses can be avoided. The possible applications with sprinklers and automatic extinguishing systems are discussed within the working group. The aim is to publish good practice guidance for this that the various stakeholders can fall back on when rolling out the electrification of this sector.

The SA/E191SC1 working group is currently working on the revision of the Belgian standard prNBN S 21-208-2 'Fire safety in buildings - Smoke and heat extraction installations (RWA) - Part 2: closed car park buildings'. BFSN recently joined this working group. Inge Devalez represents BFSN and provides the necessary support for the further technical development with regard to the chapter 'Interaction with sprinklers'.



# The Italian job

Giorgio Franzini, Country Manager Italy



The Italian branch of EFSN has been established and is now an operational reality. IFSN – Italian Fire Sprinkler Network – aims to associate sprinkler company distributors as well as sprinkler contractors, sprinkler designers and the newly introduced sprinkler inspecting organisations that do not have, currently, any specialised association representing the interest of the water-based fire protection industry in the country.

IFSN is developing its activity in Italy, where the market for automatic water protection systems has historically suffered from significant underdevelopment compared to the European landscape. Statistical data shows that the number of sprinklers installed in Italy per 1,000 inhabitants is less than a quarter of those installed in Scandinavia, almost a quarter compared to Germany, Austria, and Switzerland, and about a third compared to the UK. Even a country in many ways similar to Italy, like Spain, installs about 60% more sprinklers than Italy.

This situation has ancient origins, stemming from the construction characteristics of our buildings. Over time, we transitioned from stone to bricks, and then to reinforced concrete, limiting the combustibility of the buildings. However, the growing environmental awareness that promotes Green Buildings is changing this situation even in Italy, increasing the combustibility of buildings. Fires such as the one at the Torre del Moro in Milan raise fears of much more serious scenarios, like the Grenfell Tower disaster in London. A wider use of automatic water protection systems (sprinklers and water mist) in Italy, even in residential settings, is becoming a strategic factor for people's safety.

In this regard, the Fire Prevention Code in Italy allows designers to choose the best fire safety strategy, offering water-based fire protection as a trade-off with other traditionally implemented solutions. Fire resistance of structures, evacuation route lengths, and compartment sizes all benefit from the overall risk reduction facilitated by the installation of sprinkler or water mist systems. However, this opportunity is often overlooked, possibly due to the habit of following the usual design choices from the past, perhaps due to myths that sprinklers are expensive and cause extensive water damage, or perhaps because stakeholders require more specialised training.

At the same time, the push towards “active protection” solutions is weakly promoted by the Authorities Having Jurisdiction. Italian legislation, except in very limited cases, still does not mandate the installation of sprinkler systems for various building uses, and the fire brigade gives the designer the freedom to apply fire safety engineering to implement their fire protection strategy, which sometimes seems specifically aimed at avoiding the installation of sprinklers.

Even insurance companies, although long-standing supporters of sprinkler fire protection technologies, struggle to promote their widespread use, perhaps because they are not widely recognised by the market as an Authority Having Jurisdiction, unlike in Anglo-Saxon countries. The difficulty in conveying to their clients the advantages of water-based fire protection systems is a common frustration among the entire community of Italian insurance risk engineers, who are often also

confronted with fire protection systems that suffer from design and installation deficiencies.

This leads to the observation that the specialization of all sector operators needs to be increased. Designers, installers, and maintenance technicians must take greater care in the design, construction, and management of automatic water systems. Specialised installers feel the need for national certification for companies in the sector that would regulate the market, ensuring the qualification and competence of the companies operating within it.

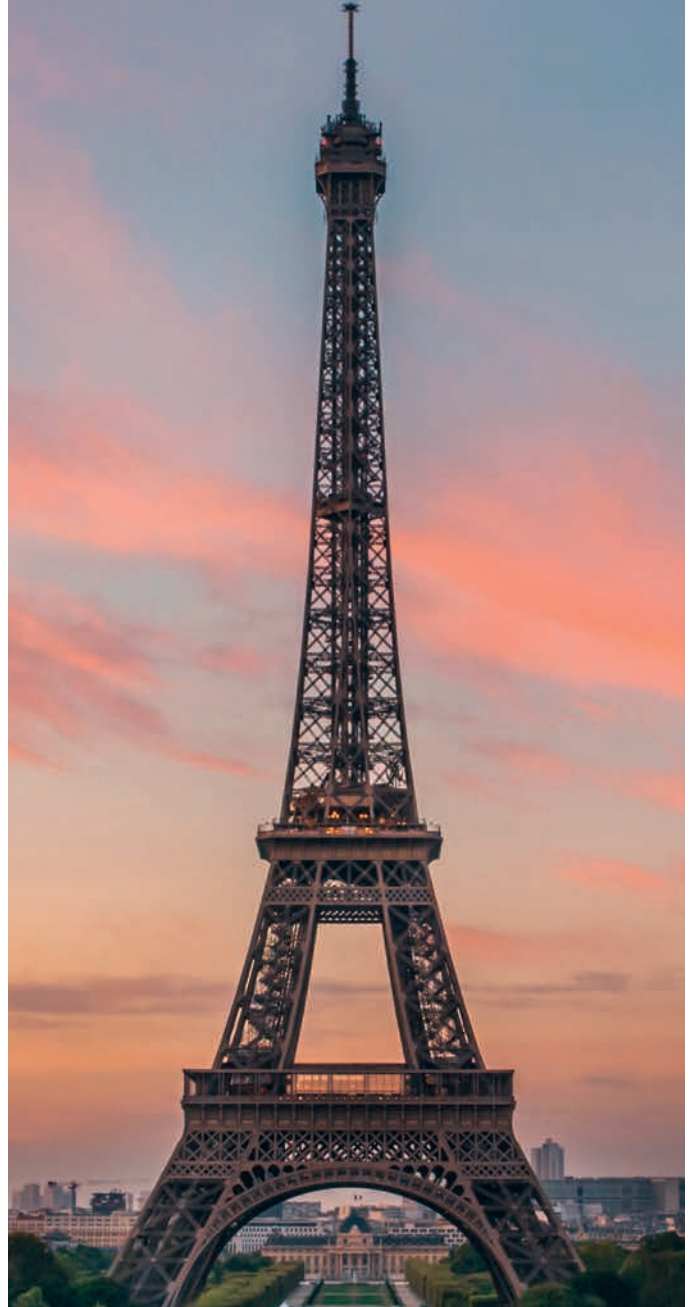
This concept also extends upstream for designers and downstream for maintenance technicians, with the goal of having fire protection systems that are correctly designed, perfectly installed, and adequately maintained, ensuring the required performance over time.

In this regard, IFSN is organising itself to offer a portfolio of courses that can address the current training gaps in Italy. Fire prevention professionals, fire system designers, installers, testers, and maintenance technicians are the stakeholders who will benefit from this initiative. In the regulatory field, an important update of the fire standard EN 12845 is also underway, which will require new training needs for its proper implementation by sector operators. To better follow regulatory developments, IFSN has increased its participation in the “Active Fire Protection” working group at UNI, the Italian Standard Body that adopts and translates European standards.



In September, IFSN participated with its own stand at Safety Expo 2024, the most important Italian event in the world of fire safety, providing an opportunity for all sector operators to meet and exchange ideas. The situation described in this article was confirmed by everyone who visited us. There is a clear need for change, and expectations are high. Many have expressed their desire to be part of this organization, and IFSN will provide an opportunity for everyone to promote change.

# Fire Sprinkler International 2026



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# Progress in France

## Youcef Ouammou, Country Manager France

A number of themes are driving the installation of sprinklers and water mist into buildings where previously they were not present in France. Wooden construction is one of these themes and is driven right from the top, with President Macron posting a video and message on LinkedIn about l'Arboretum, the largest European office campus for wooden buildings<sup>1</sup>. He was promoting the use of wood and green credentials of the campus, a major step for France. While the President did not mention it, all the buildings are protected with sprinklers and it was only with sprinklers that the buildings could be constructed in the way they were, with so much exposed wood. Insurers worked closely with the developer, WO2, to produce 125,000 m<sup>2</sup> of office space in a nine hectare park near La Défense.

This is by no means the only project in France where sprinklers are being used to protect new wooden structures. WO2 itself has more lined up, as do other developers.

## Cultural Heritage

Last year in April Alan and I spoke at a major conference on cultural heritage protection, held at the Château de Chantilly and attended by over 500 delegates. The conference launched a new guide on cultural heritage protection. While the guide does not require sprinklers it does describe the benefits they bring to heritage protection. It is now available in paper copy<sup>2</sup>.

Meanwhile a fire in July this year in the spire at Rouen Cathedral reminded everyone of the need for sprinklers in cultural heritage buildings. As with the fires

in the Cathedral of Notre Dame de Paris and the stock exchange in Copenhagen, the building was undergoing refurbishment. Rachida Dati, the Culture Minister, said the cause in Rouen was believed to have been 'an accident'. Although permission has not yet been given for details to be released, it is widely known in France that a high pressure water mist system has been installed in the new vaulted ceiling of Notre Dame. At least one other cathedral is also installing a high pressure water mist system.

## Annual Seminar

While I represent the EFSN in France, most of my time I work for AXA France as Manager of the Department for Engineering and Prevention. Thanks to the resources of AXA last year we organised a seminar in AXA offices at Nanterre, repeating it in September this year with 150 delegates in person plus another 30 online. I would like to thank AXA and in particular Ludovic Vincent, Director of Property Damage and Frédéric Coppin, Technical Director and Major Accounts at AXA France for providing the auditorium, lunch and coffee breaks.

We first heard from LCI Durand of the Paris Fire Brigade, who gave an overview of current developments and issues. He was concerned about wooden construction, electric vehicles, batteries in general, facades and our ageing society. All these concerns can be mitigated by sprinklers. A working group has been formed to review the three French car park fire safety regulations, particularly with the introduction of electric vehicles and the fact that cars today are wider and contain more plastics. This means that vehicles are closer together in car parks, so fire spread is more likely, and heat release rates are higher. In his view sprinklers or mist are needed – it remains to be seen whether the French government will accept that.

As in other countries, he is concerned about e-scooters and e-bikes which are often stored on balconies and can start fires there. It is possible to protect balconies with sprinklers and we have seen in the Middle East that sprinklers prevent façade fires from penetrating into a building.

Thinking of our ageing society, the first care home retrofit in France took place in Agen in 2017. Today we see many projects to retrofit care homes and other residential buildings that do not comply with regulations.

Insurers are concerned about fires in photovoltaic panels on the roofs of buildings. In the seminar Minimax France presented its photovoltaic protection system, which is approved by VdS and designed to prevent fire spreading from the photovoltaic panel to combustible insulation on the roof of the building.

Following the major fire at Lubrizol in Rouen, where hundreds of tonnes of flammable liquids were released from intermediate bulk containers (IBCs) and burned, French authorities are much stricter in their regulatory control of such sites. Elen risk Consulting and AXA France presented the latest on intermediate bulk container protection.

European sprinkler standards are referenced in French fire safety regulations and often applied in public buildings. CLF Satrem, a major French sprinkler installer and AXA XL presented the current status and progress with CEN sprinkler standards.

As our society moves away from fossil fuels we see new risks, not only from batteries. AXA France gave an overview of the wide range of new, renewable energy fire risks and protection measures for them. Finally, Engineered Fire Piping presented its environmental, social and governance (ESG) initiatives, explaining that not only were efforts in this area expected by investors and society, ESG activities also make the company a better employer, so employees are happier and staff turnover is lower, saving the company money. Marioff had hoped to present its system installed in Notre Dame but as I explained above it did not yet have permission to do so. The cathedral is to reopen on 8th December so hopefully then permission will be given.

The event was so successful we are already looking forward to holding it again next year!

## Training

Many of the positive developments described above have been advocated by our fire brigades. We have won their support by positive engagement with them for many years. I and my predecessor gave live demonstrations of sprinklers on fires at the annual fire brigade conference and I have spoken at fire brigade events. Since 2010 we have offered two-day training courses to French fire officers at ENSOSP, the Ecole nationale supérieure des officiers de sapeurs-pompiers. We give these two-day official courses twice a year, presenting both sprinklers and water mist. By now many hundreds of officers have taken the course and this has created much greater awareness and appreciation of the benefits of sprinklers and water mist. Armed with knowledge, some of these fire officers have since become sprinkler advocates. I have also organised courses for other groups, such as the Architectes des Bâtiments de France, an organisation responsible for protecting and managing our cultural heritage – that was an essential part of our cultural heritage campaign.



## Water Mist Installer Accreditation

Water mist systems have been installed in France for almost 30 years but unlike for sprinklers, installers could never offer a certificate of compliance for water mist systems to insurers, not least because there were no insurer installation rules. With the publication by CNPP of the APSAD R2 water mist installation and maintenance rule, insurers have an accreditation scheme to which they can refer and which will lead to a certificate for the installed system, giving them an assurance that the water mist system has been correctly designed and installed. Certificates can only be given for systems installed by companies that hold the APSAD certification for installation and maintenance of water mist systems. I participated in the development of this new rule and in a seminar organised by CNPP to launch it.

## FSI 2026

While Alan and his team are currently preparing for next year's conference in Salzburg, he books the venues at least two years ahead. I am delighted that in 2026 Fire Sprinkler International will return to Paris. The conference venue will be the Paris Marriott Rive Gauche Hotel & Conference Centre. This is the same location as in 2012 but now the event is much larger and we will be using the main conference halls. Please mark 22nd & 23rd April 2026 in your diaries! Meanwhile I am working with our members to find an exciting venue for the gala dinner.

1 <https://arboretum.fr/>

2 <https://laboutiqueofficiellepompiers.fr/edition/3010-le-risque-d-incendie-dans-les-batiments-d-interet-patrimonial.html>

# SPP PUMPS



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# Demonstrating sprinklers to improve awareness

Alfredo Álvarez, EFSN Country Manager, Spain

Just after our last Sprinkler OUTLOOK Spanish country overview a year ago...

We were engaged to participate in a seminar Fundación Mapfre organised to cover new risks in buildings. Solar panels, EV charging, underground car parks and façade systems were the main subjects.

A month after, the 2022 Fire Victims Report was presented at the 112 Emergency HQ in Madrid. The National Statistics Institute showed an increase in fire

victims of nearly 40% from the previous year. Fire victims, as shown, have nearly doubled since 2018. Soon the 2023 figures will be presented.

To support our campaigns, we agreed with Bomberos Madrid and Fundación Mapfre to show sprinklers at national and local events to improve awareness. Their mobile demonstration room and our sprinkler tank were at fairs such as Juvenalia, Sicur and Madrid is Science in December, February and March. Last month the units



were again on the “street” at Paseo de los Carruajes, Retiro Park, Madrid.

2024 started with the first controlled fire tests inside the mobile unit and the sprinkler tank with senior firefighters and officials present. The tests were a success, achieving complete extinguishment in seconds; this is something we knew would happen, although some officials had their own concerns. Probably this was the first time many saw a sprinkler activation.

In the late afternoon of 22nd February, the country was shocked by news of a terrible fire in Valencia, in the Campanar neighbourhood. Investigations determined that the fire started in a kitchen appliance and spread inside and to the outside, developing quickly through the façade. 10 people died, tens were injured (including some firefighters) and hundreds lost everything. The building was finished in 2008 and sold to owners as luxury flats as part of the New Campanar project.

A week after, on 28th February, SICUR opened (the biannual Fire & Security exhibition in Madrid), but this time with the shadow of the Valencia fire hanging over it. Many thought this could happen at any time after what we saw in London in 2017. All experts agreed that such fires should not happen and that they could be avoided. During the week many campaigned in favour of collecting data about buildings with similar façades and were told this was done by AHJs and research institutes in the main Spanish cities, not only in Valencia.

A few days after SICUR, we organised with the COGITIM (National Engineering College) and OBS (Observatory of New Risks) a presentation to Authorities with the Ministry of Housing (MIVAU), the Science Council (CSIC) and other experts. Thomas Roche, from FM Global, gave a master class on the different façade materials and tests conducted and classifications made after the Grenfell Tower fire. I covered sprinkler requirements in other countries and gave an overview of the economic measures taken in the UK to remediate buildings.

On 21st May, we had our first successful training seminar for firefighters and officials. During the summer, our courses were accredited by the Security and Emergency Integral Training Centre at Madrid Council (CIFSE). Our next course is scheduled for 7th November. The aim is to mirror this in other Spanish cities, next being Barcelona, where there is also a room available to show them the different systems and, most importantly, how to interact with them. It is planned to extend our courses to the inspection and control companies since we believe it is important to follow continuous training.

In the meantime, we are waiting for a professional qualification to be created by the Education Ministry

to have a recognised title for the installation and maintenance of active fire protection systems. A Royal Decree to mandate the creation of this course was published in 2022 and the course has been in development since then. We hope it will become available in 2025.

Also during May, we were advised by APPUNLE, the Logistic Platform Association, that a few projects designed under FM data sheet 8-9 were on hold waiting approval in some Autonomous Regions. After making a survey with our stakeholders, we realized that half of the country was affected. The issue was that the design with ESFRs up to 16.8m was not covered in the current European standard. We knew that over the years many warehouses have been protected in Spain using data sheet 8-9, but this issue was not a surprise. As we did a year ago, when a similar issue arose with the acceptance of ESFRs as a product, the main Spanish Associations (Tecnifuego, CEPREVEN, OBS) along with the EFSN, signed and sent a letter to the Ministry of Industry and Tourism (MITUR) calling on them to accept these designs.

In the middle of June, the EFSN participated in a conference in Bilbao organised by OPRA (The Observatory to prevent Risks and Accidents) to cover the protection of Lithium-ion storage. Over 200 were present, which shows a huge interest on the topic. As advised during the event the first designs to protect this risk will make use of American standards. Incidentally, this was one of the regions where at least one ESFR warehouse project was awaiting approval by the local Authority.





Early in September, as a short term solution to the ESFR design issue, MITUR agreed to contact the Autonomous regions where projects were awaiting approval. To resolve the issue, MITUR has proposed common acceptance criteria across the regions until the new EN 12845-2 (which covers ESFR designs up to 16.8 m height) has been published. Many of these projects have now been approved, including the project in the Basque region mentioned above. Meanwhile the draft of the new Industrial Fire Code (RSCIEI) has been waiting for publication for months. This document lists the standards to be applied. MITUR's long-term solution is to create a performance-based design guide to support the RSCIEI after its publication. This guide will provide a route to accept any proven design, such as one in FM data sheets, that is not already in the European standard.

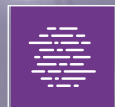
Late last month, we participated in a meeting with the main associations, firefighters and other experts to produce a "white book" for fire protection recommendations; Fundación Mapfre would like to present the book to the authorities early in 2025. Sprinklers are well represented in the book in line with our campaigns to protect blocks of flats and care homes. Only this year more than 20 people have lost their life in fires in blocks of flats, most over 28 m in height. The National Building Code only requires sprinklers if the building is over 80 m high.

The next logical revision or adaptation after the new Industrial Code is published will be to the Building Code (CTE). The main reason being that the RSCIEI sets the basic fire protection requirements in a building when shared with an industrial establishment, so changes made in the new RSCIEI will have to be reflected in the CTE. We believe this presents an opportunity to revise the whole document and not just to adapt the CTE to the RSCIEI; we will ask the AHJ (MIVAU & CSIC) if the proposal to work on a consolidated document will be worthwhile

considering they have received many individual suggestions in the past and the fact that the CTE will have to be revised within 9 months after the publication of the RSCIEI. All the associations we have talked to about the proposal are willing to participate to consolidate all the enquiries sent over the years in one document that could be used in future discussions.

To support all these actions, it would be ideal to produce a local study including a costs and benefits analysis to fit sprinklers in blocks of flats and care homes. For this we are working with COGITIM and the OBS to find out the way to document the study including with a real fire test. The most difficult part is finding a suitable location to produce a real fire and to ensure relevant media coverage. To date, we have found two old fire parks with training towers that are not in use where a test could be carried out, although these locations are not the best. We are still waiting for news of a better location and we should find out more in a few weeks. In the meantime others have shown interest and wish to participate in this study. No doubt if this research goes ahead we will have a strong document to present and something to support a revision of the current Building Code and to discuss with decision makers.

While we carry on with the above actions and campaigns, to end the year we will organise with the APTB (Firefighter Technical Association) a one day seminar to cover fire protection in hospitals. La Paz Hospital, the largest in Madrid, has got the approvals from the Madrid Council to be fully refurbished over the next 10 years. The project will increase on its actual size by 72%. Sprinklers are not required in hospitals in Spain, or only in the basement of some storage areas, and this will be a good opportunity to protect the first one. The project plans to extend the hospital height to 25 floors (almost 80 metres) and the maternity tower to over 30 floors, so it would make sense to require sprinkler systems throughout the whole hospital.



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# Developments in the Dutch sprinkler market

John van Lierop, Country Manager, EFSN and VSI

The Dutch sprinkler market is developing positively, despite the nitrogen emission issues that have constrained the issuance of building permits. The scarcity of land and rising construction costs are also slowing down developments. Nevertheless, there are positive trends regarding the use of sprinklers in the Dutch market. In terms of laws and regulations, sprinklers are now legally required in certain parking garages for the first time, and the regulatory obligation to apply certain standards has in many cases led to the use of sprinklers in large fire compartments and buildings over 70 metres high.

Additionally, we see that appreciation for sprinklers increases when more knowledge about sprinklers becomes available, and when it becomes clear that the

regulatory fire safety requirements do not always achieve the desired safety level. Finally, we observe that sprinklers are more frequently incorporated into standards that previously focused primarily on passive fire safety measures, such as standards for smoke control and wooden buildings.

## Legislation and Regulations

On January 1, 2024, new regulations came into effect. The 'Bouwbesluit 2012' (Dutch Building Code) was replaced by the 'Besluit bouwwerken leefomgeving' (Bbl) and is now an integral part of Dutch law. Two Dutch standards, NEN 6060 or NEN 6079, are mandatory for the design and construction of large fire compartments exceeding 1,000 m<sup>2</sup> or 2,500 m<sup>2</sup>.



## Quality assurance

The reliability of sprinklers in the Netherlands is exceptionally high, partly due to the quality control instruments we use. Independent inspections are mandatory. In the summer of 2024, new inspection schemes came into force and apply to buildings with sprinkler systems. Building owners benefit financially and qualitatively when they use the services of certified companies, as the certification allows for less extensive inspections in the inspection schedules.

On January 1st, 2025, new CCV certification schemes for the 'Installation' and 'Maintenance' of sprinkler systems will come into effect. These new schemes include numerous adjustments and improvements, making it possible to apply certification more widely. Water mist systems can now also be delivered under certification, and the maintenance requirements are specified based on the Dutch maintenance standard. The qualification requirements for personnel involved in the installation and maintenance of sprinklers are now derived from professional competence profiles set by VSI, the trade association for sprinkler installers.

VSI has worked for nearly five years to develop these competence profiles for all standard sprinkler roles.

## Fire brigade procedures in buildings with sprinklers

At the end of 2023, the NIPV (Netherlands Institute for Public Safety) published the report 'Response perspective for firefighters in buildings with sprinklers'. This report contains the procedure for fire brigade interventions during incidents in buildings equipped with a sprinkler system. That enables the fire brigade to work more safely and effectively in all stages of a fire. The need for such a guideline grew as sprinklers were increasingly installed. It turns out that there is also international demand for such a procedure. The NPFA Research Foundation has initiated research, and FM Global had previously developed materials for its clients.



Currently, VSI supports NIPV in developing additional training modules that complement the handbook and support the response perspective. We are also contributing to the Fire Safety Handbook for the Fire Service, which will be published later this year.

## Wooden buildings

The Dutch government requires standards for the fire safety design of buildings with wooden structures. In 2022 it was already clear that regulations needed to be adjusted for the higher risks associated with specific wooden buildings in the Netherlands. Literature research was conducted by TNO, RISE, and ARUP, who have been working on the first part of a new standard last year. Based on various expert sessions and international research, the first draft standard was published in the summer of 2024. Sprinklers and water mist systems are included as possible measures to mitigate the higher risks.

VSI provided the necessary information to the drafters of the standard and the standardisation working group. However, there is still a great deal of unfamiliarity with sprinklers, which can lead to poor decision-making. The fear of extinguishing water is seen as a threat, with the fact often forgotten that the fire brigade typically requires much more extinguishing water than a sprinkler system during a fire.

## Large fire compartments

The two standards for large fire compartments, NEN 6060 and NEN 6079 (risk-based), have gained a more significant position in the new building regulations. Since these standards are now directly referenced in the Bbl, there is no longer a need to demonstrate equivalence. However, the update of both standards is progressing slowly, and it has been decided to implement the revisions in phases. This means that the revision of how the presence of sprinklers should be valued in the very sprinkler-unfriendly NEN 6060 has been delayed. An example of this is the requirement for 240 minutes of fire resistance for compartments larger than 20,000 m<sup>2</sup>, despite the presence of a sprinkler system. This is economically unattractive for clients and, in comparison with other measures, difficult to justify.

## High-rise buildings

For buildings over 70 metres high, there is a consensus guideline that prescribes the use of sprinklers. However, 70 metres is a very high threshold for sprinklers, much higher than in other European countries, where the limit is typically 30 metres or lower. The government has approved a proposal from the standards committee to conduct a literature review as the basis for a risk-based standard for buildings between 20 and 70 metres. Funding for this research is expected to be available in 2025. Meanwhile, VSI has taken a stance and organised a roundtable discussion to support more conscious choices. Participants included representatives from insurers, developers, building inspectors, consultants, universities, and the fire brigade.

## Parking garages

Sprinklers are mandatory in parking garages under buildings where people sleep. While fires in parking garages have not yet caused significant loss of life, they frequently result in substantial economic damage, loss of buildings, and long-term evacuation of residents. Meanwhile, the standards committee has completed



the NEN 6067 'Fire Protection for Parking Garages' standard, and its publication is pending. The standard includes various solutions and as expected, sprinklers and water mist systems are by far the best options compared to others. The standards committee worked on this standard for six years, including provisions for the protection of electric vehicles.

A Dutch engineering firm has been asked by the Dutch Sprinkler Association (VSI) to develop risk-oriented design criteria for smaller parking garages, with the aim of making the installations more economically attractive while maintaining an acceptable residual risk.

### Sprinklers in Historic buildings

More than 150 historic Dutch buildings, mainly churches, were equipped with sprinkler systems under their roofs and in their towers, funded by the government until the 1980s. Several fires with significant losses and the need for knowledge on how to look after these systems have led to a collaboration with the government. The publication on fire safety and sprinklers (and water mist systems) in historic buildings is expected in early 2025.

### Preventing smoke spread

Since 2021 the Netherlands has unique additional requirements for smoke compartments, which lead to considerable extra costs in many types of new buildings, such as hospitals. The cooling effect of sprinklers during a fire significantly reduces the pressure differences between the fire room and surrounding areas, thereby greatly limiting smoke spread.

Last year, the report of a study commissioned by the sprinkler industry was published. It confirmed that a sprinkler system can serve as an alternative to meet the

smoke resistance requirements described in NEN 6075. This is good news for owners of hospitals, care homes, and hotels. The expectation is that sprinklers will also be incorporated into the Dutch standard NEN 6075.

### Attracting employees

The sprinkler market in the Netherlands is growing, and VSI members are struggling to attract enough suitable employees. VSI has therefore launched a project to 'mobilise technical talent'. This project aims to make the sprinkler industry visible as an attractive employer. The campaign also provides insight into career opportunities. Through this campaign, we aim to inform and encourage potential target groups to apply to VSI members. The social media campaign will launch in the autumn of 2024.

### Summary

There are many areas where sprinklers make a significant difference in preventing fire casualties, limiting damage, enhancing sustainability, and protecting business continuity. Consider, for example, the protection of vulnerable people. With our initiatives, VSI and EFSN develop and disseminate knowledge on the applications of sprinklers. Thanks to the collaboration with various stakeholders in fire safety and active contributions to the development of standards, we are confident that buildings can better meet market demands and become more valuable at lower overall costs.

The 'Verenigde Sprinkler Industrie' (VSI) represents the Dutch sprinkler industry and promotes the use of sprinklers. In doing so, it works closely with the European Fire Sprinkler Network.

An overview of the possibilities with sprinklers and the research can be found on [sprinkler.nl](http://sprinkler.nl).

# FM Approvals and VdS Certification for water mist systems



Manufacturers of water mist systems can now simultaneously obtain FM Approvals and VdS Certification.

Water mist systems are intentionally designed for efficiency as these means of suppression quickly distribute atomised water droplets that are drawn to the base of the fire where they flash to steam and absorb the energy needed for further combustion. Third-party testing and certification verifies that properly installed water mist systems will perform as expected under the toughest conditions.

Common implementations of tested and certified water mist fire protection include machinery spaces; combustion turbine enclosures; non-storage areas; wet benches; industrial oil cookers; offices; hospitals; hotels and other occupancies. Manufacturers of these systems now can go through a combined testing programme to simultaneously obtain certification to FM Approvals Standard 5560 for Water Mist Systems and the VdS Fire Test Protocol for Water Mist Systems (VdS3883-series). Water mist systems can go through a

streamlined evaluation against the defined criteria and requirements of both certification bodies to evaluate quality and performance spanning the products' lifetime. If your organisation manufactures water mist systems and is interested in a combined testing and certification programme, please contact FM Approvals at [europa@fmapprovals.com](mailto:europa@fmapprovals.com) or VdS at [atcs-fire@vds.de](mailto:atcs-fire@vds.de).

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## The need for bracing fire sprinklers in Europe according to Seismic Regulations



In the context of building safety, few aspects are as crucial as the proper bracing of fire sprinkler systems, particularly in seismic-prone regions. With its diverse architectural landscapes and varying seismic activity, Europe faces unique challenges in ensuring integrity of a building's life-saving systems. Adhering to seismic regulations—such as NFPA 13, FM, and the newly published European Norm EN 12845-3—is not merely a matter of compliance, but a fundamental step towards safeguarding human lives and protecting property.

However, the complexity of seismic regulations presents a significant hurdle for professionals in the field. The technical and laborious standards, though comprehensive, can be daunting to navigate. This is where the value of accessible, well-structured resources becomes evident. For the first time in the industry, there are now illustrated, instructional handbooks tailored to the specific requirements of

installers, designers, and inspectors. These prove to be an invaluable tool in bridging the gap between regulatory demands and practical application.

Offering an easy-to-read breakdown of international codes and standards for seismic protection with a particular focus on fire sprinkler systems, these handbooks demystify the often intricate and jargon-laden standards by presenting information in a graphical and user-friendly format. This empowers professionals at all levels to understand and implement the necessary measures to comply with different international regulations.

The illustrated seismic handbooks cover the entire process from initial design to final inspection. By making technical requirements more accessible, illustrated seismic handbooks not only support professionals in implementation but also contribute to a broader cultural shift towards enhanced safety standards across Europe.

The simplified, graphical presentation of complex regulations encourages widespread adoption of proper bracing practices, thereby increasing the resilience of fire sprinkler systems in seismic areas.

The importance of bracing fire sprinklers according to seismic regulations cannot be overstated. Compliance with standards like NFPA 13, FM 2017, and EN 12845-3 is essential for protecting lives, minimising property damage, and maintaining operational continuity during and after seismic events. Resources such as the industry's first illustrated Seismic Handbooks from nVent CADDY play a pivotal role in easing the path to compliance, promoting a deeper understanding of the requirements, and fostering a commitment to safety. As we continue to advance our understanding of seismic risks and mitigation, these tools will be instrumental in building a safer, more resilient future for all.

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# Fire sprinkler monitoring steps into a new area



SprinklerView's fire sprinkler monitoring solution has been lauded for its ability to revolutionise the management of fire sprinkler systems. Traditionally, maintaining these systems has involved cumbersome processes—relying on manual logs, greasy paperwork, and a labour-intensive approach to ensure compliance and safety standards. SprinklerView has turned this process on its head, introducing a streamlined, digital solution that eliminates the need for physical records.

With SprinklerView's system, all data is automatically captured, logged, and stored in a secure, accessible format. This not only enhances the efficiency of monitoring but also allows for seamless sharing of information with relevant stakeholders, including insurance companies and regulatory bodies. The ability to upload pictures, escape plans etc. create communication between colleagues, export logs directly simplifies reporting and analysis, saving time and reducing the risk of errors.

## First clients and strategic partners onboard

The company's innovative approach has quickly attracted the attention of major industry players. In the United States, SprinklerView has already signed a significant contract with USI, the third-largest property insurance broker in the country. This partnership underscores the trust and confidence that leading insurance companies have in SprinklerView's technology.

Furthermore, SprinklerView has made significant inroads into the European market. The company has established a mutual showroom in collaboration with Reliable Norway, a leading name in fire safety equipment. This European showroom serves as a hub for showcasing SprinklerView's cutting-edge solutions to potential clients and partners across the continent.

## Supports the full value chain

One of the key reasons behind SprinklerView's success is its holistic

approach to the fire sprinkler system value chain. The company has not merely focused on the technology but has also considered the entire ecosystem in which fire sprinkler systems work. This includes considerations for installers, maintenance teams, property managers, and insurance providers.

Both installations and maintenance are controlled via GPS and QR enabling maintenance in a New York installation from a ski lift in Austria, but the GPS will show timestamp, date and your whereabouts in the logs. And maintenance on the site is QR based with dropdowns and numbers on the mobile device, so everything is accessible in real-time back home at the office.

"SprinklerView is not just introducing a new product—we're ushering in a new era for fire safety," Brian Alexander, CEO of SprinklerView concludes.

SprinklerView  
sprinklerview.com

## Crew training

Some of the world's largest cruise ships are protected from fire with the HI-FOG water mist fire protection system as the primary firefighting system on board. To increase safety standards onboard and to ensure that new joiners and experienced crew members have the basic and advanced skills and competences meeting ship safety standards, Carnival Cruise Lines have signed agreement for Crew training by HI-FOG experts in August 2024.

Hands-on and Classroom training modules are depending on ship size,

HI-FOG system installed and type of training module and vary from 1 to 6 days per ship.

Based on the SMS familiarisation requirement (under ISM 6.5), Marioff offers tailored HI-FOG Crew Training with following objectives:

- HI-FOG familiarization
- HI-FOG emergency response
- HI-FOG Lifecycle maintenance

The HI-FOG familiarization training focusses on crew members who need to know and identify the HI-

FOG components and understand the HI-FOG features.

The Emergency response training focusses on crew members who need to be able to safely operate the equipment, supervise and perform emergency response.

The Life cycle maintenance training is for crew members who need to plan Lifecycle maintenance of the high-pressure water mist system.

MARIOFF  
carrier.com

# Product demonstration room

Rapidrop have made exciting advancements at their UK headquarters with the launch of a fully functional product demonstration room. This newly expanded space has been designed to replicate a realistic pump room environment, providing an authentic setting for showcasing Rapidrop's diverse range of fire suppression products. The dedicated team of engineers at Rapidrop designed and built the demonstration area to offer visitors a first-hand insight into how the products function by simulating activations in both commercial and residential settings.

The demonstration room features an impressive array of Rapidrop products, including sprinklers, flexible hoses, control valves, pipe connections, wet and dry riser systems, alarm panels, and residential valve sets, among others.

Each product is fully functional, allowing visitors to observe their performance and gain an understanding of how they operate. This immersive environment provides a unique opportunity for professionals in the fire suppression industry to see how Rapidrop's products work seamlessly together in a realistic context.

Rapidrop invites industry professionals, engineers, and anyone from the fire suppression industry to explore this state-of-the-art demonstration room. Join a member of the team for a walk through the space, explaining the features and benefits of each product. Whether you are looking to better understand the intricacies of fire suppression systems or explore the latest innovations, Rapidrop's demonstration room offers a comprehensive learning experience.



To schedule a visit, please contact via email at [rapidrop@rapidrop.com](mailto:rapidrop@rapidrop.com)

RAPIDROP  
[Rapidrop.com](http://Rapidrop.com)

## Pushing to the limit with Mercury's support

Daniel Cooney joined Mercury's IT department in early 2020 and has always balanced his day job dealing with software and computers, with a strong love for all things outdoors, spending weekends volunteering as a hike leader to bring like-minded individuals together and connect mountain-side. Daniel had completed some mountaineering challenges but wanted to do something on a bigger scale, to raise more awareness and funds for dog shelters across the country.

After learning of the Vandleur-Lynams Challenge, Daniel set his mind on beating the current record - which would mean completing 275 mountains - all over 600 metres - in less than 48 days. Daniel spent up to 15 hours a day on foot, usually completing between 7 and 13 mountains per day.

Daniel is adamant that without Mercury's support "none of this would have been possible" - "I availed of Mercury's fantastic career break programme and took three months off, to prepare for, complete and



recover from the challenge. It was amazing to have that time to focus on my own personal interests". Mercury also provided Daniel with a jeep which he used to travel the whole of Ireland, and often coupled as his sleeping quarters

Having aimed to dedicate each of the 275 mountains to a different rescue dog, Daniel had initially hoped to raise €2750, which would equate to €10 raised for each mountain completed and dog mentioned. After gaining a significant following online, Daniel has now raised over €10,000 and completed the challenge on August 3rd.

MERCURY ENGINEERING  
[Mercuryeng.com](http://Mercuryeng.com)

## BAFSA launches Sprinkler Awareness programme

Recently given a thumbs-up by The CPD Certification Service, the BAFSA Fire Sprinkler Awareness programme earns its students CPD credits while boosting their professional knowledge. This course is tailored for beginners and has been developed by BAFSA to highlight the vital role automated fire sprinkler systems play in protecting people and property. It includes details of the benefits, types of systems and components used and how these are matched to meet the individual requirements of the buildings, contents and people they will protect. BAFSA is also keen to make people aware of the fantastic career opportunities available in the industry so have included details of pathways to entering and becoming accredited.

It is a free course but you are time-limited to 6 months from registration to completion of it otherwise access will be removed.

BAFSA  
[Bafsa.org.uk](http://Bafsa.org.uk)



Fire Sprinkler  
International  
2025

*Salzburg* 

**Wednesday 2nd &  
Thursday 3rd April 2025**

Fire Sprinkler International 2025 is the premier European event on the 2025 sprinkler calendar and will be one of the largest conferences in the world dedicated to water-based fire suppression.



FOR REGISTRATION & UP-TO-DATE INFORMATION

[www.firesprinklerinternational.com](http://www.firesprinklerinternational.com)

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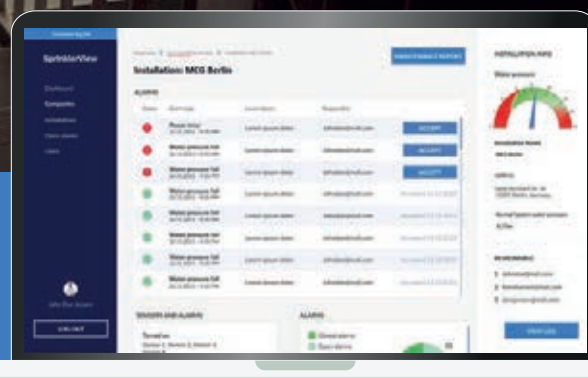
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# 24/7 digital monitoring of your fire sprinkler system health

SprinklerView is an IOT fire sprinkler system solution offering real-time monitoring and notifications for outages and unexpected incidents that happens to help you to react instantly and secure vital fire sprinkler parts.

- Increase building safety
- Avoid unnecessary cost
- Digital history & log documentation archive
- Connects to your existing fire sprinkler system



Digital remote monitoring of your fire sprinkler system

Peace of mind with 24/7 overview anywhere – anytime

## SprinklerView

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