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British Automatic Fire Sprinkler Association

# bafsa

NOVEMBER 2021

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Design freedoms



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British Automatic Fire Sprinkler Association

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# BAFSA loses two sprinkler champions



## Bernard Cain

**BORN IN 1937** Bernard Cain worked for some years at How Fire Engineering before starting his own company Project Fire Engineers in the mid 1970's and for many years this was a very successful installation contracting company and the customer base included The British Library, MI6 Building and St Mary's Axe (the Gherkin) to name a few. Throughout his career Bernard was actively involved with the code standards for the industry and was the Chief Technical Advisor for BAFSA. He was on the British Standard Institute committees for the formation and implementation of new codes for Residential Fire Protection and was very involved representing BAFSA for the introduction of schemes to set the levels of competency for designer engineers to meet recognised written code standards (LPS 1048 scheme). His last assignment was to represent them on the committee "Sprinklers for schools."

At the end of the nineties Bernard embarked on a vigorous R&D product development programme. This culminated in a string of successful, innovative products, notably Pressure Check system, Bell Check and Live Tap but and most significantly the Zone Check that focused on water and energy saving and reducing carbon footprint, pairing with his vision of being sustainable in all that we do.

His brainchild Zonecheck has been installed across the globe saving millions of litres of water a year, including the tallest building in the world the Burj Khalifa. Bernard dedicated his life to keeping people safe and with his determination and perseverance changed the company from a UK based design and installation outfit, to a global manufacturer and thought leader within the industry.

Peter Armstrong, past Chairman of BAFSA reflects... "It is with great sadness that I learned of the loss of one of the great characters of our industry."

Bernard had good knowledge of the LPC rules and of contracting procedures and seemed to relish contractual argument. He was a deep thinker which helped not only his interest in cards and chess but also in his analysis of any proposed changes to the LPC rules and certification. At Council meetings Bernard always generated some food for thought and debate and often adopted the stance "what would you say in court?". Council members of the time will recall his many references to the bus stop, glass ceiling and clear blue water, some perhaps are still pondering the meaning.

Bernard's ponderings lead him to become an innovator and inventor and shopping centres worldwide include a memorial to Bernard Cain.

## Sir David Amess

A TRIBUTE TO SIR DAVID AMESS MP – CHAIRMAN OF THE ALL-PARTY PARLIAMENTARY FIRE SAFETY & RESCUE GROUP from Ronnie King OBE, O.St.J., QFSM, Fire Adviser and Honorary Administrative Secretary

ON BEHALF OF the All-Party Group, I would like to pay this personal tribute to our Chairman and dear friend, Sir David Amess MP, who suffered a brutal and horrific attack and was taken from us on Friday 15th October, and whom we will all miss tremendously:

I have been privileged to know Sir David as a great 'champion' for Fire Safety & Rescue and a good and true friend over the past twenty years.

He was one of those rare human beings who looked for the best in others and, in doing so, brought out the best in them. He was dedicated, passionate, firm in his beliefs but never anything less than respectful for those who thought differently.

David was a great respecter of the Fire & Rescue Service, as he had been personally involved with two separate incidents with fire fatalities, whilst in Basildon, both of which had a great impact on him.

No one could have been more passionate about fire safety, and in his article in Parliament's own House Magazine of 9th March 2020 his comment:

"The horrendous Grenfell Tower fire should never have happened; if only the recommendations and advice of the All-Party Parliamentary Fire Safety and Rescue Group had been listened to following the Lakeland House fire. Heightened awareness combined with effective protection and resilient, robust, low-risk construction is essential. That includes applying best-protection practice. It therefore remains a mystery why the benefits of sprinklers are not more widely employed with fire containment."

"Recent fires where there was substantial destruction – such as the Beechmere care home, hotels at Willenhall and Bristol, flats at Barking, and the Cube student block in Bolton – point to further probing questions: 'How can today's buildings be apparently so vulnerable to fire?'"

In the last conversation we had together he reiterated that 'we mustn't let the Department for Education get away with removing sprinkler protection from all but a few schools, in its recently revised draft design for new schools!' (consultation closed). He said he would now write to the new Education Secretary'.

I strongly believe therefore that the All-Party Parliamentary Group, and the wider Fire Safety Sector owe it to Sir David to continue his fine work with even greater vigour.

Lastly Sir David is survived by a lovely family and our love and our prayers are with them. May perpetual light shine upon Sir David and may he rest in peace.

BAFSA Council and its members echo Ronnie's sentiments.

# Learning lessons

**TOM ROCHE, BAFSA COUNCIL MEMBER, CHAIRMAN OF THE BSA AND A SENIOR CONSULTANT WITH FM FEELS THAT IF WE DO NOT SPEAK UP THEN OUR THOUGHTS, IDEAS AND EXPERIENCE ARE NOT HEARD, AND LOST.**

I SPOKE AT a BAFSA conference in 2018 about having and using our voice to gain change over the use of sprinklers. It is something that I feel strongly about. If we do not speak up then our thoughts, ideas and experience are not heard and lost. Others will assume our voice; they will speak for us, and it may not be what we want to say.

At the conference I spoke about learning this lesson as a very young engineer. My manager, Jim, had sent me to a meeting as he expected me to speak up on my strong opinions. Jim was not pleased when I reported not speaking up, I was too junior an engineer to do so. He challenged me not to do that again, to speak up and appreciate that I had something valuable to say. Jim coached and encouraged to speak up.

Fast forward over 30 years and I find myself in a position attending many meetings connected to the fire sector on a range of technical and regulatory issues. I am not there to make up the numbers, using my voice to contribute, to share views and ensure those of the sector are heard effectively. It is the same thinking when attending BAFSA Council. However, there has been something concerning me for a while. Did I really learn all the lesson that Jim was trying to teach me?

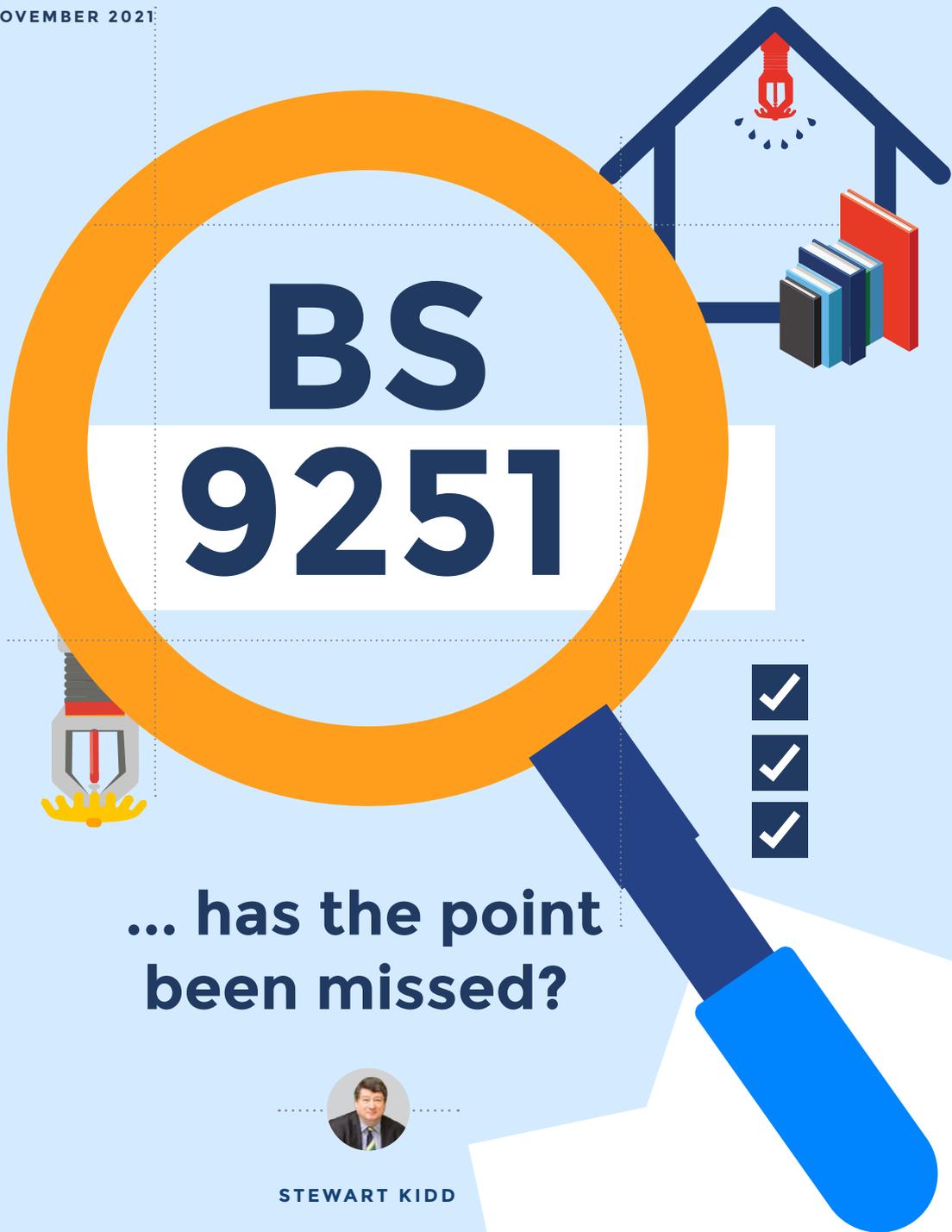
In many meetings I find myself looking around the room. I am not that young engineer anymore. I now resemble the majority around the table – middle-aged, male and a grey beard. When Jim encouraged me all those years ago to go to that meeting, he was also trying to get new ideas, diverse opinions, and differing faces in the room. I suspect that he appreciated that this would add something to everyone and not least encourage and retain me to be part of it. I have been slowly understanding the lesson and it is so important in the context of today.

Looking at the key challenges of the wider engineering sector the most vital one is how does it attract, train, and retain a diverse, talented workforce. All those years ago Jim understood this. In his own way he sought to encourage those who had joined, to remain and widen its appeal to ensure we give a voice to all. The fire sector and the sprinkler community within it, is not immune to these challenges – in fact anyone who has heard Ruth Oliver speak will recognise this.

Thinking on that extra lesson from Jim, I have found myself asking what I can do. My actions have been small in supporting STEM sessions, encouraging newer engineers, seeking differing voices on committees, looking for differing people to present at events as well as taking my own presentations to diverse audiences. What I have realised it that all those small things can add up and therefore the purpose of this piece to share and make you aware of the same lesson.

I would like to encourage you to do the same, as waiting for someone else to do it is going to take too long. As members I would ask you to think of what you can do in this space, however small and try it. Think about how you can act to encourage others from diverse backgrounds to come into the sector. It may be just about speaking positively to others about what you do and what you enjoy about your job. It may be the opportunity to listen, to coach or to ask someone to share their opinions. It may be to encourage others to join in, go to that meeting or to join BAFSA council.

What I see is that there is a need to include, encourage, listen, and provide these opportunities if we are to meet the challenges. I hope you can see it too and more importantly we cannot wait for others to do it – we all need to try.



# BS 9251

## ... has the point been missed?



STEWART KIDD

I, IN COMMON with a number of members of the relevant British Standards committee am greatly concerned by the contents of an article titled: *'What is an appropriate sprinkler design standard for the protection of multiple-occupancy (mixed use) buildings?'* published on the FPA's website ([www.thefpa.co.uk](http://www.thefpa.co.uk)) and possibly elsewhere which I believe contains several misguided assertions and analyses of changes in the 2021 edition of BS 9251 *'Sprinkler systems for residential and domestic occupancies. Code of Practice'*.

Most notably the following need to be rebutted:

- BS 9251 overlaps into commercial and industrial fire hazard classifications already suitably covered by BS EN 12845
- BS 9251 has introduced multi-occupancy (mixed use) opportunities for buildings

- Acceptance of sprinkler protection by insurers is contingent upon the use of commercial and industrial design standards
- Table 4 of BS 9251 is misleading
- BS 9251 advocates reduced areas of operation
- Residential plant rooms must be protected to OH3
- BS 9251 does not adequately cover water supply requirements

In this article I will strive to address what I consider to be these inaccurate evaluations and misinterpretations.

#### BACKGROUND TO THE 2021 EDITION OF BS 9251

The BSi BS 9251 review group recognised that:

- Numbers of installation of sprinkler protection to BS 9251 in residential

premises have increased significantly in recent years (as a result of both requirements from building regulations/standards and voluntary installations from responsible property owners and developers).

- Improved residential sprinkler system design guidance was sought by the regulators, the fire service, architects, consultants and developers particularly for taller and higher risk residential buildings such as care homes and sheltered housing.
- Residential buildings have always incorporated (to various extents) areas which are not "residential occupancy" (Commercial kitchens (e.g. in care homes), laundry rooms, small offices, small retail kiosks or shops and such things as hairdressing salons). Given ever-increasing

scrutiny of fire safety measures, improved guidance on how to protect these areas was sought.

- Work by BAFSA and others have proved conclusively that despite suggestions to the contrary by the Westminster government, retrofitting of residential sprinkler systems into social housing is neither difficult nor cost-prohibitive. This has led to a significant increase in the installation of residential sprinklers in existing buildings on a voluntary basis, mainly by social housing providers and local authorities with the support of the fire and rescue services.

The 2021 revision to the standard was intended to provide an updated consensus Code of Practice removing ambiguities and improving guidance; never an easy thing in writing a standard.

### ... Overlap between BS 9251 and BS EN 12845

The LPC Rules were never intended for residential buildings, which are specifically outside their scope. The LPC Rules do not reference residential or domestic occupancies and make no mention of residential sprinkler heads or how to design sprinkler protection for residential buildings.

Sadly, historically, not all organisations have taken an active interest in this part of the sprinkler protection market - that is, the portion not served by BS 5306-2 and BS EN 12845/LPC Rules. (It goes without saying that I accept part of this blame for this when the LPC was less than supportive of the initial pushes to develop residential and domestic sprinklers in the 1990's).

### ... BS 9251 has introduced multi-occupancy (mixed use) opportunities for buildings / Table 4 is misleading

Residential buildings have always incorporated non-residential areas. It is not the standard which has 'introduced' mixed use buildings, but the way modern (or indeed existing) buildings are constructed and used. The presence of concierge or neighbourhood housing offices or community support offices is not new, neither are support functions like kitchens and laundry rooms in care homes. It's worth noting that there was a gym and boxing club in Grenfell Tower.

In the past, where a sprinkler installer found that there was to be provision for a small supermarket in a new structure, they will have advised the developer that this could not be protected to BS 9251. The developer will then have been told by its consultants that only supermarkets in excess of 2000m<sup>2</sup> needed to be sprinkler protected so it will have been concluded that sprinkler protection could be omitted from the retail occupancy.

Now the sprinkler installer can refer the developer and its consultants to Table 4 of the revised BS 9251 where it is clear that very small retail premises may be tolerated within the umbrella of BS 9251 protection provided that the correct sprinkler heads are specified and that the minimum density of 5 mm/minute application rate can be met.

I am concerned that some might believe it would be better not to provide even limited suppression in the shop... For it is almost a certainty that no developer is going to install a BS 9251 system and a BS EN 12845 system in the same building and equally, no developer will willingly assume the costs (and find the space for significant volumes of water storage) for a BS EN 12845 system for the whole building.

In order to clarify the needs of multi-occupancy buildings, the revised standard contains more detailed guidance on when and where it was reasonable to utilise BS 9251 systems.

An informative Commentary in BS 9251:2021 clause 5.5 makes the logic adopted clear:

*'In some parts of the building, residential sprinklers might not provide adequate protection. Therefore, the nature of occupancies needs to be determined and the type of sprinkler selected accordingly. This process could determine that some areas can be adequately protected with residential sprinklers (i.e., sprinkler heads conforming to BS EN 12259-14) and others require protection by so-called "commercial and industrial" sprinkler heads (i.e., sprinkler heads conforming to BS EN 12259-1).'*

BS 9251:2021 Clauses 5.5, 5.6 and Table 4 sets out the maximum acceptable sizes of any non-residential building parts at 100m<sup>2</sup> and give examples of what are suitable sprinkler design criteria to protect such areas. For example, a communal laundry as one might find in a residential tower block, where no linen is stored, is considered likely to contain a very low fire loading and thus can be protected using "residential sprinkler" criteria (2.8mm/min with up to 4 sprinkler heads in operation).

By contrast, the laundry in a residential care home will usually store and process much more linen, so it is suggested that this space should be protected using "commercial/industrial sprinkler" criteria which are better able to cope with higher fire loadings. By reference to clause 5.6 and table 4, it is recommended that such a laundry facility may be up to 100m<sup>2</sup> in area and should be protected using 5mm/min of water, with an area of operation to match the compartment size (in effect, identical design criteria as the LPC Rules would give rise to). BS 9251:2021 very clearly states that where these limits are exceeded, BS EN 12845 should be applied in full.

### ... BS 9251 advocates reduced areas of operation

I know that criticism has been levied regarding the revised standard for specifying 'Areas of

Operation' which are less than those specified in the LPC Rules and BS EN 12845. As should be clear from the foregoing text, this is a fundamental misunderstanding of the new standard and simply incorrect: Note 3 in 4.1 says very clearly that:

*'In buildings where there is a mix of residential, non-residential and commercial use (e.g., where flats are above shops, car parks, bin stores, offices and retail units), it is generally appropriate to protect the residential parts using this British Standard and the non-residential parts using BS EN 12845.'*

Additionally, the Commentary on 4.2 also makes it clear that a standard other than BS 9251 may have to be used:

*'Some premises might have multiple authorities having jurisdiction who might be concerned with life safety, property protection, business continuity, heritage preservation and environmental protection. Some authorities having jurisdiction might impose additional requirements beyond those of this British Standard.'*

The point is that the 'Area of Operations' quoted are actually the maximum permitted occupancy areas in the standard, so a car park which is larger than 100m<sup>2</sup> must be protected by a BS EN 12845 system.

### ... Acceptance of sprinkler protection by Insurers

The BS 9251 sprinkler market does not exist to serve the interests of Insurers. It is not primarily intended to reduce fire claims (although statistics show it will often do so). So, whilst BS 9251 may not attract insurance premium discounts, this has never been the reason for residential and domestic systems. Their objective is to protect life from fire.

There also appears to be a question mark, in respect of BS 9251 systems, over whether insurers are an 'Authority Having Jurisdiction'. I do not accept that this is ever likely to be true in the UK but may certainly be the case in some countries. In the UK, the insurers will be stakeholders with a commercial interest, but they are not an AHJ in the generally accepted understanding of that term. Insurers in the UK lack any regulatory powers in this regard. While an insurer is free to decline to cover a building unless it is sprinkler protected to a specified standard, the owner of the building is equally free to go elsewhere for insurance or assume self-insurance for the risk.

In the real world, the installation of sprinklers is a grudge purchase and developers will only do this if either there is a legal compulsion to do so or if there are significant benefits, such as insurance premium discounts or business continuity advantages. As far as can be determined, no UK insurers are offering premium discounts against the installation of residential sprinkler systems. Indeed, BAFSA is aware that some insurers have reportedly said that they will actually load premiums in such cases due to fear of water damage.



If a new build residential block higher than 11m is to be constructed in England, a sprinkler system must be installed, and insurers have not, as a practice, granted discounts for systems which are required by law. The relevant Approved Code of Practice, Approved Document B, makes it clear in Appendix E that the sprinkler system to be installed in residential buildings should comply with BS 9251.

**... Residential plant rooms are OH3**

No they are not. Typically, plant rooms in residential buildings are concrete shells with little more than a calorifier, GRP/metal water tanks, some pipework and pumps. Alternatively, they might be boiler rooms or small electrical rooms with no more than three phase power. The reality is that residential plant rooms very often contain almost no combustibles. In all cases (and to catch the exceptions) BS 9251 is very clear that the hazards present should always be assessed by a competent person. It is very doubtful that OH3 protection would be warranted in most cases. However, even if it was, BS 9251 requires very similar design criteria be used for such areas: 5mm/min throughout the entire compartment or 4 heads (depending upon the circumstances).

**... Certification, Third-Party Approved Products and Services**

Most industry experts and sprinkler installers recognise that certification is highly desirable but BSI can go no further than acknowledging the desirability of third-party conformity assessments; as it already does in the Foreword to BS 9251:2021.

Certificates confirming compliance with BS 9251 should always be provided and this is explicitly required in the standard.

**... BS 9251 does not adequately cover water supply requirements**

This is one of the most improved areas of BS 9251. A correctly designed and installed BS 9251:2021 water supply might now in many instances be as reliable or even more reliable than an LPC Rules water supply. BS 9251 includes requirements for weekly, unattended self-testing of pumps which offer clear advantages over the LPC Rules requirements in terms of reliability and safety of personnel when undertaking weekly tests – if indeed these are even undertaken. The BS 9251 option to share a domestic water supply service is inherently more reliable than some BS EN 12845 options as interruptions to domestic supplies are rare – and swiftly reported should they occur.

Criticising BS 9251 for only providing life safety cover is like a review of a fast-food outlet which focuses on the absence of a fine wine list.

*This article reflects only the personal views of the author and not BAFSA, its Council nor the collective views of BSI committee FSH/18/2 nor its BS 9251 revision group.*

*The author was Director of the FPA from 1989-1997 and Secretary-general of BAFSA from 2001- 2016 and is a member of BSI committees FSH/18, FSH/18/2 and FSH 18/5 covering fixed fire protection systems, sprinkler systems and water mist systems.*

*The article referred to can be read here: <https://www.thefpa.co.uk/news/what-is-an-appropriate-sprinkler-design-standard-for-the-protection-of-multi-occupancy-mixed-use-buildings->*

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# Increased activity is Europe wide

**IT IS NOT JUST IN THE UK THAT THE SPRINKLER INDUSTRY IS BOOMING, EVERYONE I TALK TO IN EUROPE IS BUSY AND 2021 IS CERTAIN TO BE A RECORD YEAR SAYS ALAN BRINSON, EXECUTIVE DIRECTOR, EUROPEAN FIRE SPRINKLER NETWORK.**

MARKET GROWTH HAS come from increased warehouse construction, particularly to support online businesses, from a tightening of regulatory supervision of sprinkler systems in France following a huge industrial fire in Rouen and in general from greater use of sprinklers as part of building fire safety designs. Some of the latter is due to changes in regulations or regulatory guidance, some is voluntary as consultants better understand the benefits of sprinklers.

BAFSA members will be aware of the changes in England, Scotland and Wales that have led to explosive growth in the residential sprinkler market. The same has not happened elsewhere but there are promising signs in Belgium, France, Netherlands and Spain, where our campaigns to highlight the need for sprinklers in high-rise residential buildings, in residential wooden buildings and in care homes are leading to a change in thinking.

All these countries and more are using EN 16925 to design residential sprinkler systems, with each having published a national annex setting out threshold heights, numbers of design sprinklers, densities and other criteria. British experience of fires in wooden buildings causing disproportionate damage is informing thinking in other countries, with insurers and fire brigades insisting on sprinklers in wooden residential buildings.

The Notre Dame fire is leading to fire suppression systems being installed in some French cultural heritage buildings. Sprinklers, high pressure and low pressure water mist are to be tested next year as part of a project to develop French guidance and we understand a system will be installed in Notre Dame.

Over the past 20 years much of the research conducted by sprinkler manufacturers has been aimed at finding solutions for warehouse fire protection. End users want warehouses to be denser and higher, as well as flexible in the dimensions and content of what they hold. Automated warehouse solutions providers are finding that fire protection affects insurability and hence what is acceptable to their customers. Today they work closely with sprinkler manufacturers and insurers. I would not be surprised one day to see them in sprinkler standards committees. While we have yet to compile the

programme, I expect warehouse fire protection will once again feature strongly at Fire Sprinkler International 2022 in London on 31 May and 1 June.

Regarding standards, a draft of the next edition of EN 12845 is scheduled to be sent to BSI and other CEN members for enquiry (comment) in December. We have divided the standard in three parts, with EN 12845-1 as the main standard and EN 12845-2 covering ESFR and CMSA designs, while EN 12845-3 will cover earthquake bracing. Parts 2 and 3 will be circulated for enquiry next year, with part 3 based on the existing TS 17551. While there may not be much need for earthquake bracing in the UK, other parts of Europe need guidance and want it to have the status of a full standard.

Although CE-marking is being replaced by the UKCA mark in the UK, both are being awarded on the same technical basis. We have not been able to produce any harmonised product standards for almost 20 years but an alternative route to CE-marking is for manufacturers to request a European Technical Assessment from one of the laboratories that are members of EOTA. These laboratories then develop a test protocol, called a European Assessment Document (EAD), and if it is accepted and cited by the European Commission in the Official Journal of the European Union it can be used for CE-marking. An EAD was recently cited for flexible sprinkler hoses so they can now be CE-marked. As yet the equivalent UKCA process is unclear.

To support design standards we need component standards. In December EN 12259-13 for ESFR sprinklers will begin the CEN enquiry. The formal vote (approval stage) for a revised EN 12259-14 on residential sprinklers, this time without o-ring seals, will also begin in December. Meanwhile work has started on EN 12259-15 for large k-factor, extended coverage and CMSA sprinklers. We have ended the impasse over pump standards, with the draft for EN 12259-12 on pumps to be completed this year and progress made on EN 17451, the pump set standard. Not to be outdone, water mist has several fire test application standards imminent and more to come, complemented by test protocols for nozzles and other key components.



# The end of design freedoms?



**RITCHIE O'CONNELL, BAFSA'S REPRESENTATIVE IN WALES, HAS NOTICED THAT THE REMOVAL OF ADDITIONAL DESIGN FREEDOMS FOR SPRINKLERS WHERE THEY ARE COMPULSORY HAS SOMETIMES EVOLVED INTO A BELIEF THAT SPRINKLERS CANNOT BE USED AS THE BASIS FOR FIRE ENGINEERED OR BESPOKE FIRE SAFETY SOLUTIONS IN PREMISES WHICH ARE MANDATED TO HAVE SPRINKLERS, AND HE IS CONCERNED.**

FITTING SPRINKLERS IN buildings where they are not mandated has traditionally brought certain design freedoms or to use the colloquialism 'trade-offs' for example in residential care premises there was sometimes the opportunity when fitting sprinklers to: reduce the quantity of portable firefighting equipment, extend travel distances or remove some self-closing devices from fire doors.

These design freedoms are well known and over the years have been persuasive factors in

the debate of whether or not to fit sprinklers where they were not compulsory.

The Domestic Fire Safety Wales Regulations 2015 (aka the Welsh sprinkler Regs) mandated for automatic water suppression systems (AWSS) in all new or converted dwellings.

The vision of Welsh Government was to improve the safety of people in their homes so, quite rightly, the fitting of sprinklers was made over and above the requirements of the Building Regulations, and whilst the design freedoms written into Approved Document B

such as reduced fire resistance and larger compartment sizes where AWSS is fitted were retained, the ethos was that sprinklers could no longer be used to "trade-off" against departures from a code compliant solution.

A code compliant solution requires, as the phrase suggests, the designer to follow the recommendations of a particular code and "cherry-picking" or selecting the bits from different codes to suit the design is generally frowned upon. Where buildings cannot meet a specific code then a different solution is often sought, where necessary a fire-engineered or performance-based solution is used.

An extension of this principle was the increased provision of certain fire safety elements, to compensate for departures from a code compliant solution. Where a project cannot meet all of the requirements of, for instance, Approved Document B, the document allows the use of fire engineering for "an aspect of the building design which otherwise follows the provisions in this document,"

An example of such a compensation would be to provide an emergency voice communication system which broadcasts evacuation instructions to reduce the time which it takes for people to react to a fire alarm signal. When trying to calculate how long a premises would take to evacuate, a time-based calculation is often produced to demonstrate a level of safety equivalent with a code compliant solution the reaction time is often quite significant, by using the voice system this time is shown to be reduced thereby reducing the evacuation time required, this is a well-established principle.

However on a small number of occasions over the past year or two I have noticed that the removal of additional design freedoms for sprinklers where they are compulsory has somehow transformed into a belief amongst some building control bodies that sprinklers cannot be used as the basis for fire engineered or bespoke fire safety solutions in premises which are mandated to have sprinklers.

A case in point was a recent barn conversion, the premises were 'caught' by the sprinkler Regulations and required a category 1 system to comply with that legislation. The upper floors of the converted barn were constructed on a lightweight steel mezzanine platform. However, due to an oversight, the developers had failed to provide sufficient structural fire resistance to the mezzanine and the Local Authority Building Control had, quite correctly, requested additional protection to the steelwork. For aesthetic reasons the client did not wish to use intumescent paints, spray protections or additional passive protection, in all other fire safety aspects the building conformed with Approved Document B (Wales) Volume 1.

I was asked to provide a solution for this issue. To meet the requirements of the Building Regulations the steelwork was required to retain its load bearing capacity and stability for 30 minutes.

Structural steel begins to lose its strength at approximately 300°C and the loss increases rapidly after 400°C<sup>1</sup>. Therefore, if the temperature of the steel could be prevented from reaching 300°C for 30 minutes the steel work could reasonably be asserted to retain its structural stability for this period.

I therefore proposed that the sprinkler system be uprated to a category 3 system which will provide a discharge duration of 30 minutes and a greater discharge density than a category 1 system, at 2.8mm/min as opposed to 2.04mm/min.

This would then suppress or control the fire for at least 30 minutes preventing the steel from reaching the temperature at which the steel would begin to lose its structural stability.

Whilst the Building Control officers did not contest the efficacy of the proposed solution, they were of the opinion that they were unable to accept sprinklers as the basis for a performance-based solution as they are a mandatory requirement.

No criticism is implied here of the Building Control body who were helpful and professional throughout the project. I use this example as a simple illustration of how the principle has been misinterpreted.

I felt quite strongly that this was not the case and wrote to Welsh Government asking for an opinion on this issue, as this had potentially far-reaching consequences for the sprinkler industry, fire engineers and small builders operating in Wales.

The Building Control body and I received a reply from Welsh government which stated:

"The situation as explained is a fire engineering approach. This would be for the parties involved to agree or disagree based on the evidence put forward, in this case to prove that the enhanced sprinkler system will or will not comply with the requirements of B3 (Internal fire spread structure) of Schedule 1 of the Building Regulations 2010 have been satisfied"

Whilst this falls short of determination it is clear from the reply that it was never the intent of Welsh Government to prohibit the use of sprinklers as a basis for fire engineered solutions. What they did intend and which BAFSA fully support is that the Welsh Sprinkler Regulations provide a greater degree of life protection than that mandated by the codes elsewhere in the UK.

1. [https://www.steelconstruction.info/Fire\\_damage\\_assessment\\_of\\_hot\\_rolled\\_structural\\_steelwork](https://www.steelconstruction.info/Fire_damage_assessment_of_hot_rolled_structural_steelwork) Accessed 24 May 2021



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# The devastating impact of a fire

BAFSA'S SPRINKLER AMBASSADOR NICK COLESHILL REFLECTS  
HOW LIVES ARE AFFECTED FOLLOWING A FIRE.

EVERY YEAR DETAILED analysis of fires attended by fire and rescue services (FRS) in England are published by the Home Office. For the year ending March 2021 FRSs attended 518,263 incidents, of these incidents, there were 151,086 fires. What the above figures don't tell us is the impact at grass roots level of a fire on families, residents following a devastating fire to their home.

One such incident that caught my attention involved a house fire reported by The Thornton Heath Chronicle, involving a 2-storey detached house occupied by a family of 7 including 6 Children. The Cause of the fire was due to a candle.

Yes, the reporter identified the damage sustained by the fire to the property, including the kitchen and half of the hallway destroyed by the fire with considerable smoke damage throughout the rest of the property making the property uninhabitable.

However, the feature focused predominately on the devastating impact of the fire on the family, which is often overlooked, specifically the impact on the children following the incident.

It was reported that the family were rehoused in a small flat consisting of one double bedroom, two singles, and a pull-out bed resulting in two children having to sleep on the floor. The negative effect on the children's education productivity levels due to the family's temporary accommodation located remote from their school.

All personal possessions destroyed by the fire resulting in appeals from the local community for replacement school uniforms, clothes, essential items. Due to the financial impact on the family, just giving crowd funding appeal was launched on Facebook.

The outcome could have been so different if sprinklers had been fitted, the publication,



**94%**

SPRINKLER EFFECTIVENESS

**99%**

SPRINKLER EFFICIENCY

IN EXTINGUISHING  
OR CONTROLLING A FIRE

*Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: An Analysis from Fire Service Data* confirms sprinklers are 94% effective, 99% efficient in their ability to operate in extinguishing or controlling a fire.

From April 2020 to March 2021, FRS attended 61,912 primary fires resulting in 240 related deaths, 186 of these fire related fatalities were in dwellings, 6,347 non-fatal casualties in fires.

In the short time, I have been collating sprinkler saves the data supports the findings of the above-mentioned report confirming the efficiency effectiveness of sprinklers in extinguishing or controlling a fire. The period from May to September 2021, sixteen residential sprinkler activations were reported confirming the fire was either suppressed or extinguished by the residential sprinkler system with no fatalities reported.

The events of October 12, 2021, clearly identifies, the benefit of collating sprinkler saves, 2 fires, 1 day, 2 different outcomes. Essex County Fire & Rescue Service reported a successful sprinkler save involving a residential block of flats involving a candle fire. The sprinkler system extinguished the fire resulting in minimal damage with no reported injuries, no further action was required on the arrival of operational crews.

Subsequently London Fire Brigade reported a further candle fire in a flat on the 20 storeys of a residential block of flats, resulting in the attendance of over 70 firefighters, one child taken to hospital. The flat was destroyed by the fire and over 50 people evacuated the building. Sprinklers were not fitted, if they had would they of made a difference?

To drive change making the installation of sprinklers the norm, not the exception, we need evidence/data to influence change. We need your continued support to promote the benefits of sprinklers to drive change, every day automatic fire suppression systems are operating throughout the country with a majority unreported.

The recent changes to Approved Document B reducing the threshold height of sprinklers from 30m to 11m in all new build residential buildings is a prime example on the benefits of lobbying the government for change from all sectors marking a major success for BAFSA, National Fire Sprinkler Network, Business Sprinkler Alliance, European Fire Sprinkler Network, National Fire Chiefs Council all of whom have campaigned for so long for changes to ADB. It's a simple way to save more lives and reduce the risk to firefighters. The government estimated that the change to ADB would apply to over 1,600 new buildings each year, retrofitting sprinklers is not mandatory but many housing providers post Grenfell have committed to projects across the country providing a further layer of safety from fire in their high-rise residential buildings.

It is our vision that all residential buildings should be fitted with sprinklers to save lives, where major refurbishments are to be completed in existing high-rise tower blocks, care homes and specialized housing schemes.

Many Local Authorities and housing providers have already commenced or completed major retrofitting projects on a wide range of properties including high rise residential blocks, sheltered housing accommodation. Birmingham City Council recently completed a project to install sprinklers in 213 blocks of flats while Southwark Council completed a project to protect all their specialised housing schemes and temporary accommodation hostels.

**With your support we can make a difference, if you hear of a save report it, full details on how to report a save can be found at [www.sprinklersaves.co.uk](http://www.sprinklersaves.co.uk). The evidence collated will be a further tool in our toolbox to drive a culture change within both government, housing providers. The benefit of which will allow a greater inclusion of fire sprinklers in all new homes including existing sleeping risk buildings as part of a risk-based approach.**

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# Think sprinklers... Think Sprinkler Saves

## JUNE



### 3 : Specialised Housing, North Wales

North Wales Fire and Rescue Service attended a kitchen flat fire involving a chip pan which had been accidentally left unattended.

Crews identified that a sidewall sprinkler head had operated in in a flat where the fire originated, subsequently extinguishing the fire before firefighters arrived and the kitchen sustained only minor smoke damage.

In 2016 working closely with North Wales Fire and Rescue Service, Flintshire County Council took the bold decision to review their fire safety arrangements to protect their most vulnerable residents by installing sprinklers to all three of their specialised housing high-rise blocks.

The benefits of this decision were clearly demonstrated as this was the second sprinkler save since the sprinkler retrofitting project was completed in 2016.



### 13 : Kitchen fire, Cleveland

Cleveland Fire & Rescue were mobilised to a high rise residential kitchen fire on the 7th floor. On arrival it was established that the fire was all out with one sidewall sprinkler head operating, minimising and containing the fire damage to 10m<sup>2</sup>.

There was no delay in calling the fire and rescue service as the sprinkler system transmitted a sprinkler fire alarm signal to a remote monitoring station initiating the appropriate emergency procedures.



### 19 : Refuse store, Manchester

Greater Manchester Fire & Rescue Service have reported a fire in a high rise residential block involving a large refuse plastic industrial bin located on the ground floor of the refuse store. Two sprinkler heads operated suppressing the fire before the arrival of operational crews. Due to the prompt activation of the sprinkler system

the fire was contained to the compartment/ room of origin.

## JULY



### High rise, London

Four fire engines and around 25 firefighters from Norbury, Woodside and Croydon fire stations attended a fire in a four roomed flat on the fifth floor involving a tea light which activated a sidewall sprinkler head. One resident was taken to hospital.

Following the Grenfell Tower fire in June 2017, Croydon Council announced it would retrofit sprinklers in its 25 tallest residential blocks of 10-12 storeys and an eight-storey sheltered block.



### 1 : High rise flat, Scotland

The benefits of sprinklers were again confirmed following the fire involving a top floor flat in Edinburgh resulting in five heads activating which suppressed the fire at source.



### 7 : Hospital, South Yorkshire

The effectiveness of sprinklers were clearly demonstrated following a fire caused by an industrial gas powered ironing machine in a laundry room in a Sheffield hospital which was suppressed and extinguished by the sprinkler system before the arrival of South Yorkshire Fire Service, no further action was required.



### 10 : Retail unit, London

London Fire Brigade mobilised four fire appliances to a fire within a shop with a restaurant above on New London Street, in the City of London.

Fire damage was contained to part of the ground floor only due to the activation of the premises sprinkler system. Two sidewall sprinkler heads operated restricting fire damage to 20% of the ground floor only. The water supply for the sprinkler system was from the town main. There were no working smoke alarms inside the property.



### 12: Student accommodation, West Midlands

There's no getting away from the fact that student lifestyle contributes to a level of fire risk and it is therefore pleasing to report that following a fire in a kitchen, (cooking pan left unattended) the residential sprinkler system activated. On arrival of the West Midlands Fire Service, it was identified that a sprinkler head had operated extinguishing the fire and no injuries were reported.



### 12: Flat, Hampshire

A sidewall sprinkler-head actuated suppressing a fire, preventing flashover. This allowed a breathing apparatus team from Hampshire & Isle of Wight Fire & Rescue Service to enter the flat and suppress the fire. All the occupants of the flat evacuated the property safely.

It should be noted however the effectiveness of sprinklers was clearly demonstrated despite the fact that the operational efficiency of the residential sprinkler system was compromised due to a household item being placed in front of the sprinkler head obstructing the discharge of water.

**BAFSA comment : During 2008/2009 five significant fires took place involving healthcare premises in London which resulted in partial or full evacuation. None of the five sites had AFSS installed at the time of the incidents.**



**16 : Distribution centre, Kent**

The commercial sprinkler system (FM Global Early Suppression Fast Response) activated at Ocado's three-storey customer fulfilment centre (CFC) assisting operational crews in 15 appliances from the LFB to suppress and extinguish a deep seated warehouse fire.

The cause of the fire according to the statement released by Ocado appears to have been caused by the collision of three robots on the grid, noone was injured and the damage was limited to 1 per cent of its grid.



**24 : High rise flat, Lancashire**

The decision by Stockport Homes and Stockport Council to approve a multi million pound programme to fund the installation of sprinklers in all 22 of Stockport tower blocks has proven to show that it is money well spent following the fire in a high rise block in Edgley.

Greater Manchester Fire & Rescue Service (GMFRS) despatched six fire appliances and one aerial appliance to a kitchen fire in an eight storey high rise residential block.

On their arrival it was identified that one residential sidewall head had operated extinguishing a lithium battery fire

**AUGUST**



**2 : High Rise flat, Manchester**

Six pumping appliances from Greater Manchester Fire & Rescue Service (GMFRS) attending a fire in a flat on the 17th floor of a residential block in Eccles found the sprinkler system had activated and extinguished an electrical fire before their arrival. Fire damage was contained to the room of origin.



**7 : Bin Store Fire, South Wales**

South Wales Fire & Rescue Service (SWFRS) was mobilised to a fire following the activation of the sprinkler system involving a refuse bin located on the ground floor of a 11 storey residential accommodation block.

When the alarm went off residents from all 82 flats, except for the two flats closest to the smoke, stayed in their homes and followed the fire safety arrangements for this building.

This was the second sprinkler save at Hillview involving the residential bin store in two years, the previous fire took place in August 2019 which was also believed to of been caused by a discarded lit cigarette



**7 : Superstore, Essex**

Essex Fire & Rescue Service were called to a fire at a large supermarket store in Waltham Abbey. The commercial sprinkler system activated suppressing a fire in one of the rooms within the store.



**7 : Kitchen fire, Lincolnshire**

Lincolnshire Fire & Rescue Service (LFRS) responded to a kitchen fire involving an unattended chip pan. The residential sprinkler head activated restricting damage to 50% of the kitchen and moderate smoke damage to 100% of the flat.

On arrival operational crews identified that the fire was all out due to the activation of the sprinkler system, assisting one adult and two cats to safety and administrated oxygen due to smoke inhalation.

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**8 : Leisure & Entertainment Complex, Nottinghamshire**

Nottingham Fire and Rescue Service were called to a fire at the Cornerhouse complex in Nottingham city centre. It was established that the premise's sprinkler system activated following a fire in the extraction system in one of the commercial premises. On arrival crews established that the fire had been extinguished due to actuation of the sprinkler system.



**8 : Bin store, West Midlands**

West Midlands Fire Rescue Service despatched crews from four local fire stations following reports of the bin store being alight at Faulkner House, Stoney a 17 storey residential block of flats.

On arrival it was identified that the automatic fire suppression system had operated suppressing the fire protecting both residents and firefighters.



**11 : Recycling Plant, North Yorkshire**

North Yorkshire Fire & Rescue (NYFRS) were called to a fire in a recycling plant in Rufforth. The building measured 100m x 25m.

The onsite pre-action type B sprinkler system operated and controlled/suppressed the fire before the arrival of NYFRS who proceeded to use firefighting jets.

A total of nine sprinkler heads had operated and were replaced the same day and system left back on line. Plant machinery was then used to remove the recycling from the building allowing the contents of the building to be turned over. The cause of the fire is unknown.



**17: High Rise Flat , London**

London Fire Brigade (LFB) were called to a high rise residential flat fire on the 37th floor on Marsh Wall in the Isle of Dogs where two residential sprinkler heads operated containing the fire and limiting its impact with fire damage limited to a small part of the flat. Operational crews were able to identify and locate the sprinkler isolation valve minimising water egress, a key aspect of business continuity where automatic suppression systems are installed.

The cause of the fire is believed to be unattended candle.

**SEPTEMBER**



**2 : High School, Scotland**

The Scottish Fire and Rescue Service responded to a fire at the Community High school in Edinburgh which activated the automatic fire suppression system (AFSS).

Three appliances attended and firefighters extinguished a fire affecting a first floor toilet. "There were no reported casualties and crews left after ensuring the area was made safe."

It is noted on the school website, that the school was closed following the fire, but reopened the following day.

**"There were 759 fires in London schools between 2009 and July 2017 and sprinklers were only installed in 15 of these cases."**

*LFB*



**9 : Shopping Centre, London**

Failure of a capacitor within a fridge compressor compartment caused a fire in a commercial unit of a Shepherds Bush Shopping centre. The shop was fitted with a sprinkler system which activated 5-10 sprinkler heads suppressing the fire until firefighters arrived at the scene. Only a small part of the shop was damaged by fire. No injuries were reported.

**OCTOBER**



**4 : Waste site, Cumbria**

A waste site conveyor belt sustained extensive damage after a fire on the second floor of a commercial building.

The fire was suppressed by the operation of the onsite deluge system containing the fire before the arrival of operational crews from Carlisle West Fire Station who located several seats of fire which were extinguished with a hose reel jet.

**FACT ... A deluge system is a fixed fire protection system designed to protect against a specific risk/hazard. A large number of open-ended nozzle heads simultaneously activate to bring the fire under control.**



**12 : Flat, Essex**

A bin fire in a residential block of flats was successfully extinguished following the activation of the residential sprinkler system. The cause of the fire was a candle which had been extinguished but not cooled sufficiently before it was disposed of in the bin.

On arrival Essex Fire & Rescue (ESFRS) crews established that the sprinkler system had successfully extinguished the fire. Damage to the premises was minimal.



**29 : Factory, Wolverhampton**

West Midlands Fire service (WMFS) despatched eight fire appliances and 42 firefighters including an aerial platform to a fire in the roof space of an ink (paint) industrial unit.

BAFSA member, Argus Fire Protection reported the commercial sprinkler system activated extinguishing the fire in the area it protected. The benefit of which allowed WMFS to deal with the unprotected part of the building which sustained fire damage.

**"When a building burns down what is the cost to the environment?"**

*Tom Roche BSA*

**NOVEMBER**



**1 : High rise flat, St Austell**

Following reports of an automatic fire alarm sounding in a block of flats, operational crews were mobilised from St Austell Community Fire Station.

On arrival, it was identified that a fire had been extinguished by the residential sprinkler system within a flat, one occupant required medical attention due to the effects of smoke inhalation. The fire was contained within the flat preventing further fire spread and flashover.

Coverage of the system included all 67 residential flats, communal areas, laundry room and store shed. The installation in this, Cornwall's only high rise residential block, was completed in February 2019.



**For a complete archive of Sprinkler Saves, visit [www.sprinklersaves.co.uk](http://www.sprinklersaves.co.uk)**

# WHAT IF...



Eight fire engines were called to a large blaze at Woodborough Primary School, near Pewsey. 15 crews, including firefighters from Hampshire battled the fire in the roof space of the building. Dorset & Wiltshire Chief Fire Officer Ben Ansell said: "This was a large and complex incident, with firefighters working tirelessly to contain the fire, and protect and save as much of the school as possible. While sprinklers might not have prevented this fire from taking hold in the roof, they would have reduced the speed at which it spread and limited the damage caused before my firefighters arrived on scene. As a Service, we will continue to promote the installation of sprinklers in new and refurbished school buildings."

## Two fires, one day, two different outcomes

**12<sup>th</sup> October : London high rise fire, flat destroyed. Two hospitalised. No sprinkler system installed**

**12<sup>th</sup> October : Harlow flat fire, extinguished by the residential sprinkler system**



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# Celebrating the history of firefighting



**IAN GOUGH TELLS OF A VISIT TO THE FIREGROUND MUSEUM AND HOW IT REFLECTS THE DEVELOPMENT OF FIREFIGHTING AND FIRE BRIGADES IN THE UK AND HOW THE MUSEUM WILL TELL THE STORY OF SPRINKLERS.**

I RECENTLY HAD the pleasure of visiting the very impressive 'Fireground' Museum in Rochdale where I met Curator, Bob Bonner and some of his colleagues. I was there to discuss ways in which BAFSA could assist Bob and his team with the 'story of fire sprinklers' – particularly as it relates to Manchester and neighbouring areas.

The Museum commemorates the history of firefighting within the Greater Manchester area, where the region has played a significant role in the development of fire brigades and fire engineering. Manchester formed England's first municipal fire service in 1826 and in 1901 the country's earliest motorised fire engine was delivered to Eccles.

Moreover, many BAFSA members will be more than well aware of the significant contributions made by Manchester based companies such as Mather and Platt and many others, to fire engineering both nationally and internationally over the past century and more.

Based in Rochdale's former fire station, the new Museum was officially opened in August this year.

## **GREATER MANCHESTER FIRE SERVICE MUSEUM TRUST**

The Museum was originally established in 1983 as the in-house "Brigade Museum" of the Greater Manchester Fire Service. This was as the result of over three years of dedicated hard work, by off-duty members of the fire service, to convert a former workshop building at what was then Rochdale's central fire station.

This initiative by enthusiastic volunteers, quickly began to attract more and more interest; and as the historical collection grew, so too did visitor numbers, with regular open-day events proving particularly popular.

It became apparent to those involved therefore that, looking to the future, the Museum needed to adopt a more professional approach – particularly if much needed funding was to be secured.

In 2008 the Greater Manchester Fire Service Museum Trust was formed with the intention of taking the Museum forward on a more sustainable footing. Then, in 2010, an agreement was reached between the Trust and the Museum's then owners – Greater Manchester Fire and Rescue Service – that the whole Museum operation and collection would be devolved to a new Trust. A new partnership agreement, the first of its kind in any British fire museum, was therefore struck and the two organisations began to function as "partners" for the good of the Museum.

Under the terms of this partnership agreement the Museum became truly "independent" but continued to receive funding and



## CELEBRATING THE HISTORY OF FIREFIGHTING

other support from the fire service. In return, reciprocal support was provided through attendance at official Brigade events, responding to research requests and looking after all historical matters relating to local fire services.

### THE BIGGER PICTURE - LOCAL PLANNING

The Museum project is at the heart of the 'Station Gateway' area. This is part of the council and Rochdale Development Agency's (RDA's) new rail strategy.

Consequently, the RDA has helped secure a £1m grant from the government's Town's acceleration fund and the project is now also funded and supported by the Greater Manchester Combined Authority (GMCA), the National Lottery Heritage Fund, the European Regional Development Fund (ERDF), Pilgrim Trust, Garfield Weston, Swire Charitable Trust, Trust-house Charitable Foundation and the Worshipful Company of Firefighters.

### FIREGROUND 2021

After a year and a half of restoration and construction work to refurbish and repurpose the beautiful, art deco-influenced, 1933 former Rochdale Fire Station (the building had been vacant since 2014 when firefighting resources moved to a new site in Halifax Road); the new Museum opened on 14th August 2021 with the name "Fireground".

The ground floor, once home to the town's fire engines, now houses an improved and expanded museum celebrating the work and sacrifice of the Greater Manchester Fire Service. Fireground is five times bigger than the old museum, allowing previously unseen collections to go on public display for the first time. There is a café and Museum shop with easy access throughout.

On show can be seen twenty-five larger exhibits that make up the appliance fleet, supported by many other items of firefighting equipment, uniforms, models, medals and insignia, paintings, curios and other objects - including fire sprinkler equipment.

Upstairs, the old ballroom is being transformed into Firedup! - a vibrant new co-working space for start-up businesses. Historic features in the space, including the stained glass on the ceiling, are being carefully restored as part of the revamp.

The collection includes a wide and varied range of local fire-related archival material including log books, personnel records, minute books, circulars, journals, technical publications and so on. A purpose-built library and archive, and an educational suite for young people, have therefore been included.

The Museum is managed by a Governing Body comprising of nine voluntary Trustees, plus one Trustee representing Greater Manchester Fire and Rescue Service and one representing Rochdale Borough Council.

Day to day, the Museum is looked after by an enthusiastic team of over 30 working volunteers who carry out all the maintenance, guiding, educating, archiving, restoration, driving, events attendance etc. In the first month and a half of opening it attracted just under 300 visitors.

### EDUCATION AND YOUNG PEOPLE

In 2010, the Museum was awarded full accreditation from Visit England under the Visitor Attraction Quality Assurance Scheme (VAQAS) arrangements and in 2014 was awarded the Quality Badge of the Council for Learning Outside the Classroom.

Fireground offers educational visits for pupils and students of all ages from reception to A-level. Regular topics include The Great Fire of London, People Who Help Us, Victorians, Uniforms and The Blitz.

The Museum also serves as the headquarters and secretariat of the national Subject Specialist Network for fire museums and collections - Fire Heritage Network UK (FHNUK); and Bob Bonner the Curator is also the Secretary of FHNUK.



## Fire sprinkler exhibits - a call for help

A number of artefacts related to the fire sprinkler industry, mainly sprinkler heads but also other material showing the historical importance of the Mather and Platt factory, were previously on display in the old museum but are yet to be transferred to the new location. However, since the Grenfell disaster, Bob and his team note an increasing interest in the topic of fire sprinklers as visitors have asked for information and advice about them. They therefore feel the need to address this as soon as they can but, realistically, the Museum appreciates that on the topic of fire sprinklers their 'in-house' expertise is very limited.

The opportunity therefore arises for BAFSA and/or individual BAFSA members to assist with the production of a new display.

The intention is to show these items in a new purpose-built display cabinet, within the main body of the Museum, when funds are available to provide a quality display which would be in keeping with the high standard already set for the collection.

Any assistance therefore, either financial or otherwise, will be gratefully received.

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# Providing candidate video evidence



**CHANGE IS OFTEN INEVITABLE WRITES RUTH OLIVER, BAFSA SKILLS & QUALIFICATIONS ADVISER, BUT CHANGE HAS A CATALYST AND THE PANDEMIC HAS MOST CERTAINLY BEEN THAT CATALYST IN THE AREA OF TRAINING AND LEARNING.**

OUR LIVES ARE changing more rapidly than ever before. The first 20 years of the 20th century saw more technological advancement than the entire 19th century and the prediction for the 21st century is even faster. Have no doubt the use of video technology in education, information sharing and proof of action or practical knowledge will continue to rise.

Whereby the traditional method of learning ‘face to face’ has been replaced by use of computer and electronic technology such as online learning, competency assessment now brings ‘video evidence’ into play. For candidates and sometimes assessors this may be an entirely new process

so for those embarking on qualifications which will involve some element of ‘practical assessment’ through ‘video evidence’ it is worth spending a little time considering how to produce reliable, valid evidence to meet the required assessment requirements. Certainly reading the guidance supplied by the College is an essential.

Within the sprinkler industry specifically, the Level 2 Certificate in Fire Sprinkler Installation (EWR) qualification requires candidates to submit video evidence in respect of Unit 6, Fire Sprinkler Installation and Handover. This replaces the need for candidates to attend college and the evidence produced on a mobile telephone can be

submitted to the Assessor at the candidate’s convenience... This is required for many courses covering many disciplines.

This sounds like a lot of work but for the L2 can be completed in 5 or 6 short videos consisting of just a few minutes each, or an individual video for each point. A college Assessor is available online should you need any support and full guidance on the actual evidence requirement is contained within the programme module online.

When producing the evidence required, as examples, you could consider including these suggestions below. NB. This is not the definitive list of requirements so please refer to the qualification guidance when preparing your filming sessions.

## **1. Identify checks required to ensure sprinkler system can be installed**

In this section a short video of you showing:

- you looking at the installation drawing and verbally stating that this is the drawing which you will be following during the Installation.
- the materials are on site and that there is access for safe working access platforms etc.
- that you have checked and that there are no issues with access to the area you are going to carry out the work in.

## **2. Carry out checks to ensure the sprinkler system can be installed**

In this section a short video of you:

- walking around the site looking for any potential obstruction to you safely installing your pipework,
- stating verbally that you are looking for things like debris on the floor, electrical trays, overhead beams etc. (There may not be any obstructions, but you are checking before you start work.)

## SKILLS & QUALIFICATIONS

### 3. Select equipment for the task. Select all the tools for a specific job

In this section a short video of you :

- demonstrating that you have selected the correct tools for the job, allowing it to be completed in one operation. For example: cutters, Stilson's, impact gun, level, spanners etc.

### 4. Carry out checks on installation materials

A short video demonstrating you:

- Checking the sprinkler heads are undamaged and protected by covers?
- Checking pre-fab threads are not damaged
- Checking plastic pipe is free from scratches
- Checking glue is within its use by date, and that it takes longer to set in cold conditions, etc.....

### 5. Use equipment in line with manufacturers or organisational instructions.

In this section a short video of you :

- Using the threader/machine correctly.
- Using cutters correctly.
- Properly grooving steel pipework.
- Using glue as per instructions check date and tell me it takes longer to set in cold conditions.

### 6. Carry out installation under supervision.

- A short video of you being filmed carrying out a small installation.

### 7. Describe problems that can occur during installation.

A short video of you talking about/showing:

- Installation materials having defects, damaged threads etc.
- (Hopefully there are no faults, but you must demonstrate you are checking for them)
- Obstruction from other services and how you have overcome them.

### 8. Rectify identified Pipe faults.

A short video of you talking about/demonstrating:

- Removing a protective cap from a head.
- Tightening back nut on a bracket.
- Repairing leaking joint.
- Replacing incorrect head.
- Altering pipework should it not match design drawing. Incorrect support spacing etc...

A college Assessor is available online should you need any support, and, full guidance on the actual evidence requirement is contained within the programme module online or within the BAFSA webpage <https://www.bafsa.org.uk/wp-content/uploads/2021/09/Proposed-standardisation-for-video-evidence.docx>

Remember the Assessor is there to assist you!!

### AND FINALLY ...

Please ensure you have agreement from the relevant persons before you commence filming your work activity and you must wear correct PPE (personal protective equipment) where appropriate when being filmed.

Ensure any video is clear and at a distance so the task is clearly visible, and an assessment decision can then be made with confidence. Zooming In does not improve video quality it merely makes the image bigger.

# Marioff



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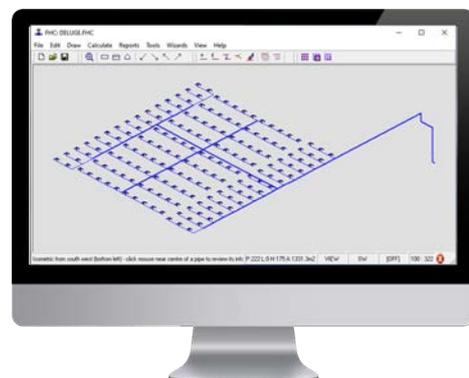
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# Product Liability Insurance – are you getting enough?

**INSURANCE COVER IS ONE OF THOSE THINGS WHERE BEING WISE BEFORE THE EVENT PAYS WRITES GARY EATON BSC (HONS), FCII, MCILA, CLIENT DIRECTOR AON INSURANCE BROKERS.**

I AM OFTEN asked for advice on Products Liability cover, and I'm sure that there are many readers of FOCUS will be all too familiar with such cover. But what do such phrases as "efficacy", "excess layer" and "in the aggregate" really mean? Also why does one need product efficacy cover at all if one has professional indemnity insurance? These are questions I've been asked many times in my career and I have sought to answer some of these below.

#### **IS PUBLIC AND PRODUCTS LIABILITY COMPULSORY?**

In a word, "no". As a business you are required by law to have Employers Liability insurance and to insure your motor vehicles for injury or damage to Third Parties, but there is no legal requirement to take out Public and Products cover. That said, many customers will insist upon this as a prerequisite to contractors being awarded work, so even though not legally required you will need it in just about all cases as a contract requirement.

#### **WHAT'S THE DIFFERENCE BETWEEN PUBLIC AND PRODUCTS LIABILITY?**

To give an example, if you were to cause fire damage to a building using a blowlamp or inadvertently turn on a water supply and cause a flood or drop a pipe on someone's foot, these would be examples of Public Liability claims. Products Liability claims arise when the damage or injury is caused by a product supplied. In case of sprinkler companies, an example of a product claim would be if an installed system did not activate and a fire took hold as a result. This would be an example of a product not fulfilling its intended function, in other words, "product efficacy". More about that later.

#### **HOW MUCH COVER IS NEEDED?**

This depends largely upon what your customers ask for. A point to bear in mind is that Products Liability cover is "in the aggregate". This means is that in a policy year (policies are nearly always one year long) your Products policy provides a single pot of

money. Therefore, if you have a £5 million aggregate limit and you have a £4 million claim in the first week of your insurance, you have a £1 million limit left for the other 51 weeks of the year. Taking out as high a limit as you can afford at the outset is a good safeguard against this.

Public Liability is different in that the only limitation is "per claim". In theory for Public Liability claims, you could have any number of claims in a 12-month period and your policy would not be exhausted.

#### **EFFICACY – WHAT IS THIS?**

I mentioned Product Efficacy above, and I would like to expand a little upon on this. Product efficacy (or inefficacy – the words are used interchangeably - both mean the same thing) is when the product supplied does not do the job it was designed for. In the case of a sprinkler company, if you install a system and the pump doesn't operate, or sprinkler heads do not activate, these would be examples of a product not doing its job – not being

**“Many insurers do not like to give Product Efficacy cover and as a sprinkler installer, you need to be wary of such policies, as the cover provided is virtually useless.”**

efficacious. Many insurers do not like to give Product Efficacy cover and as a sprinkler installer, you need to be wary of such policies, as the cover provided is virtually useless.

**EXCESS LAYERS**

Often insurance companies will give cover to a certain limit but will not go beyond that. You may have contracts with your customer who wants you to have a limit of say, £10 million but your insurer will give only £5 million. In a case like this it is normal to arrange a top up policy sitting as a layer above your policy.

These are called “excess layer” policies, sometimes you will hear them referred to as supplementary, top up or mezzanine policies. If you have an Excess layer policy, be sure to check that it also provides efficacy cover. If it does not, you are only getting some of the cover that you need.

**WHAT ABOUT PROFESSIONAL INDEMNITY**

I’ve sometimes asked by clients why they need Product Efficacy when they have already have Professional Indemnity cover, and this is a very good question. The answer is that both covers are needed because claims can arise from different root causes. Imagine if you will a scenario where a sprinkler system has been correctly designed, but the sprinkler heads and/or the pumps do not activate when a fire breaks out. This would be an example of a Product Efficacy claim. Now imagine the same scenario when the sprinkler heads and/or pumps do activate properly, but the heads are too far apart, or the pump is not sufficiently rated to deliver enough water and the fire takes hold. This latter scenario is an example of a design error claim and would be met by a Professional Indemnity policy.

Often when the damage is extensive it may not be very clear whether the root cause was a design error or product inefficacy and it is usual for a broker to advise both the Product Liability and the Professional Indemnity insurers at the same time. In such cases, you will often find yourself dealing with two loss adjusters from the different insurance companies!

**IN CONCLUSION**

Insurance cover is one of those things where being wise before the event pays, and like in so many cases, awareness of the issue and attention to detail is important. Do all of these things by choosing a broker who is well experienced in the sprinkler industry and can talk in a way that is clear and free from jargon.



**Compliant Residential Monitoring FloWatch 9251**



Take full control of your fire sprinkler monitoring requirements with FloWatch 9251. The only specifically designed fully compliant residential and domestic fire sprinkler monitoring system available. FloWatch 9251 gives you complete confidence that your sprinkler system is in full working order and ready to operate should it ever be required.

**24 Hour Battery Backup**

The specified AGM rechargeable battery provides the system with a 24hr battery backup in the event of a mains power failure.

**Monitor System Components**

As well as monitoring flow switches, FloWatch 9251 can monitor all the required fault conditions detailed in BS9251:2021 table 5.

**Audible Alarm**

A distinguishable audible alarm in the event of a sprinkler activation or fault on the system.

**Pump Fault Monitoring**

FloWatch has dedicated inputs for pump fault monitoring, giving early detection if a fault should occur.

**Tank Level Alarms**

Monitors low levels of water within a sprinkler or combined tank to raise an alarm indicating in a failure of the water supply.

**Remote Browser Viewing**

View the system status remotely via web browser, tablet or mobile device and receive email and text alerts in the event of an alarm.

🌐 [www.flowatch.co.uk](http://www.flowatch.co.uk) ☎️ 01733830440 ✉️ [info@flowatch.co.uk](mailto:info@flowatch.co.uk)



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# From the sprinkler head

A ROUND-UP OF NEWS FROM  
BAFSA & ITS MEMBERS

## Highly compact pump initiation boards

After some trials, testing and general playing around, Sale Engineering believes it has come up with one of – if not the – smallest ‘plug-and-play’ pump initiation boards suitable mainly for wet riser applications.

The new boards are based on the same principles as previous ones...

- Bailey & Mackey LPCB-approved pressure switches
- Ball valves for isolation and test (test valve include restricted orifice for fine control)
- Bypass, with check valve on pump switch bypass, and orifice on jockey bypass
- Open CPVC drain as standard, or optional full galvanised drain and/or inlet
- Totally corrosion-free polypropylene mounting board
- All pipework painted in our trademark silver hammer for better protection (and unbeatable looks!)

But the size is now considerably reduced! The 3-way board shrinking from W600xH750mm to just W560xH500mm – a massive 40% reduction in wall-space!

As well as continuing to look pretty good, the size makes handling and mounting much easier, and the reduction in materials, labour and shipping costs enables us to price this new compact board at the pre-increase price of the older, larger model.

SALE ENGINEERING  
Firesprinkler.co.uk



## The perfect solution for luxury Safari Lodges

Leading tourist attraction West Midland Safari Park has increased fire protection for its visitors with the installation of a water mist suppression system

The Safari Park has created new exclusive accommodation overlooking the Park’s cheetahs, red pandas, and African elephants, designed to give guests an unforgettable, overnight wildlife experience.

The themed lodges have been built with thatched roofs and a large, open-plan living area as well as a downstairs and upstairs bedrooms. The layout and construction of the lodges meant the installation of traditional fire suppression systems, such as sprinklers, was impractical.

To provide protection for its visitors, West Midland Safari Park approached approved Automist installer BCK Fire Sprinklers to discuss the specification.

Yusuf Muhammad of Plumis said: “This project had some very specific requirements. With each room in the lodge connecting to the main living area, the Safari Park needed a system that would provide adequate protection to the lodges’ means of escape in the event of a fire. In addition, it could have been difficult to install the necessary water supply within the wooden prefab structure.”

Plumis’ water mist fire suppression system, Automist, was designed to be easily retrofitted. Utilising 90 per cent less water than a BS 9251 sprinkler system, the systems are directly connected to the mains water supply.

Automist is a dry pipe system, with the system remaining free from water until a fire is detected. This minimises the risk of leaking pipes.

When activated, a pump drives mains water through the unique wall-mounted nozzle unit, targeting the fire with a dense fog of watermist. This removes heat and displaces oxygen from the fire zone, resulting in fire control, suppression, or extinguishment. Automist’s tests suggest that their system can actuate more quickly than a domestic sprinkler system,

After considering the fire safety solutions available it was agreed with the Park’s fire safety officers that Plumis’ water mist fire suppression system could be installed sensitively and quickly, whilst also providing suitable protection to overnight guests.

To date, BCK has carried out eight installations across West Midland Safari Park’s lodges – taking just two days each – with plans to carry out more installations in the coming months.

Neil James, Project Manager at West Midland Safari Park, said: “The safety of our guests is of upmost importance. Finding a solution which was effective and in keeping with our unique themed design was no easy feat. We are pleased with the final result and delighted to be working with BCK on the next phase of our accommodation development.”

PLUMIS  
Plumis.com



## Groundbreaking regeneration project

Wembley Park is the first to install Project Fire's newly developed CPVC flow-switch testing device for residential sprinkler systems.

The project in North West London covers a colossal 85 acres and includes the SSE Arena Wembley, 7,000 new homes, 8,640 new jobs, 7 acres of parkland and communal sky gardens. The residential spaces are designed to be multi-purpose where living, working, playing and entertainment are part and parcel of the urban community. The newly built high-rise complexes have been purposeful designed to enhance social value, creating a vibrant, sustainable and social neighbourhood.

110 of Project Fire's residential Zonechecks, a compact CPVC flow-switch testing device, were installed across E03 and E05 residential areas. E03, or Canada Gardens, includes 750 new homes, 25% of which are affordable housing. The complex is home to the tallest building in Wembley Park, which includes a super lobby, communal residential lounge and rooftop garden, where residents can enjoy allotments and play areas for children. E05 has 458 new build apartments with 25% specifically built for families, the largest number in Wembley Park. The project includes coffee bars, sofa areas, shared kitchens, dining areas, work pods and sun terraces.

All buildings within E03 and E05 are connected via ground level communal gardens and employment spaces. Shared areas and multi-purpose residential buildings are part of the wider Wembley regeneration master plan to create inclusive and close-knit communities across Wembley Park.

J&J Fire Engineering have an impressive resume of working on projects with a strong focus on sustainability, most notably their recent work on IKEA's Greenwich BREEAM 'Outstanding' store, and their part in the Wembley Park regeneration is no different.

The mixed-use developments in E03 and E05 include wet and dry risers, water supplies, commercial sprinkler and ordinary hazard systems as well as residential sprinklers. The 110 residential Zonechecks are installed throughout the risers to enable remote flow-switch testing on each floor with no disruption to tenants.

PROJECT FIRE  
Projectfireproducts.co.uk

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- Compact and simple installation.

Flow Rate (l/min)	Flow Rate (USPM)					
100	100	100	100	100	100	100
200	200	200	200	200	200	200
300	300	300	300	300	300	300
400	400	400	400	400	400	400
500	500	500	500	500	500	500
600	600	600	600	600	600	600
700	700	700	700	700	700	700
800	800	800	800	800	800	800
900	900	900	900	900	900	900
1000	1000	1000	1000	1000	1000	1000

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# From the sprinkler head

A ROUND-UP OF NEWS FROM  
BAFSA & ITS MEMBERS

## Extended FM Approval

Following a rigorous certification process, Marioff HI-FOG® high pressure water mist fire protection system with an electric pump unit has received an extended FM Approval to provide fire protection for combustion turbines and machinery with enclosures up to 2300m<sup>3</sup>. The approval nearly doubles the amount of space Marioff's flexible fire protection solution can cover and gives the HI-FOG system added flexibility and makes it suitable for different types of turbine models and their configurations, as the spray heads can be installed both on the ceiling and at the midpoint of the turbine.

Marioff's previous FM Approval for combustion turbines and machinery, dated 2013, is for 1375m<sup>3</sup> spaces. The extended FM Approval means a HI-FOG system can now be used to protect a wider range of heavy-duty gas turbines and large machinery spaces in enclosures that are almost a thousand cubic metres larger. The extended FM Approval also provides more flexible system installation



criteria, as it allows to change the place of spray heads flexibly around obstacles without adding extra spray heads. Previously, obstructions like piping or walking platforms meant adding more spray heads – and more water.

The FM Approved HI-FOG system may also be installed in existing enclosures with gas turbines, oil tanks, electrical transformers and machinery, as well as greenfield projects.

MARIOFF  
marioff.com

## New initiative to raise awareness

Fire Risk: It's Not Just About the Building is a sector-wide initiative from Plumis highlighting what housing providers can do to tackle changing fire safety challenges, whilst also future-proofing their homes to ensure residents are adequately protected.

The initiative serves as a reminder that, although recent failures in building and fire safety practices have rightly taken centre stage, fire safety is not just about the construction and fabric of a building.

Plumis has created seven risk profiles to demonstrate the personas of vulnerable individuals who may need further preventative solutions in place. These profiles highlight some of the most common causes of fires, such as electrical goods and smoking materials, as well as some of the individual

needs that may prevent someone escaping easily in the event of a fire. This is particularly important as the most common cause of death for fire-related fatalities, where the cause of death is known, is 'being overcome by gas or smoke.'

To truly mitigate fire safety risks and save lives, Plumis' initiative argues that housing providers must consider the needs of individuals and recognise that one resident may need a completely different approach to another.

The aim of It's Not Just About the Building is to make sure this is more widely known and understood throughout the housing sector. The more informed fire safety decisions are made, the greater the chance lives will be saved – it's as simple as that."



## Rapid Install Sprinklers

Johnson Controls has released two new Tyco early-suppression, fast-response (ESFR) Rapid Install Sprinklers (RIS) for protection of warehouse and storage facilities. The Model ESFR-22 and Model ESFR-25 pendent sprinklers, and their accompanying custom welded outlet fitting, simplify installation for fire protection contractors by featuring pre-installed rubber gaskets and a thread connection that can be installed by hand with no need for tools, tape or sealant.

The ESFR-22 RIS (22.4 K-factor) and ESFR-25 RIS (25.2 K-factor) both provide warehouse design flexibility by eliminating the use of in-rack sprinklers when protecting high-piled storage. The ESFR-22 RIS and ESFR-25 RIS are cULus Listed and FM Approved for specific applications with a maximum storage height of 43 feet (13.1 m) and a maximum ceiling height of 48 feet (14.6 m) without the requirement for in-rack sprinklers. Both sprinklers permit the use of a maximum deflector-to-ceiling distance of 18 inches (460 mm), compared to 14 inches (356 mm) distance for ESFR sprinklers with K-factors of 14.0 and 16.8.

The sprinklers are designed to operate at substantially lower-end head pressures, which offers flexibility for contractors when sizing system piping, as well as possibly reducing or eliminating the need for a system pump.

Tyco ESFR Rapid Install Sprinklers are ideal for ceiling-only sprinkler protection of warehouses and storage facilities containing plastics (in accordance with NFPA 13 and FM Global standards), and some storage arrangements of rubber tyres, roll paper, flammable liquids, aerosols and automotive components.

JOHNSON CONTROLS  
tycofpp.com/esfr-ris



## Brand portfolio extended

Rapidrop Global Ltd have announced that FloWatch Limited is now part of the Rapidrop group of companies, joining the existing brands of Rapidrop and IFI.

“Rapidrop have been working with FloWatch since 2019, during this time we have been well aware of the capabilities of the FloWatch product and the team behind it. The FloWatch product has considerable growth opportunities both within the fire industry and outside of the fire industry and so the directors of Rapidrop Global Limited were very excited by the potential for the FloWatch product to increase Rapidrop’s market share and to also bring technical solutions to their existing customer base plus providing the opportunity to develop new markets.”

Together with FloWatch, Rapidrop Global Ltd are excited to support the further development of monitoring products in wider industries. Any questions regarding the recent acquisition of FloWatch can be directed to Jake.Walker@rapidrop.com”



## Unique fusion welding

After the launch of Aquatherm Red SDR11 into the UK market, Domestic Sprinklers were the first company to embrace the new alternative to traditional sprinkler pipe systems.

Ben Shereston and his team at Domestic will be installing Aquatherm Red Pipe in 10-15 care homes across Cornwall and, after receiving free training on the fusion method, started in October by taking their first delivery of pipe and fittings.

Ben said, “Due to the unique way Aquatherm is fusion welded together, we felt this was the perfect product for the client as there are no VOC solvents needed, which is a great benefit when working in a live nursing home”.

The team were also impressed with the unique saddle weld system, allowing them to drill into the pipe and add heads in directly after the main runs have been installed, meaning they only had to do one join instead of three as they would for a tee.

The main advantage for Ben, however, was the quick fusion times, “Aquatherm can be put back into service within minutes, not hours like solvent joints, meaning minimum downtimes”.

Aquatherm  
Aquatherm-uk.com

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# From the sprinkler head

A ROUND-UP OF NEWS FROM  
BAFSA & ITS MEMBERS

## Cyber Risk – what’s all the fuss about?

**CYBER-ATTACKS ARE HITTING THE HEADLINES ALMOST DAILY. BUT WHAT DO WE MEAN BY CYBER RISK? HOW ARE WE ALL AT RISK? WHAT CAN BE DONE ABOUT IT? WHAT DOES CYBER INSURANCE DO? WE’VE ASKED CYBER RISK SPECIALIST MATT CLARK RISK MANAGEMENT PARTNER WITH BAFSA MEMBER PARTNERS& LTD TO HELP US GET TO THE BOTTOM OF IT.**

CYBER RISK IS ONE of the most talked about topics in business and the media. Advances in technology have provided us with unparalleled levels of convenience in our business and personal lives, from electronic banking to email, and remotely-controlled hardware to social media, transactional websites and pay-per-view streaming platforms. But as with any new technology, the criminal underworld has been busy exploiting this new landscape.

It’s now far easier and more lucrative for criminals to ply their trade digitally rather than physically. Cyber-attacks are the ‘modern crime’ and business insurance has had to evolve to protect against this new threat.

Traditional insurance is focused on physical assets like protecting buildings, machinery and equipment from fire, flood, theft and other perils. Cyber insurance is now required to protect against the new risks of data loss/theft, network and computer damage, cyber extortion and electronic fraud.

### IS MY FIRM AT RISK?

Research conducted by Forbes in 2019 shows that SMEs are far more likely to suffer loss due to cyber-attacks than they are to suffer loss from fire, flood and all physical perils combined. The UK government’s Cyber Security Breaches Survey 2020 highlights that almost half of businesses (46%) and a quarter of charities (26%) report having cyber security breaches or attacks in the last 12 months. No business is immune from cyber assault and the liability, unexpected costs, reputational damage and regulatory action that follows it.

### HOW CAN I PROTECT MY FIRM FROM CYBER RISK?

Implementing appropriate risk management controls is a must. We examine 6 simple steps you can take to become more resilient to cyber threats.

1. Cyber risk awareness training for your staff is a great place to start. Research consistently shows that human error is a common factor in cyber-attacks. Education and awareness will turn your staff into your first line of defence.
2. It’s also important to ensure you have up to date firewall and malware protection to block malicious emails and malware.
3. A strong password policy will prevent easily-guessed passwords and locks accounts after failed access attempts.
4. Secure configuration will limit system functionality to the minimum needed for business operation (e.g. does your receptionist really need to access all of your software systems?)
5. Encrypt devices and adopt Multi Factor Authentication on email accounts. Use of a VPN provides secure remote access to your systems for remote workers.

6. Cyber Essentials is a UK government-backed programme of cyber security accreditation. Achieving Cyber Essentials certification demonstrates your commitment to excellent cyber security and is often a requirement of public sector contracts.

### HOW DOES CYBER INSURANCE WORK?

Imagine you’ve just suffered a cyber-attack. You’ve come into work to find your entire workforce are locked out of your computer system due to a ransomware attack, or cyber criminals have stolen your customer data. Perhaps you’ve been victim of a phishing scam and the criminals have sent your customers fake invoices to defraud clients.

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You report the cyber-attack to your insurers, using the dedicated 24/7 cyber helpline, or breach response app that comes as standard with your policy. This connects you with your very own breach response manager who helps you to plan your response to the attack.

The insurers appoint experts from their response panel to support you:

- the insurer’s IT Forensics team helps you to discover how the cyber criminals gained access, what information they had access to and what they did with it. They then help you to recover data from back-ups or recreate lost or damaged data.
- an extortion negotiator is appointed by insurers to deal with the ransomware attackers. If necessary, the insurance can even pay the ransom if it means avoiding costlier losses being incurred later on.
- Insurers pay to rebuild any hardware damaged in the attack.
- Insurers pay your lost revenue and increased costs incurred following the attack.
- Public Relations consultants are appointed to help you manage communications with your customers and the press.
- Insurers pick up the costs of expert data privacy lawyers who help you deal with the Information Commissioner (the law requires you to report the breach to the regulator within 72 hours)
- Insurers pay to defend you against law suits from data subjects whose information was stolen or breached, or from customers who sue you for breaching confidentiality.

Cyber insurance provides invaluable protection against unforeseen costs, an ‘always-on’ breach response service, and protects your bottom line and business reputation should the worst happen.



Golfers representing England and Scotland Fire & Rescue Services battling for supremacy during the first leg of the BAFSA sponsored golf match. The return match will be held over the border in England when Scotland will be hoping to even up the score.



## BAFSA co-sponsors Business Fire Safety Seminar

On Wednesday 15th September, Tyne and Wear Fire and Rescue service hosted a business fire safety seminar. Approximately 100 delegates attended the event, representing housing providers, local authority building control, environmental health, hospital trusts and many Fire Services from across the UK.

The day was focussed around the introduction of new fire safety legislation, and the Grenfell Tower Inquiry recommendations. There were guest speakers from the National fire Chiefs Council, Tyne and Wear Fire and Rescue Service, Twinnedit and Danny Doherty from BAFSA.

The audience were engaged in a range of discussions around the impact of the introduction of new legislation, how to identify the makeup of external wall systems in tall buildings, technology available to assist with any evacuation of a building and the many benefits in having sprinklers installed.

Each session was interactive, which enabled good engagement with the audience and allowed learning and improvement to be shared. The day also reinforced that through joint working, organisations can increase their reach, scale and impact they have on their local communities.



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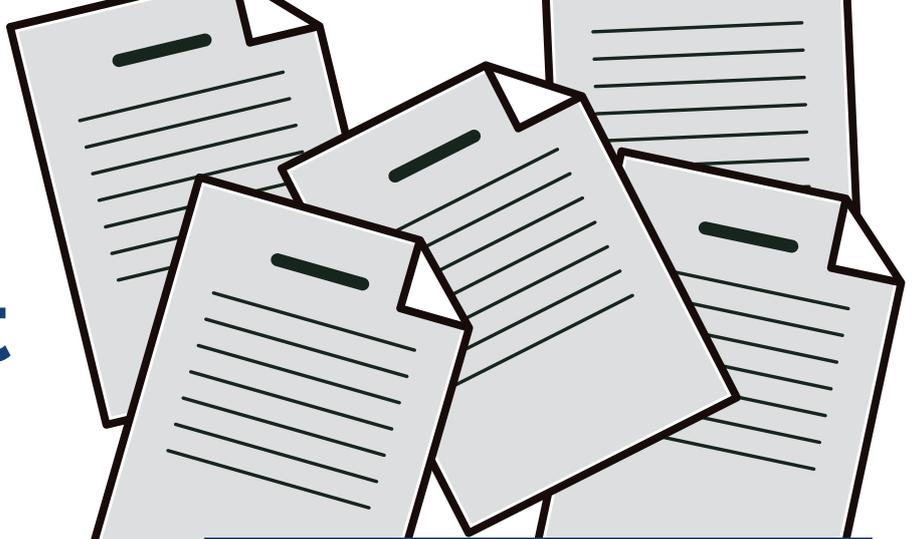
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# Significant number of changes & revisions



Access to all FM data sheets is available at no cost via: [https://www.fmglobal.com/research-and-resources/fm-global-data-sheets?utm\\_source=data\\_sheets&utm\\_medium=email&utm\\_campaign=202102\\_data\\_sheets](https://www.fmglobal.com/research-and-resources/fm-global-data-sheets?utm_source=data_sheets&utm_medium=email&utm_campaign=202102_data_sheets)

FM have announced a significant number of changes and revisions to some of the fire-protection related datasheets. Possibly the most significant of these for the UK sprinkler industry is the fully revised DS2-0 Installation Guidelines for Automatic Sprinklers. Other revisions cover corrosion in sprinkler systems, system testing and maintenance, pumps and flow and pressure regulating devices. The publication of DS4-13 covering oxygen reduction systems for the first time is also worth noting. There are also significant changes to DS4-2 covering water mist systems with some items of significance in the revision including FM Approved systems and changes to acceptable water supplies. A number of the changes have to do with new protocols in respect of the storage of Lithium-ion batteries.

## DS2-0 INSTALLATION GUIDELINES FOR AUTOMATIC SPRINKLERS

- Full revision. Significant changes include the following:
- Incorporated the sprinkler installation recommendations from Data Sheet 8-29, Refrigerated Storage.
  - Incorporated most of the sprinkler and water spray protection recommendations from Data Sheet 1-23, Fire Barriers and Protection of Openings.
  - Reorganized this data sheet to better reflect the way a sprinkler contractor would determine the installation of a sprinkler system.
  - Updated the guidance for obstructed ceiling construction based on recent testing.
  - Updated the guidance for ceiling based on recent testing.
  - Updated the guidance for objects below a sprinkler that could result in sprinkler discharge obstruction based on recent testing.
  - Revised the guidance on hanging and bracing sprinkler pipe.
  - Removed the terms “inner core discharge pattern” and “umbrella discharge pattern” from this data sheet.
  - Added a new flowchart to help the user navigate to the appropriate sections of this data sheet.
  - Supersedes public EB 08-05, Use of Smoke Detection to Activate a Refrigerated Area Sprinkler System and EB 02-11, High-Volume Low-Speed (HVLS) Fan and Sprinkler Performance

## DS 4-13 OXYGEN REDUCTION SYSTEMS

First publication of new data sheet

DS 2-1	Corrosion in Automatic Sprinkler Systems	Interim revision. Minor changes made to Section 2.2.1.4 to align with Data Sheet 2-0, Installation Guidelines for Automatic Sprinklers.
DS 2-81	Fire Protection System Inspection, Testing and Maintenance	Interim revision. Made changes to Table 2a, ITM Activities Applicable to All Types of Sprinkler Systems, and Table 2c, Dry, Preaction, Vacuum, Refrigerated Area, Deluge, and Fixed-Water Spray Sprinkler Systems, to align with Data Sheet 2-0, Installation Guidelines for Automatic Sprinklers. Made clarification to Table 6, Fire Service Mains
DS 3-4	Embankment-Supported Fabric Tanks	Interim revision. Revised operation and maintenance recommendations in Section 2.2 to align with the July 2021 revision of Data Sheet 2-81, Fire Protection System Inspection, Testing and Maintenance.
DS 3-6	Lined Earth Reservoirs for Fire Protection	Interim revision. Revised operation and maintenance recommendations in Section 2.2 to align with the July 2021 revision of Data Sheet 2-81, Fire Protection System Inspection, Testing and Maintenance.
DS 3-7	Fire Protection Pumps	Interim revision. Significant changes include the following: Added new guidance for use of multiple fire pumps running simultaneously at reduced capacity to provide the total water supply for a fire protection system. Aligned this document with Data Sheet 3-11, Flow and Pressure Regulating Devices for Fire Protection Service. Updated inspection, testing and maintenance guidance to align with Data Sheet 2-81 Fire Protection System Inspection, Testing and Maintenance. Updated guidance on power supplies for electric drivers of fire pumps. Update feeder cable guidance to ensure consistency with Data Sheet 5-31, Cables and Bus Bars. Aligned water supply reliability to ensure consistency with Data Sheet 3-29, Reliability of Fire Protection Water Supplies. Developed appendix material to improve use of Form 105, Pump Acceptance Test Data.
DS 3-11	Flow and Pressure Regulating Devices for Fire Protection Service	Completely revised. Significant changes include the following: Changed the title of the data sheet to “Flow and Pressure Regulating Devices for Fire Protection Service.” Revised the scope to clarify the hazards covered. Revised guidance for the installation and construction of pressure reducing valves. Revised inspection, testing, and maintenance guidelines for pressure reducing valves.

DS 3-26	Fire Protection for Non-storage Occupancies	Interim revision. Significant changes include the following: Incorporated guidance from Data Sheet 2-5, Installation Guidelines for Automatic Sprinklers in Residential Occupancies. Clarified acceptable storage arrangements for incidental and low-pile storage (Sections 2.3.2, 2.3.3, 3.3.3, 3.3.4, and Appendix A). Added lithium-ion battery protection guidance (Sections 2.3.2.5 and 2.3.3.2) and clarified that battery manufacturing in Table C-1 includes lithium-ion batteries. Added water mist protection guidance for HC-2 and HC-3 occupancies (Section 2.3.5). Added protection guidance for high-density movable shelving (Section 2.3.7). Clarified when to adjust hazard category for theaters (Table C-1). Changed hazard category and description of car workshops to HC-3 with the description updated to car manufacturing/assembly (Table C-2). Added protection guidance for desalination plants (Table C-2 and Section 3.3). Added the removal of Table 4 to the changes in Appendix B, April 2019 revision.
DS 4-2	Water Mist Systems	Interim revision. The following significant changes were made: Revised Section 1.1, Hazards, to identify new categories for which water mist systems can provide primary and supplementary protection. Revised Section 2.4, Protection, to identify water mist systems that are FM Approved for specific applications. Revised Section 2.5.1, Water Supply, to clarify the criteria for an acceptable water supply to be used with a water mist system. Added new Section 2.4.3.6, Preaction Systems, to clarify that, for a single interlock preaction high pressure water mist system, smoke detection is allowable if the water delivery time is met. Revised Section 2.5.8.6, Water Supply, to allow the use of the following in low-pressure water mist systems.
DS 5-48	Automatic Fire Detection	Interim revision. Provided a new Section 2.2.7 to cover wet and dry pilot sprinkler systems used to activate water spray systems.
DS 7-77	Testing of Engines and Accessory Equipment	Interim revision. The following significant changes were made: Revised scope to clarify which fuels are covered by this data sheet. Made minor changes to be consistent with Data Sheet 7-32, Ignitable Liquid Operations. Added FM Approved water mist systems as an enclosure protection option.
DS 7-101	Fire Protection for Steam Turbines and Electric Generators	Interim revision. The following significant changes were made: Updated cable fire protection to associate fire protection rating with safe shutdown time. Added recommendations for oil-conditioning skids.
DS 13-3	Steam Turbines	Interim revision. Minor editorial changes were made.
DS 13-17	Gas Turbines	Interim revision. Minor editorial changes were made.
NOW OBSOLETE		
DS 2-5	Installation Guidelines for Automatic Sprinklers in Residential Occupancies	Made obsolete. Incorporated into Data Sheet 3-26, Fire Protection for Non-storage Occupancies
DS 8-29	Refrigerated Storage	Made obsolete. Incorporated into Data Sheet 2-0, Installation Guidelines for Automatic Sprinklers



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# Water mist systems for protection of buildings

**DESPITE THE RESEMBLANCE WITH SPRINKLER SYSTEMS, WATER MIST WORKS IN A SIGNIFICANTLY DIFFERENT WAY FROM SPRINKLER SYSTEMS.**

## INTRODUCTION

Water mist removes heat and dilutes oxygen elements of the triangle. It achieves this by dispersing water through specially designed nozzles at low or high pressure. Generally, as system pressure increases, the water droplet size decreases. This, in turn, significantly increases the total surface area of water and so leads to production of a greater volume of steam, removing more energy from the fire which generates the steam.

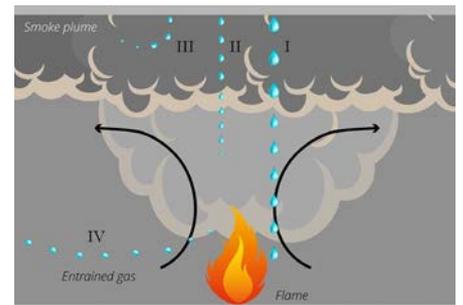
The smaller a water droplet size is, the larger the surface area becomes and the more effective the system becomes in rapidly reducing the temperature and oxygen concentration at the flame front of a fire. This is because the heat absorption capability of water mist is greater than any other water-based suppression system. To put it another way, when water is converted to steam – which is what happens to the water droplets in water mist – then quite a lot of energy is taken from the fire which has initiated the water mist discharge. This reduces the strength of the fire.

Another consequence is that the droplets also act as a barrier to the radiant heat from the fire.

Most importantly, water mist requires the small droplets to reach the base of the fire so that it can be effective at suppression by cooling and suffocating and not primarily by wetting (wetting is a secondary mechanism), which is the case with large droplet systems (such as sprinklers which mainly rely on gravity). Water mist therefore relies heavily on the principle that while hot, less dense air rises, cooler air is being drawn to the fire's base.

Water mist systems are designed so that this can take place in several ways, non-exclusive examples as follows:

- Directional nozzles at the fire load from the top and/or sides to address the risk locally
- Nozzles placed closer to the base of the fire so that water mist is dragged to the flame front
- Deploying the mist in an enclosed compartment so that water mist entrains the fire gases, expands and suffocates the fire.



Nozzle design is also governed by the type of fire risk they are installed to protect and this varies greatly on whether the nozzle is designed to control, suppress or extinguish the fire. The intended application will also inform the nozzle location which may be ceiling, wall or even floor mounted.

## APPLICATIONS

Where its use is appropriate, water mist can have a number of highly attractive features when compared to more widely used sprinkler systems including using reduced water storage and smaller diameter pipework. Significantly reduced water damage, post fire, may also be a benefit too.

Water mist should only be specified because of its suitability for the intended application when compared to other systems – not because of any claimed cost advantage.

Water mist technology is sometimes said to be 'closed protocol' (to adopt a term used of fire detection systems). This means that, unlike sprinklers, water mist manufacturers will supply

proprietary nozzles, piping and pump designs for the specified applications, while sprinklers can use heads from any manufacturer with the confidence that these will perform in exactly the same way. The benefit for the sprinkler system is interoperability from different suppliers, the benefit for water mist is the design of a solution which, when correctly specified and installed, is optimised for that application.

Consequently, water mist systems can vary significantly in the way that mist is discharged depending on the application. For this reason, mist is considered “application specific” in that a domestic system will use significantly different designs than one used for protecting machinery. For example, in hangars, the nozzles might be placed on the floors with activation through fire detection systems. It is therefore important to ensure that the evidence provided by manufacturers and installers are specific for the intended application.

This also means that while system performance can be verified in the fire test protocols present in standards such as BS 8458, 8489 and BS EN 14972, the way in which systems are installed is prescribed by the system or nozzle manufacturer, not by the standards. The manufacturers’ requirements are defined in a Design, Installation, Operation and Maintenance manual and is a key document for stakeholders to reference, whether it is the installer or the AHJ, checking the installation has been done for its intended purpose and correctly. Water mist should comply with BS 8458, BS 8489 or the BS EN 14972 series.

**UK WATER MIST STANDARDS**

BS 8458 and BS 8489 are the two system standards for water mist in the UK. BS 8458 is for residential and domestic applications using wet pipe systems while BS 8489 is for commercial and industrial systems, irrespective of nozzle type. The recent introduction of the BS EN 14972 series of documents has caused some

**IN THE UK, WATER MIST SYSTEMS SHOULD BE DESIGNED AND INSTALLED IN ACCORDANCE WITH ONE OF THE TWO REFERENCED STANDARDS**



**BS 8458**



**BS 8489**



**BS EN 14972-1**

uncertainty as to which standards should be called up. It is possible that at some future date BS 8458 and BS 8489 may be withdrawn or significantly amended. Until then, they work as alternative guidance, in much the same way that BS 9251 is used alongside BS EN 12845 for sprinklers. Water mist standards tend to be less prescriptive and more performance based than sprinkler standards to accommodate the many proprietary designs.

The standards have the following objectives:

**1. Define the adequate application of water mist.**

The table below, from BS 8489 shows examples of occupancies where water mist can be specified. Each occupancy then defines the fire test protocol to which the system should be tested. The publication of BS EN 14972-1 has added several new test protocols, but many of these are not yet published. BAFSA’s advice as at October 2021 is to continue to use BS 8458 and B489 until the situation becomes clearer.

Table 1 Occupancies and acceptable fire test protocols for an automatic watermist system<sup>A1</sup>

Occupancy	Description of occupancy	Exceptions	Fire test protocol
Apartments (where BS 8458 cannot be complied with or is not appropriate)	Lightly loaded non-storage and non-manufacturing areas with ordinary combustibles	Mat stores	BS 8489-7 FM 5560:2016, Appendix G
Churches			
Concealed spaces			
Gymnasiums			
Hotel bed rooms and their access (only)	Expect fire with relatively low rates of heat release in these occupancies		
Local lending libraries			
Residential or nursing or convalescent homes where BS 8458 cannot be complied with or is not appropriate			
Offices			
Restaurant seating areas			
Schools and university classrooms			
Unused attics in low hazard premises containing no combustible contents or stored materials and no electrical or mechanical services other than lighting			

*NOTE The listed test protocols are applicable with the following limited parameters.*

- BS 8489-7 covers Category 1, 2 and 3 systems for:
  - fire loads ≤ 500 MJ/m<sup>2</sup> (covered in Category 3 only);
  - ceiling heights ≤ tested height up to 5 m;
  - floor area = restricted and unrestricted;
- FM 5560:2016, Appendix G covers:
  - fire loads ≤ 150 MJ/m<sup>2</sup>;
  - ceiling heights ≤ tested height up to 5 m;
  - floor area = restricted and unrestricted.

<sup>A1</sup> Specific areas within buildings can be protected by watermist where relevant fire test protocols exist.

**2. Fire test Protocols**

Annex C of BS-8458 and Parts 4, 5, 6 and 7 of BS 8489 details the fire test protocols for water mist systems for their specific applications: flammable liquid fires, combustion turbines and machinery spaces, industrial oil cookers and low hazard occupancies, respectively. If there is no test protocol for the intended use then this are not covered by the best practices adopted in the UK. These may rely on other standards such as FM 5560 and stakeholders, such as insurers and AHJs, must be consulted on its use beforehand given these are deviations from UK common practice.

TEST PROTOCOL	OCCUPANCY/APPLICATION	OBSERVATIONS
BS 8458	Residential and domestic premises	As defined stated in Table 1
BS 8489-4	Local applications involving flammable liquid	
BS 8489-5	Protection of combustion turbines and machinery spaces up to 80m <sup>3</sup>	See also FM 5560-A/B
BS 8489-6	Industrial oil cookers	See also FM 5560-J
BS 8489-7	Low hazard occupancies	As defined in BS 8489-1 from Category I – III and limited by table 1 and associated notes

**3. Water supply resilience, actuation and detection methods and components**

Both BS 8458 and BS 8489 provide recommendation on key performance parameters to ensure systems will perform in the field as they have performed in the fire test protocols, for example: ‘The minimum flow and pressure required for a successful fire test should be met or exceeded by all the nozzles in any area of operation, e.g. if the fire test is passed using a constant pressure source then the use of a decaying pressure source is not permissible.’

The need for hydraulic calculations, for resilience of water and electrical supply are also detailed in these standards.



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#### 4. Design, installation, commissioning and maintenance

Instructions for the design and installation of water mist systems are specified in the manufacturer’s DIOM (as the standards state), however, the standard recommends the parameters that should be specified in the DIOM, such as nozzle spacing and AMAO, and how these must match those that have been fire tested. These are useful for stakeholders to use as a basis to verify that a product has clear and thorough specifications and to verify the installation has been carried out correctly, according to the DIOM.

##### TYPES OF MIST SYSTEMS

Water mist systems come in a wide variety of types. This is a non-exclusive example of some of the common system types by pressure to show how lower pressure, higher flow systems differ from lower flow, higher pressure systems.

In the UK, traditionally it has been the LPCB which has tested, certificated and listed active fire system components. In the water mist section of RedBookLive there is a strong caveat printed in bold which relates to the approval of individual components – ‘Water mist component approval does not mean LPCB water mist system approval’.

##### INSTALLING RESIDENTIAL AND DOMESTIC SYSTEMS IN WALES AND SCOTLAND

Since September 2021 the installation of residential wet pipe water mist systems (as an alternative to sprinklers) in premises in Wales which are mandated by Regulation 37A of Building Regulations and the Domestic Fire Safety (Wales) Measure 2011 must comply with the Welsh Government guidance document<sup>1</sup>. BAFSA understand that the guidance has also been adopted by Scottish Building Standards.

View BIF 9 online here: <https://bit.ly/3cr9y2G>

1. <https://gov.wales/sites/default/files/publications/2021-08/guidance-automatic-water-mist-systems-for-domestic-and-residential-premises.pdf>

	LOW PRESSURE	HIGH PRESSURE
Pressure	Typically 5-12 bar	Typically not less than 35bar up to 200 bar
Pipework	(Typically 20-65 mm): Stainless steel, copper, approved CPVC. Corrosion and fire resistant	Smaller bore, higher wall thickness. Typically stainless, 12mm – 30mm. Corrosion and fire resistant
Water & pressure supply	Normally use stored water and electric pumps due to higher flow	Can be stored water (tanks) or mains supply. High-pressure pumps or high-pressure cylinders
Maintenance	As per DIOM and BS EN 14972 or BS 8458/8489, whichever is the most onerous. Smaller orifices may require checks of nozzles and strainers to ensure these are not blocked. Nozzles to be sample tested after five years.	As per DIOM and BS EN 14972 or BS 8458/8489, whichever is the most onerous. Much smaller orifices typically require checks of nozzles and strainers to ensure these are not blocked. Cylinder-based systems require 10 year pressure test. Nozzles to be sample tested after five years.
Fire service inlet	Fire service may be able to supplement stored water supply by pumping-in subject to availability of connections	Fire service may be able to supplement stored water for tank systems provided filters are in place
Shared water supply	Can share water supply with other water-based fire protection system	If as a cylinder system, cannot share existing water supplies with other water-based fire protection
Density	Typical water flux density 2 – 3.5 lpm/m <sup>3</sup>	Typical water flux density 1 – 2 lpm/ m <sup>3</sup>
Dry or wet pipes	Typically wet systems only	Most systems are wet but deluge systems and some innovative systems are dry.

	NOZZLE	PUMP	CONTROLLER	SYSTEMS	INSTALLER
UK National Standards	BS 8663-1	Not published	Not published	BS 8458 BS 8489 Series BS EN 14972 Series	BS 8458 BS 8489 Series BS EN 14972 Series
UK Certification Standards	BS 8663-1 LPCB Schedule of requirements, SD0231 Appendix 4.	Not published	Not published	LPS 1283 (Commercial low hazard) LPS 1285 (Domestic and residential)	LPCB will certify installers against the published LPS standards
UK Residential certification	Five manufacturers have certificated nozzles	None yet	None yet	None yet	FIRAS: 7 IFCC: 5 LPCB None (as at Oct 2021)
Other standards	EN 17450-2 (In progress) UL 2167 EN 12259-1 is the standard for sprinkler heads and deluge nozzles and is sometimes quoted	EN 17451 and EN 122259-12 UL 448	EN 17450-4 (In progress) UL 218	FM 5560 Water mist systems FM 5580 Hybrid water and inert gas systems	

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# Technical questions & answers

**Not a day goes past without the BAFSA Technical team, Joe McCafferty and Ian Gough, responding to questions regarding sprinklers and water mist applications, standards and design. We could fill a whole magazine with them but instead publish some of the more interesting and obscure ones.**

**?** We are third party accredited residential sprinkler installers. We are hoping to start to install commercial jobs to BS EN 12845. I have past commercial design experience and I have done approved training for installation, design and FHC using FHC software for residential systems. I'm wondering what qualifications I need in order to start designing/installing projects? Any information would be greatly appreciated.

## ANSWER

To design/install/maintain commercial sprinkler systems (BS EN 12845, LPC Rules etc.) you and your installation/maintenance staff need to be competent in each process. Training for the various design disciplines is critical and designers can sit Designer competence examinations. For installation/maintenance the company should become accredited by organisations like FIRAS or LPCB which have commercial sprinkler system accreditation schemes. If you go to their websites or call them, you should be able to find all you need to get started. Note: this is not an 'overnight' process and you must be prepared for many hours of data/document preparation and have suitable sites for the auditors to visit and make their assessments of your competency.

**?** Do sprinkler heads installed to BS9251 have to have third party approval? Are there any sprinkler heads approved by LPCB or others that comply with the requirements of BS 9251.

## ANSWER

BS 9251 Clause 5.9.1 does state that sprinkler heads should conform to BS EN 12259-14, but gives a bit of leeway i.e., or 'another residential head standard', if the approval standard is acceptable to the AHJ! You can check on sites like Redbook Live (and/or other approval sites) for a list of sprinkler heads that have third party approval to BS EN 12259-14

**?** Is there any special requirement for the lettering that identifies where a Dry Riser is installed and can the lettering be recessed in a stone facade.

## ANSWER

BS 9990 Clause 8.1 gives details of identification lettering for Dry Risers and there is no mention of recessing the lettering. The lettering should be clear and visible to the FRS in a prominent location and of the dimensions stated in BS 9990.

**?** I am trying to understand why our Category 2, 50m residential block has been reclassified by a Fire Report as a Category 3 sprinkler system. BS 9251:2014 says its only Category 2.

**ANSWER**

BS 9251: 2014 does state that blocks of flats over 18m is Category 2 in Table 1 BUT It also refers to Subscript d) which is probably why the building has been reclassified as Category 3. Subscript d) states: Where the fire strategy requires the communal rooms and corridors to be sprinkler protected, then the building should be treated as Category 3. Note: this response was prior to the new BS9251:2021 which has a new table and subscripts.

**?** A non-sprinkler contractor was asked to fit wire protective cages on the sprinkler system as they were already working in the area. They asked what the implications of them doing this work without training in sprinkler system maintenance.

**ANSWER**

Sprinkler systems are normally maintained by third party listed sprinkler installers. The sprinkler system's warranty/certification may be invalidated if a non-approved company works on the system. The person working on a sprinkler system should be competent to control the system in a fire emergency. Manufacturers/suppliers may offer training in the installation of their products.

**?** Most new ceiling voids (over 800mm deep) would comply with the limited combustibility requirements in ADB but BS EN 12845 makes no allowance for this. So if there is no combustible elements in the ceiling void what is the value of having a sprinkler system in that space?

**ANSWER**

You are correct that BS EN 12845 does not allow for the omission of sprinklers in concealed spaces over 800mm deep. It does give some non-sprinklered alternatives for spaces less than 800mm deep. Historically these deep voids have required sprinklers. It is interesting to note that in the old 28th edition of the Fire Offices Committee rules stated that the space should be 'effectively protected' and the 'must fit sprinklers' came in the 29th and following rules. I can find no reason for the change of wording but as ceiling voids (regardless of construction or contents) are conduit for extensive and very rapid spread of fire, they have to be treated with the caution they deserve.

**?** We recently had a report that stated the water in our sprinkler storage tank should have a Ph level between 8.3 and 8.5. Is this a regulation and would we have to send water samples to an accredited laboratory for testing?

**ANSWER**

I have not heard anyone raising 'warning flags' about the range of pH levels of water in the UK. The UK Water regulations stipulate that water must be supplied within the pH range of 6.5 to 9.5. (pH 0 is highly acidic, Ph 7 is neutral, Ph 14 is highly Alkali). Pipe corrosion is most caused by: Microbiologically Influenced Corrosion (MIC), water with suspended debris/contamination, Dry sprinkler pipes that have 'puddles' of water left in them when drained causing 'oxidation/scaling'. It is not usual to hear that high corrosion rates are caused by High/Low water pH Levels. The very precise number range mentioned i.e. 8.3 to 8.5 seems very narrow and it would be interesting to find out where it comes from. If the 25-year inspection shows high levels of steel pipe degradation i.e. serious pitting or pinhole leaks then I would look for another reason other than pH levels. If Ph levels were an issue in your city location, we would have heard reports of high pipe corrosion and leaks. Many sprinkler systems in your area have been in service for well over 50 years and no pH level issues. If you wish you could do a sample test with one of the less expensive kits available, but you need only check for a pH level somewhere around the range allowed by UK Water Regulations i.e. 6.5 to 9.5.

**?** Can we fit bird netting under the sprinklers in our loading canopy?

**ANSWER**

Open mesh bird netting is not considered a barrier or interference with the sprinkler system provided: a) It is professionally installed and pulled taught. b) It is not 'gathered' to such an extent that it is bulky and could impede the sprinkler spray. Any bunched-up netting areas should be stretched so they are not an impediment to the sprinkler spray. c) The netting should be regularly checked for any build-up of debris i.e. leaves, plastics, paper etc, and cleaned if necessary. d) None of the netting should be allowed to 'snag' on the sprinkler heads as they may get damaged. e) Ideally the netting should be of a material that does not add to the fire load of the area, I note on internet searches that fire retardant netting is available.

**?** Do we have to install sprinklers in our electrical room?

**ANSWER**

The industrial/commercial sprinkler rules BS EN 12845 expect all areas of a building to be sprinkler protected but does allow non-sprinklered exceptions where other fire prevention measures are in place. Electrical rooms are sometimes a concern for end-users as they worry about the very rare risk of accidental damage or water leaks. Such rooms can be a source of fire and sooner or later water may be used (automatically or manually) to extinguish it. An alternative to sprinklers could be an inert gas extinguishing system. Many of our BAFSA members can supply/install these systems so have a look at our website.

**?** Our old sprinkler system used to have leather straps and padlocks for securing the main stop valves, but we have now been advised by our new insurer that it has to be changed to a metal chain and padlock. Can you enlighten me on why they need to be changed?

**ANSWER**

UK Sprinkler rules (BS EN 12845) states that straps and padlocks are acceptable for securing the stop valves. It was established that your new insurer works to US sprinkler rules and their rules require chains.

**Contact [technical@bafsa.org.uk](mailto:technical@bafsa.org.uk) – the BAFSA Technical team are always there for you.**



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