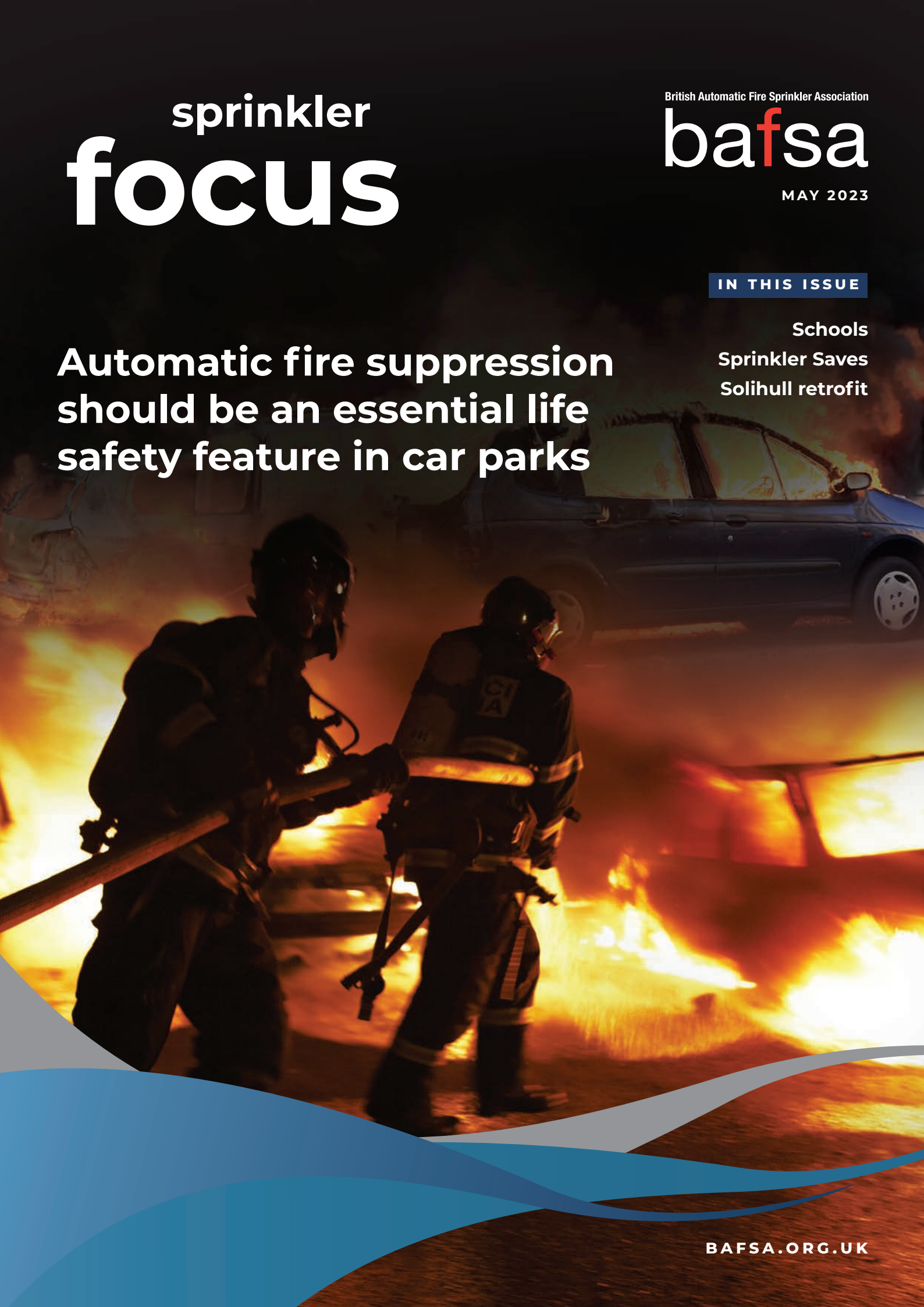
sprinkler focus

British Automatic Fire Sprinkler Association
bafsa
MAY 2023

IN THIS ISSUE

Automatic fire suppression should be an essential life safety feature in car parks



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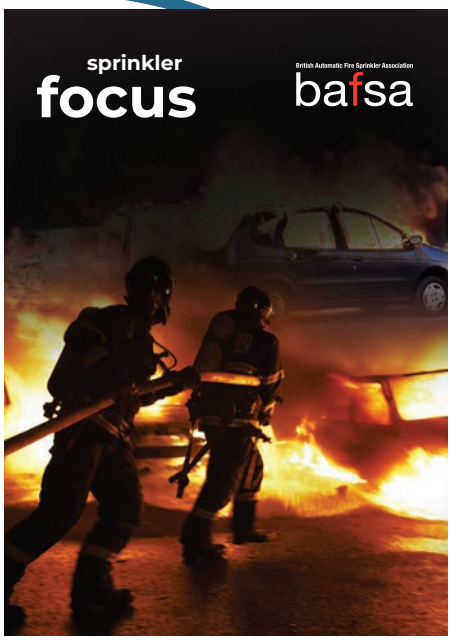

Contents

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Sprinkler FOCUS is the biannual magazine of the British Automatic Fire Sprinkler Association. It is the only UK publication which has automatic fire sprinklers at its core with current news, features and opinions along with case studies and product updates.

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IT'S MY THIRD month as the Chief Executive of BAFSA, and I am fortunate to have had the opportunity to shadow the outgoing Chief Executive Keith McGillivray and benefit from a handover during that period. I have been hugely impressed by the team that work with BAFSA and would like to thank them for the support they have offered me, likewise the BAFSA Council has been very generous with their time and guidance during these early days, in particular the new Chair Russell Dixon, new Deputy Chair Alastair Wilson, and new Treasurer Paul Berry. The Council are currently working hard to develop BAFSA's next 5-year plan to ensure we deliver the right outcomes for our members and the sprinkler industry.

My background in the Fire and Rescue Service has given me an insight into the personal, societal, and economic impact of fire. I am proud to have worked in an organisation with a powerful shared commitment to reducing this impact and I am delighted to find that same commitment among all those I have encountered within BAFSA.

If I were to choose an example that best captured the personal, societal, and economic impact of a fire it would be a fire in a school. During my career in the service, I was involved in a number of school fires and observed the immediate and longer-term impact these had on staff, pupils and local communities.

Hence, I am committed to BAFSA continuing its work with others key players in fire safety to champion the requirement for sprinklers in schools in England.

Ali

ALI PERRY
CHIEF EXECUTIVE, BAFSA

Schools need sprinklers

I AM DELIGHTED that, due in part to the work of BAFSA, sprinklers are now required in new build schools in Scotland and Wales. The reasons for this were outlined in the BAFSA FOCUS publication November 2020 and then expanded on these during the BAFSA school's webinar on 10th February 2021, which can be seen on YouTube[1]. During this webinar Tilden Watson of Zurich Municipal provided an input which highlighted the reasons behind the need for sprinklers to be fitted in schools.

- There are nearly 700 school fires a year in the UK.
- The average fire risk of schools is almost double that of other non-residential buildings.
- Zurich property surveyors inspected nearly 1000 schools and nearly 66% were rated as having poor fixed fire protection systems, 14% were rated as having good or excellent fire protection systems.
- Only 5% of schools in England have fixed fire protection systems whereas in Scotland where it is mandatory to have sprinklers fitted in new schools it is 29%. This discrepancy will only increase while the fitting of sprinklers is not a requirement for new schools in England.

The consequences of school fires for the school and wider community were detailed in "the impact of school fires a study of the wider economic and social impacts on schools and the local community LGA educational research programme 2007"[2] and include,

- Economic impacts of school fires
- Educational impacts of school fires
- Social impacts of school fires and,
- Emotional impacts of school fires

The economic case for sprinklers is strong, in 2020 the Prime Minister pledged £1 billion to fund a decade-long school rebuilding and repair programme and a further £560 million in early August. Zurich have reported that "based on large fires alone, Zurich estimates that the repair for school fires could hit £320 million over ten years – a significant portion of the Government's stated investment"[2].

The case is even stronger when one considers that "the costs of a sprinkler system can be recovered within five years through reduced insurance premiums, this reduction can be by around 65%"[3].

While the economic impacts of school fires are significant, they are also perhaps the easiest to measure and therefore from a political point of view are often the key focus in generating an argument for or against sprinklers based on a cost benefit analysis. As a result, the educational, social, and emotional factors are often given only limited consideration.

We can look back in our own lives and consider what the impact would have been, or for those of us who are responsible for young people we can imagine what the impact would be on our children; groups of friends separated, studies disrupted, and the school community broken. In addition, relocation would mean transport to a new setting almost always involving longer travel distances and poorer facilities due to overcrowding. All this would surely result in increased anxiety for all those affected, with the impact being more pronounced for the most vulnerable young people where school can offer a much needed supportive, safe, and nurturing environment.

We also know that sprinklers work, the 2017 report commissioned by the National Fire Chiefs Council (NFCC) and the National Fire Sprinkler Network (NFSN) found that sprinkler systems correctly operated on at least 94 per cent of the fires and controlled or extinguished 99 per cent of those fires[4].

If the economic case is there and the educational and social impacts are so clear plus we know that sprinklers work, and this has been accepted in Scotland and Wales it is hard to understand the resistance to requiring sprinklers to be fitted in schools in England.

In July 2021 the department for education listed the following 4 priority outcomes for 2021-2022 in the DfE Outcome Delivery Plan: 20321 -2022[5].

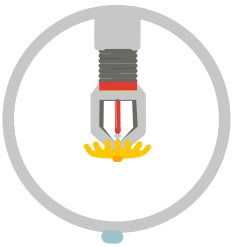
1. Drive economic growth through improving the skills pipeline, levelling up productivity and supporting people to work.
2. Level up education standards so that children and young people in every part of the country are prepared with the knowledge, skills and qualifications they need.
3. Support the most disadvantaged and vulnerable children and young people through high-quality local services so that no one is left behind.
4. Provide the best start in life through high-quality early education and childcare to raise standards and help parents to work.

All the points made so far in this article demonstrate how the fitting of sprinklers in new build schools can directly support these objectives. Helping to ensure an unbroken. undisrupted educational journey, protecting the support schools provide to the most vulnerable and reducing unnecessary disruption for those responsible for young people and communities.

I am personally committed to ensuring sprinklers are required in schools in England and this will continue to be an objective of BAFSA under the new 5-year plan. However, I recognise that this has been a long-term aim of BAFSA, and I would be keen to hear from any partners or members who might have new ideas or suggestions on who else we can involve and how we can most effectively make our case.

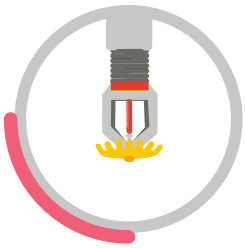
700

SCHOOL FIRES A YEAR IN THE UK



ONLY 5%

OF SCHOOLS IN ENGLAND HAVE FIXED FIRE PROTECTION SYSTEMS



29%

IN SCOTLAND WHERE SPRINKLERS IN NEW SCHOOLS ARE MANDATORY

1. https://www.bafsa.org.uk/schools-webinar/
2. Schools twice as likely as other buildings to be hit by a blaze (zurich.co.uk) 5th September 2020
3. The impact of school fires a study of the wider economic and social impacts on schools and the local community LGA educational research programme 2007
4. National Fire Sprinkler Network and National Fire Chiefs Council report "Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: An Analysis from Fire Service Data Incidence of Deaths and Injuries in Sprinklered Buildings: A Supplementary Report" March 2019
5. DfE Outcome Delivery Plan: 2021 to 2022 - GOV.UK (www.gov.uk)

Sprinklers – benefits, analysis and the environment

TOM ROCHE,
BUSINESS SPRINKLER ALLIANCE

SIX MONTHS AGO, we spoke of the continued work on guidance across the UK. Entering this year saw a consultation in England on the move to provide sprinklers in care homes, another step in the right direction. Across the sea in Ireland there was a consultation on their regulatory guidance, Technical Guidance Document (TGD B), which also moves to improve the use of sprinklers in Residential Institutional building when they are multi-storey. Tucked away in the appendices of this consultation was also a change to the approach to warehouses which will see greater use of them in buildings of modest size, over 1000m^2, when high racking over 7m is installed. All of this for us at the Business Sprinkler Alliance (BSA) builds a greater sense of sprinklers as part of the mainstream fire safety systems used within guidance to achieve Building Regulations. Continuing that movement to sprinklers as a norm.

However, this consultation also served to remind us of the elements noted in the piece from November 2022. Namely that legislative and guidance changes also need to be backed by a positive impact analysis. The arguments on the need for sprinklers in Care Homes in England are well practiced. However, when this was put into an impact analysis it was challenging, not just to establish the costs but also to monetise the benefits. The same findings could be seen in the Irish Impact Analysis supporting their consultation on TGD B.

Less we think that this is an element only here in the UK and Ireland it is interesting to see the notion of cost benefit analysis is being explored elsewhere. The National Fire Protection Associations (NFPA) published an examination of this type of work under the title the "*Economic Impact of Fire*"[1] with a revised report in February of

this year. Many of us who have worked in this field would recognise much from this report. The interesting thing is that it highlighted all the elements that we have noted and struggled with in the past. Most notably that the accuracy of the input data has a huge impact on the findings of any analysis particularly when assigning costs to fire protection. It is where expert input and data is needed from our industry.

The other lesson here is that despite earlier work to monetise installation, maintenance, environmental, disruption and social costs work continues to be needed. It appears that we live in the world of a huge amounts of data – but not the data to answer these questions.

It is hard to imagine that there was a struggle to establish the upfront cost of installations but also the ongoing costs of inspection, testing and maintenance. It is the fact that it is not in the public domain in a reliable source that is the challenge. The maintenance point is becoming more pressing as it relates to an ongoing cost for the life of the building – and therefore a key element. The BSA is working again in this area to strengthen our case in the future and to find ways to ensure reliable data is the public domain.

As noted in November the environmental question is rising. The built environment is a huge contributor to carbon emissions and therefore it must respond. There are some challenges arising in the ways developers are choosing to address this. There have been renewed efforts on green credentials taking a path to questioning the carbon embodied in a range of differing products. The target being the upfront embodied carbon and its reduction. Secondly other groups seeking to understand the energy used in the operation of a building which includes looking energy, water and parts consumed in the operation of a system. The core element is emissions and their reduction over the life of the building. Both are laudable approaches. The challenge for the fire protection world is the same for traditional build, they are not considering an impact from something like a fire in this cycle.

Efforts are placed into the build phase to make a building more efficient so that over its life. A fire incident could see them quickly lost. Indeed, some of the features of the building could make it more vulnerable to a fire and increase the impact of a repair. The benefits of the fire protection systems to minimise that impact and remain on the path of lowered emissions is not something that is readily seen. It is a feature that we have discussed qualitatively, research has identified[2] and even in prior work we sought to monetise[3]. However, we need to find the right language to bring this to life.

Therefore, the BSA has started to return to the earlier work it commissioned from BRE and Bureau Veritas to look to stimulate this discussion in another way. It does raise the interesting challenge of maintenance of systems and their emissions which is not a new issue. However, going forward it will be something that will receive more attention.

Reflecting on the last six months the road to change is a long one, nothing happens quickly. There are many challenges on that road, new arguments and positions taken by a range of actors in this field. The key is that through our combined efforts we can see change. Much has happened in recent years to allow sprinklers to become more of the norm, one of our stated aims, the journey is not yet done. So, the BSA remains committed to continuing that push we need to continue BSA remains on that journey.

1. Economic Impact of Fire: Cost and Impact of Fire Protection in Buildings – NFPA FPRF – February 2023
2. The influence of risk factors on sustainable development – FMGlobal – March 2009
3. An environmental impact and cost benefit analysis for fire sprinklers in warehouse buildings – BRE – December 2013

Would you like fries with that?

RITCHIE O'CONNELL,
BAFSA REPRESENTATIVE IN WALES

WHETHER WE LIKE it or not upselling is a part of modern life, from the seemingly ubiquitous offers to 'upgrade' your burger, sandwich or fries with cheese, extra cheese or pulled pork, or yet another additional blade on your razor it seems that everyone is trying to offer something 'extra' usually at additional cost. This phenomenon has unfortunately crept into the fire safety industry also.

Sometimes, the offer to upgrade your sprinkler/fire detection/ emergency escape lighting /fire door is useful and can add value. But on other occasions it can be meaningless or worse counterproductive, costing the 'Responsible Person' extra money in terms of installation costs, ongoing maintenance costs or can bring about a fundamental change to the escape strategy/ fire strategy for the building.

Quite often the 'upgrade' is offered by someone who is an installer for one particular type of system or product who has little understanding of where their system fits into the broader fire safety provisions for the building concerned.

One such recent 'upsell' was to a well-known housing charity, the premises in question was a self-contained block of flats for people who, having previously been resident in hostels, were now living independently.

The premises was a three storey building with a central protected staircase, the building had a BS 5839 part 6 compliant fire detection and alarm system in each flat, not interlinked between flats as it was a stay put policy, therefore the ethos was that only the person(s) in the affected flat needed to leave – this met the requirements of current Building Regulations, The Fire Safety (Wales) Act 2021 and the RRFSO 2005, there were no additional requirements as a result of the Renting Homes (Wales) Act 2016, as this only requires a properly designed and installed fire alarm system (there was one). There were no issues with compartmentation, the fire doors onto the staircase were in good condition, and both the building and the fire alarm system were regularly maintained.

Cue a change to the company servicing the fire alarm system, on their very first visit they informed the manager that the system was non-compliant (not defective) and should by law be upgraded to a BS 5839-part 1 system in the stairwell interlinked to all flats. Whilst I was not there at the time, I imagine the passing of this information was probably accompanied by thoughtful nodding and a concerned expression on the part of the alarm servicing engineer. The manager, knowing no different and wanting to comply with the law, allowed this company to upgrade the system.

On my next visit to the premises I was proudly shown the new alarm system. I explained that the 'upgrade' was entirely unnecessary and now meant all tenants had to be informed of the change to the evacuation policy - as the central alarm interlinked to all flats meant that the alarm was no longer configured to support a stay put strategy, also the alarm would now have to be tested weekly.

The alarm testing has caused issues with residents who work shifts, and the entire block has been evacuated more than once when a resident (the same resident on each occasion) burned some food. The manager is now in discussion with the alarm company with a view to them removing the new system.

Whilst I have the greatest respect for fire alarm engineers, sprinkler installers, fire door technicians etc (you really would not want me to install your sprinkler system, fire alarm, fire door etc., an accomplished tradesman I am not! In my defence I can break things with some aplomb, and I push a mean wheelbarrow.) There are, unfortunately, unscrupulous people in the industry who just don't care about the bigger picture as long as they can upsell their product/service.

Part of the problem also is that, to the lay person, all aspects of the fire protection industry are seemingly interchangeable, anyone with 'fire' as any part of their job description is often taken by Mr and Mrs J Public as being an expert on all things fire related, so a sprinkler

installer is considered to have an indepth knowledge regarding fire alarms and vice versa. This problem is exacerbated by the apparent willingness of some people in any given fire related discipline to offer advice on other areas. Life would be much easier if some people were more willing to say, "I'm not sure". Or even "I don't know."

Unfortunately, the domestic sprinkler sector also suffers to some degree from this willingness to comment/recommend fire safety solutions based solely around their knowledge of their own product.

I recently had to decline a commission to provide a performance-based solution for a three-storey house, the ground floor was entirely open plan, the staircase was unenclosed and there was no fire separation between the ground and first floor. This does not comply with Building Regulations so the LABC directed the builder to me to see if I could assist.

Whilst such solutions are possible, they are in my opinion only achievable if the premises are fully sprinklered, there is escape available at first floor level, and there is separation between ground and first floor. In this instance the builder had been told by the sprinkler installer that all that was required to satisfy Building Regulations was sprinklers installed in the escape route and they had fitted the grand total of two sprinkler heads in the entire premises, in the escape route.

When I explained to the builder I couldn't help him as his sprinkler system wasn't in my opinion compliant and the heads would only be of any value if the fire started in the escape route itself (and this was unlikely) he let me know in no uncertain terms what an idiot I was (it's been said before) he told me "the sprinkler guys know what they are doing" and they'd done five other houses for him just like this.

Now here's the thing, whilst they may have fitted those sprinkler heads very well, and they may be prepared to commission the system, (or not) in practical terms they have added no value to the fire safety in that home a fire occurring anywhere other than the escape route could trap people upstairs, and the builder still cannot get Building Regulations approval. If anyone believes that sprinklers in the escape route only provides a workable solution, they didn't understand the problem to begin with.

On a similar note, on another new project I have been involved with the sprinkler installer has installed pipes and heads in a covered alleyway which services the bin store. As there are doorways (FD30(s)) from flats which open onto it they are probably technically correct in this instance, but as the walls floor and ceiling are non-combustible (concrete and stone) and the alley is 4 cm wider than the bin, so couldn't be used for storage, there is nothing there to burn, so what use are the sprinklers?

As the alley is unheated the system will need to be frost protected also, had they waited for the fire strategy I would have recommended that the alley did not require sprinkler protection, instead they have installed a Cat 3 system (Note C to table 1 of BS9251 says they should) in the alley. In reality however, the sprinklers in the alleyway are practically as much use as the proverbial ashtray on a motorbike.

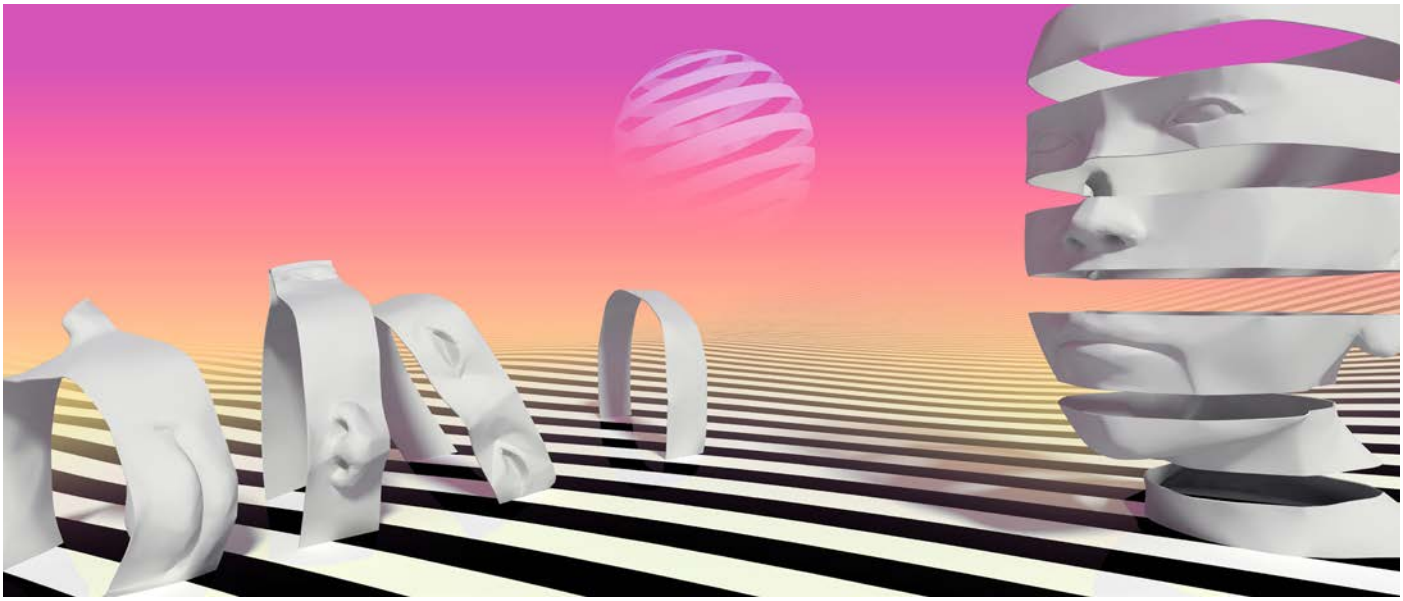
In my personal experience, the ultimate upsell was in the category of portable fire extinguishers, whilst still in the FRS I was once called by the landlady of a very small (front room style) pub, there were two exits and overall dimensions of perhaps 6m by 5m including the servery, unupholstered furnishings, seating capacity 20, allowing for vertical drinking (a lovely phrase) a maximum capacity of 27 people. There was also a ground floor beer cellar of approximately 2x 3m.

The elderly landlady was highly concerned about her fire extinguishers so "could I please go and take a look", when I arrived in each corner of the room there was a 9L water extinguisher and a 2kg Co2 extinguisher, for a total of 8 extinguishers in a 30m2 box (The BS and the RRFSO 2005 would have been satisfied by a single 9L water extinguisher (or two 6L) and a 2kg Co2 in the whole premises).

I had only got as far as pointing and saying "why..." when the landlady interrupted saying "sorry love, I didn't have room for the rest" in the adjacent cellar there were a further 4 extinguishers, the extinguishers had been sold to her the previous week by the 'gentleman'? who had called to service her existing extinguishers (both of them I imagine) and had informed her that the law had changed and she needed more, he then produced a calculator and absolutely free of charge (bless him) worked out how many she needed. This 'gentleman' (I hesitate to say saint but if the halo fits…) worked for a well-known company, I rang him and explained that he had made a mistake and need to rectify it, he told me he had risk-assessed the premises (he couldn't risk assess a right turn on a two lane road) and the lady was aware of what she was doing, undeterred I rang his boss who remedied the situation very quickly, the landlady received an apology and a refund. (Postscript, the 'Saint' was dismissed).

The moral of this tale is think before you upsell, it's not just about money, you may be making things less safe as well as creating additional expense. Think again before giving advice which is beyond the scope of your knowledge. There really is nothing wrong with admitting you don't know everything about fire (no one does!).

Finally, stop and think before you slavishly follow every aspect of the standards, sometimes they can lead to overprovision. If you are third party accredited and believe something is not necessary, you can always record a variation on the commissioning certificate.



One leg good – two legs better?...

THE ARGUMENT FOR TWO STAIRCASES IN HIGH-RISE APARTMENT BLOCKS

STEWART KIDD, BAFSA SPECIAL PROJECTS ADVISER

ONE OF THE fall-outs from the post-Grenfell debate has now reached the distinction of a government consultation[2]. The question of the provision of staircases in residential tower blocks appears, surprisingly to me, to be highly contentious. There are two opposing camps, on one hand there are the fire safety specialists, the Fire and Rescue Service and groups like the FPA who are lobbying for all residential high-rises to be constructed with at least two staircases. The other group who opposes any mandatory requirements appears to be mainly property developers and their builders supported by some fire engineering consultants and Approved Inspectors.

In the UK in the past, such matters were traditionally left to local planners and there was little official guidance on the extent to which additional staircases might be needed. This attitude remained the default position for many years and is still reflected in the preamble to guidance given to local authorities for the design of purpose built flats:

"People living in flats experience more fires than people living in houses. However, a fire in a flat is no more dangerous than a fire in a house. High-rise does not mean high-risk!"[3]

The statistics quoted in the referenced LGA guide are all pre 2011 and this is something that has not been updated. A more recent study[4], *The Fire Risks of Purpose-Built Blocks of Flats* would appear to contradict the assumptions:

'…flat dwellers are exposed to much greater probability of their building experiencing a fire than those living in other building types and are more than twice as likely to die and just under twice as likely to be injured in a fire.'

"Fires to purpose-built blocks of flats also exhibit an unexpected prevalence of significant fire spread either before firefighting commences or by the time the fire has been put out, indicating possible compartmentation failure. Significant fire spread effectively doubles the likelihood of a fire resulting in a fatality or casualty in flats".

"Almost 1 in 10 flat fires lead to a rescue of one or more people compared to around 1 in 16 house fires. Higher rates of FRS intervention to protect residents is a possible indicator that both stay put and self-evacuation are not working in a significant number of fires to purpose-built flats".

The idea of providing two or more staircases in UK buildings is not new. An 1983 BRE publication '*Aspects of fire precautions in buildings*'[5] proposed that:

"The size and number of escape routes will be determined by the number of people to be evacuated and the need to conform to limitations of distance of travel from any point to an exit. As a rule, therefore, a minimum of two stairways is necessary but in small premises of limited height and in certain designs of blocks of flats of maisonettes a single stairway is acceptable." (Page 73)

The consequences when the staircase provision and stay-put policies fail can be graphically demonstrated by examination of the location of the fatalities in both the Lakanal and Grenfell fires. In my

view this data is a sobering condemnation of both the single staircase policy and stay put.

All six of the Lakanal victims lived on the 11th floor.

The other aspect of this issue is the promotion of 'Stay-put' as a recommended response to fire in high rise residential buildings. The cynical might ask whatever happened to 'Get out, stay out and call the fire brigade out?'

Given that Both Lakanal House (constructed 1959) and Grenfell (constructed 1974) were each only designed with a single staircase, means there was essentially no alternative to the 'stay put' policy which cost so many lives in these two fires. I have always believed that this policy was fragile, depending as it does on the integrity of fire compartmentation which may have been installed 50 years earlier and all the modifications and 'improvements 'carried out since construction.

Given many real-life instances where such integrity was absent (for example, have a look at photographs of the underside of the cross-over stairs at Lakanal), I do believe that the time has come to examine the alternatives.

It seems to me that stay-put forms a key part of assisting in the fire and rescue service response to fires. Having only one staircase in a building greatly complicates the ascent of the building by firefighters and who will inevitably obstruct residents escaping.

So, is there a case for demanding second (or even third staircases)? As some opponents of the second stair concept have said, this is nothing new. What this group is asking for is new evidence-based criteria to be used to inform any such additional provision. The pro lobby contends that acquiring such data is virtually impossible – how can you prove, either qualitatively or quantality that if a second staircase had been provided at Grenfell, there would have been 73 - x deaths? Despite the fairly heated arguments on both sides, there is insufficient data available for fires in buildings taller than 30m which demanded evacuation. Some of the anti-lobby have attempted to confuse the issue by suggesting that of two staircases are good, then three are better and that no number of staircases will assist in the evacuation of residents with disabilities. Another faction has suggested that additional fire rated evacuation lifts would be a better solution.

Additionally, one faction of the 'anti group' has concluded that as sprinklers will now be installed in all new UK residential blocks taller than 11m, the issue is no longer urgent.

The consultation referenced at the beginning of this article closed on 17th March and its findings are eagerly awaited. Regardless of which way the Westminster government decides to go, there will be some unhappy people.

This article is a personal view and does not reflect the view of BAFSA or its Council - Stewart Kidd, April 2023

1. "Four legs good, two legs better' – Animal Farm, George Orwell, 1945
2. https://www.gov.uk/government/news/government-proposes-second-staircases-to-make-buildings-safer
3. LGA Guide: Fire safety in purpose-built flats, 2011 (Note: superseded in June 2021) The quote remains in the latest iteration.
4. Hodkinson, Turner and Murphy The Fire Risks of Purpose-Built Blocks of Flats (University of Leeds, July 2021
5. Read REH and Morris WA, Aspects of fire precautions in buildings, HMSO 1983

Sprinklers protect our heritage from fire

Saving historic buildings being burnt to the ground

Preventing galleries and libraries from fire

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PRESERVING OUR TREASURES FOR FUTURE GENERATIONS

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A time of reflection, difficulty and optimism

RUTH OLIVER,
BAFSA SKILLS & QUALIFICATIONS ADVISER

AS WE MOVE into Summer and fully invest in a new year of activity and planning BAFSA remains committed to its vision with qualifications and training being at the forefront of BAFSA activities so that our continued promotion of the benefits of fire sprinklers is not to be wasted.

Crucially however BAFSA members, too, need to get involved in BAFSA development activities. The journey of education that BAFSA has embarked on requires continued input from members to ensure that BAFSA, and the members vision remains at the heart of future developments.

Investment and support are also needed throughout BAFSA to ensure the maintenance and growth of the fire sprinkler industry. Your Industry Needs You! With your support we have accredited training for installers leading to qualification and a blue skilled worker card and third-party certification schemes for our members. The industry is in a strong position, much stronger than many but it can still improve and get stronger by looking to those other sub sectors outside of installers. Those who design, test, commission, as examples, to provide that all important competent workforce fit for the 21st century and those challenges and opportunities that present themselves.

2022 has been an exceptionally difficult year in terms of training and development and the differences between industry and academia are evident. In contrast to the fast-paced nature of industry, academic timelines tend to be longer and focused more on long-term goals whilst naturally focusing education and robust assessment.

In industry, the pressures are typically more deadline-driven, as teams work to integrate technology and business-focused problem solving on tight project timelines in accordance with larger product and business goals.

Academic language can be confusing to those working in industry and at times vice versa and BAFSA is working hard, often behind the scenes to bridge the gap. Two cogs in a wheel moving at very different speeds and at times the slower one causing immense frustration within the industry.

However, each has its strengths and robustness comes from ensuring that all is correct, whether that be industry or academia. It is important to remember that those who focus on the delivery and content of these training programmes have an expectation on them to provide certification against set criteria, criteria set by the industry, and in doing so provide the independent robust that a qualification evidences.

The latter part of 2022 into early 2023 has seen significant delays in L2 candidates receiving qualification certificates, in no way ideal. These certificates are not awarded by BAFSA but by an independent body, an Awarding Organisation, strictly regulated by OFQUAL (the qualification regulator). These regulations require strict adherence.

Extensive liaison between BAFSA training providers (colleges) and the Awarding Organisation has been taking place, with BAFSA involved, to meet new requirements of the current Awarding Organisation, which to our disadvantage is prolonging verification of evidence and final certification. Rest assured BAFSA is and will clearly continue to do so presenting the industry's difficulties at this delayed certification.

Our providers (colleges) have certainly gone the extra mile in undertaking the new requirements made of them. This involves teaching and assessment staff who have been faced with an uphill challenge but who have committed themselves to seeing their candidates achieve and at significant cost in terms of their time and resources.

After extensive discussion Industry Skillcard has agreed to support those candidates who are awaiting certification and will accept Letter of Competence from the college in place of a qualification certificate. However, this only applies to those candidates currently awaiting certification and candidate names have been supplied to Industry Skillcard. Candidates to whom this applies have been notified of this development. We must acknowledge the responsibility this places on the colleges and in particular the tutors. Certificates will need to be evidenced once received.

It will not surprise you to hear that BAFSA continues to work with Industry Skillcard and The Skills Partnership to consider how appropriate skillcards could be awarded to others working within the fire sprinkler sector.

Looking forward, BAFSA is preparing to develop an agreed programme that industry may follow in respect of Continual Professional Development. Whilst we recognise the importance of a competency-based qualification, maintaining that competence is equally important. How many of us could take our driving test today and pass despite passing years ago??

This is a work in progress for the Skills & Development Committee. If you are a BAFSA member, and would like to join this committee, then please contact me: qualifications@bafsa.org.uk

Think sprinklers... Think Sprinkler Saves

OCTOBER

26 Recycling centre, London

A fire involving an internal industrial shredder broke out at the Nathan Way Recycling Centre in Thamesmead, LFB said four pumping appliances were mobilised requiring 20 firefighters. On arrival crews identified that the fire involved the premises' industrial shredder. The sprinkler system activated containing/controlling the fire.

NOVEMBER

3 Residential, high-rise, South Birmingham

A kitchen fire in a purpose-built block of flats with 42 dwellings was the scene of a fire attended to by West Midlands Fire Rescue Service during the evening of the 3 November. The cause of the fire is currently under investigation, no injuries were reported. Thanks to the activation of the sprinkler system, fire damage was limited to the extractor hob above the cooker and heat/smoke damage was minimal.

"Did you know that the BAFSA Incident Data report No 2 on fire incidents in Great Britain where sprinklers were reported for the period of 2018/19 to 2020/21 identified that kitchen fires account for the highest number of incidents within the flats where sprinklers are recorded as being present in fire incidents in purpose-built blocks of flats with 89 incidents."

10 Glossop House, Derbyshire

Derbyshire Fire & Rescue Service attended to a fire in single private dwelling where a bedroom fire had broken out. On arrival operational crews established that the fire had been extinguished by the actuation of the premises sprinkler residential system. The cause of the fire involved smoking materials which had spread to the curtains. All persons were accounted for with no injuries reported

20 New-build home, South Wales

South Wales Fire and Rescue were called to a new build development in Ebbw Vale. The housing development benefitted from the installation of domestic sprinkler systems due to the decision taken in October 2013 by The National Assembly for Wales to bring in new Building Regulations that require automatic fire suppression system to be installed in new and converted homes in Wales. The fire itself was within the rear first floor bedroom of a detached dwelling of two floors. On arrival operational crews established that the fire had been extinguished by the sprinkler system and no-one was injured. A team of two wearing breathing apparatus, with a hose reel jet and thermal imaging camera entered the house. From time of call to the stop message sent by the Officer in Charge the incident was closed within 29 minutes.

20 End of terrace, London

Officers from LFB attended a call from an end of terrace house in New South Gate where a fire had broken out. Some 25 firefighters attended the incident with four fire appliances. Although the first and second floors of the property were damaged by the fire the incident was closed within 80 minutes.

DECEMBER

14 Meat Market, London

London Fire Brigade have reported a four-pump fire involving a fire within an operational meat market housing a range of stalls and shops resulting in the loss of three tonnes of meat within a refrigeration unit. The fire was extinguished, contained/controlled within the ceiling of the refrigeration unit. No injuries were reported. The market was able to re-open the same evening from midnight with only one shop unit close due to the fire.

"The Business Sprinkler Alliance says that fire is the leading cause of commercial property loss, with the Association of British Insurers (ABI) noting UK business with fire property claimed of £940 million in 2018.

24 Block of Flats, Manchester

Firefighters were called to a Manchester council-owned block of flats on Christmas Eve where fire had broken out in one of the properties. The block was constructed in the early 60s, but the council had retro-fitted sprinklers in 2017. The FRS mobilised five pumping appliances and one aerial appliance. Two sprinkler heads were actuated, and the remains of the fire were extinguished using a jet. One resident required medical attention, but smoke and fire damage were contained to an area of 12m^2. Ongoing enquiries are continuing to establish the cause of the fire.

25 Refuse bin fire, Birmingham

A purpose-built residential block of flats containing 116 flats of more than 10 storeys high was the scene of another fire outbreak in a refuse chute where lit refuse had been dropped down the chute to the refuse store below activating the premises suppression system. This extinguished the fire with no injuries reported. This, however, was the second incident of this type at this location.

Visit sprinklersaves.co.uk for a complete list and archive of all sprinkler saves

JANUARY

2 High-rise building, Birmingham

West Midlands Fire Rescue Service were called to an incident for the sixth time in eight months at a refuse chute/bin store at a residential block of flats, where lit refuse had been sent down the chute. Fortunately, Birmingham Council had previously approved the retrofitting of sprinkles in all their high-rise residential block of flats and had also completed a programme to install sprinklers in all the communal bin areas of their residential tower blocks. These types of fires can be highly dangerous, specifically where refuse chutes and access hatches directly open onto protected corridors, lobbies and stairs. It is reported refuse stores accounted for 173 fires in blocks of flats over the last year with West Midland Fire Service attending 71.

5 Factory Fire, North Wales

An accidental fire at a Garment Recycling factory in Wrexham was started when a conveyor belt overheated. Two sprinkler heads were actuated and managed to contain and control the fire until the North Wales FRS arrived. 100 members of staff were evacuated with no injuries reported. Breathing apparatus team consisting of two wearers extinguished the fire using one hose reel jet. Fire damage was contained to floor of origin due to the sprinkler system preventing the fire spreading further. This is the second reported fire within seven months involving the premises commercial conveyor belt clearly demonstrating the benefits of sprinklers protecting factories with commercial sprinkler system.

11 Student Hall, London

London Fire Brigade (LFB) were called to an incident in Stratford, at a student Halls of Residence of 25 floors. The relatively small fire in one of the student bedrooms was extinguished by the actuation of one sprinkler head. However, 500 students had to be evacuated from the premises. A similar fire in Bolton, known as the 'Cube Fire' in November 2019 had a much more devastating impact on the building, where sprinklers were not fitted. Luckily Greater Manchester Fire Rescue Service (GMFRS) reported that all residents were safely evacuated in this case. A similar fire outbreak in Wembley on the 2 April 2022, involving a communal kitchen fire on the second floor of a student accommodation block resulting in the evacuation of 190 people and much less damage thanks to five sprinkler heads being activated containing and controlling the fire to room of origin. On arrival operational crews wearing breathing apparatus extinguished the fire using one jet.

23 Restaurant, Lancashire

Police enquiries are ongoing over a suspected arson attack at a restaurant in Bolton. Greater Manchester Fire Rescue Service (GMFRS) attended the fire on the ground floor of the premises, which actuated two sprinkler heads. Operational crews wearing breathing apparatus extinguished remaining hot spots. The cause of the fire is currently under investigation. No injuries were reported.

FEBRUARY

1 Apartment block, London

An accident involving an oil-based incense burner resulted in a fire starting in the hallway of an apartment in Thamesmead Luckily two concealed sprinkler heads managed to extinguish the fire before fire-fighters arrived and as a result the fire only damaged 5% of the apartment and no injuries were reported. Breathing apparatus crews went in with one jet with a water supply via wet riser. This incident demonstrates once again the benefits of installing sprinklers within residential tall buildings for firefighter safety.

10 Forklift fire, Cheshire

Cheshire FRS have reported the following two pump fire involving an (LPG) powered forklift truck within a warehouse. In Runcorn. This resulted in the activation of the premises commercial sprinkler system. The source of the fire was identified to involve the premises' LPG powered forklift truck located within the warehouse. One sprinkler head actuated immediately above the seat of the fire containing/controlling the fire prior to the arrival of CFRS this allowed crucial time for the officer in charge to implement their operational tactical plan. Breathing apparatus crews were committed to extinguishing the fire suppressing remaining hot spots with firefighting media and one jet. This incident clearly demonstrates the benefits of sprinklers for fires involving cylinders.

BAFSA comments: "A fire where a cylinder is confirmed to be involved has the potential to be devastating. When exposed to extreme heat gas cylinders are at a risk of failure and may rapture due to over pressure. It is paramount that fires involving cylinders are immediately cooled with copious amounts of water cooling the cylinder reducing the risk of rupture clearly demonstrated by the activation of the sprinkler system. On this occasion it is reported that the estimated value of damage due to the fire was up to £10,000 with only one business day lost due to the fire."

28 Shopping Centre, Suffolk

Two sprinkler heads were actuated due to a commercial kitchen fire inside a unit in a shopping centre in Ipswich. Operational crews from Suffolk Fire & Rescue identified that the cause of the fire was due to a dehumidifier electrical appliance. The sprinkler isolating valve for the activated sprinkler zone was isolated by SFRS following confirmation that the fire had been extinguished

MARCH

3 Shopping centre, South Yorkshire

South Yorkshire Fire& Rescue Service attended an incident in Sheffield involving a fire within a multi-use shopping centre containing retail units, restaurants and cinema. On arrival, operational crews identified that a fire within a public toilet cubicle had been extinguished by the activation of one sprinkler head. No further firefighting was required. It was established that the cause of the fire was a malicious act. Fire/smoke, damage was contained to the compartment of origin and no injuries were reported.

9 Kitchen fire, London

London Fire Brigade were called a commercial kitchen fire at a restaurant/cafe during the early evening of 9th March. The fire involved a deep pan fat fryer. Restaurant staff had managed to contain and control the fire to the room of origin due to the activation of the sprinkler system. On arrival, firefighters found that the fire was extinguished with no firefighting required.

12 Block of flats, London

Firefighters were called to a reported fire in a kitchen at a residential block of flats. The fire had started in one of the communal kitchens of the 4-9 storey block and had been caused by a fault with the cooker extraction unit. The fire had been contained due to the activation of the building's water mist system.

14 Halls of residence, London

A fire in a bedroom inside a student hall of residence was successfully extinguished by the automatic activation of one sprinkler head. London Fire Brigade, who were called to the scene at 13.41, found no firefighter action was required and recorded the cause of fire as a natural occurrence.

14 Factory fire, Cleveland

Cleveland Fire Brigade attended a fire call out in the early hours of the morning to a factory fire. The single storey portal frame building was used for the manufacturing of materials for the footwear industry. The fire crew mobilised two pumping appliances and on arrival crews identified a fire within plant machinery used to preheat glue. This had been contained/ controlled by the activation of one pendant sprinkler head located just offset to the plant machinery. Minimal firefighter interaction was required with only the activation of two dry powder extinguishers. Smoke/fire damage was contained to an area of 10-15m² with 25% fire damage to the hot melt extrusion system. The cause of the fire was suspected to be down to thermostatic failure.

21 Recycling plant, London

A drencher system successfully contained a fire at a recycling plant that had been caused by the ignition of combustible material. On arrival, London fire crews took steps to extinguish the fire fully using a main jet.

21 Prison, London

A fire that had been maliciously started by a prison inmate was successfully controlled and contained to the room of origin thanks to the prison's water mist system. When firefighters arrived at the scene, they found that there was no further firefighting required.

27 High-rise flats, London

A purpose-built block of flats 10 or more stories was the location of a kitchen fire that had caused the activation of one of the sprinkler heads of the AFSS and meant that on arrival of the fire service there was no further action needed.

28 Office premises, London

Purpose built office block saw a fire break out in the powerhouse/plant room. London Fire Brigade were called to the incident during the evening and found that one sprinkler head had already been activated, meaning that the fire which had been caused by an electrical appliance, had been contained and successfully controlled.

26 Specialised housing, Pembrokeshire

Mid & West Wales Fire & Rescue Service were called to an incident during the evening at a Special Housing Unit, housing vulnerable residents. The internal fire involved the communal laundry room and resulted in the actuation of two sprinkler heads which contained and controlled the fire prior to the arrival of the fire service. Operational crews identified that the fire had been contained to the compartment of origin and required limited offensive firefighting action to fully extinguish the fire. No injuries were reported. Enquires are ongoing to establish the cause of the fire.

"BAFSA, welcome's the Government's recent proposal for sprinklers to be fitted in new care homes in England, a change we have all been calling for in the fire sector for many years. We would also encourage government to look at fitting sprinklers in new specialised housing schemes following the lead of Scotland and Wales."

APRIL

2 Retail Park, Leicestershire

An out-of- town retail park was the scene of a fire that saw Leicestershire Fire & Rescue Service send a breathing apparatus crew in to locate and extinguish a fire in a storeroom. Upon entry, firefighters saw that the sprinkler system had been activated and had helped in containing and controlling the fire. It was found that the seat of the fire involved a white goods refrigeration unit - activating one sprinkler head. As a result of the activation there was only minor fire/smoke damage reported within the compartment where the fire had started.

6 High-rise residential flats, Manchester

Greater Manchester Fire & Rescue Service were called to a high-rise building in the early hours of the morning in Sale to attend a bedroom fire in a 13-storey prefab concrete residential block of flats. The seat of the fire was found to be a mattress. GMF&RS mobilised five pumping appliances and one aerial appliance to attend the fire but found on arrival that a resident had already successfully tackled it themselves with an extinguisher. The crew proceeded to turn off the flat sprinkler isolation valve and cleared the smoke with natural and PPV ventilation. The estimated value of damage to the property was said to be in the region of £1000.

"I can't get out, I need help."

Mum Hana, says she, her partner and young son owe their lives to the sprinkler system which extinguished a fire in their tenth-floor flat.

ON 12TH APRIL, at 0200, four fire appliances and one aerial platform from West Midlands Fire Service were mobilised by Staffordshire and West Midlands fire control to Salisbury Tower in Lady Wood, Birmingham… a residential flat (one of 116 in the block) on the tenth storey of the 20 storey block was on fire.

Throughout the mobilisation, fire survival guidance was provided to the family over the telephone by Staffordshire and West Midlands fire control due to smoke percolating throughout the flat compromising the family's means of escape.

Three minutes after being mobilised, operational crews identified that the fire had been extinguished by the activation of the residential sprinkler system.

Firefighters were thus able to assist the family from their dwelling to a place of safety and the family were removed to hospital for a precautionary check-up.

The cause of the fire is believed to involve an electric bike left on charge in the hallway of the flat which compromised the occupants' means of escape from their dwelling. The dangers of Lithium-Ion battery fires should not be underestimated which can develop into significant and unstoppable *thermal runaway fires.

This incident clearly identifies the benefits of installing a correctly designed and installed sprinkler system reducing the rate of production of heat and smoke, allowing more time for the occupants to escape to safety or be rescued.

The BS9251:2014 Residential sprinkler system protected apartments, the ground floor common room, refuse store, caretakers' office, and storage area - common ways and stairs are not sprinkler protected as deemed fire sterile.

London Fire Brigade (LFB) have reported, fires involving L-Ion batteries are the fastest growing fire risk in London… In 2023 LFB have attended on average, an e-bike or e-scooter fire once every two days. In 2022, they attended 87 e-bike and 29 e-scooter fires, a total of 116 fires.

Charging batteries or e-bikes and e-scooters should not take place in any potential escape routes.

It should be noted, sprinkler protection of L-Ion batteries is outside the scope of current standard sprinkler design standards e.g., EN, NFPA/FM but specialist standards are being developed for example NPFA 85.

West Midlands FS posted a touching and inspiring video telling Hana's story. You can view it at https://wmfs.link/41QYBi3.

Simon Barry, Deputy Chief Fire Officer of West Midlands Fire Service (WMFS), said: "Sprinklers save lives – as this incident very clearly demonstrates. It could have ended tragically had the council-fitted system not kicked in."

He added: "Without the sprinklers, the family could have been very seriously injured or worse. The fire blocked their only way out. The bike battery produced a lot of smoke and fumes, which quickly spread through the flat."

Sprinklers in car parks

Following major fires in car parks around the world, it is now recognised that "Designers should seriously consider sprinkler provision to avoid multiple vehicle fires, resulting in huge insurable losses and the possible loss of life".

WARNING SIGNS

While serious fires in car parks here in the UK had hitherto been rare; major fires in car parks have occurred elsewhere:

- Gretzenbach, Switzerland – seven firefighters were killed when a car park collapsed.
- Ivry-sur-Seine, Paris – 200 cars were destroyed.
- Stavanger airport – hundreds of vehicles damaged and car park partially collapsed

On the evening of 31st December 2017 a fire occurred at the Kings Dock multi-storey car park in Liverpool and the blaze led to the loss of over 1,150 vehicles. The fire so affected the structure of the building that demolition was required. As a result of their investigations, Merseyside Fire & Rescue Service has stated: "Designers should seriously consider sprinkler provision to avoid multiple vehicle fires, resulting in huge insurable losses and the possible loss of life". This car park has been rebuilt and is now protected with sprinklers.

In each case, a single car fire spread to other vehicles parked nearby, creating large conflagrations that eventually resulted in serious structural failure and collapse of the buildings concerned. As a result, fire-fighters and other building professionals have been expressing fears about the potential dangers posed by fires in modern motor vehicles and their methods of storage.

NEW HAZARDS

Today the average family car is larger and more massive than in the past. Significantly more plastic is used in modern cars. The fuel tank is often plastic and can rupture in a fire, releasing the fuel and rapidly spreading the fire. In short, modern cars can produce fires which are larger and propagate much faster than was previously possible. Electric vehicles are now becoming common and their batteries can burn. When they do, they can produce intense horizontal flames that may ignite adjacent vehicles.

BUILDING REGULATIONS

Guidance on the fire precautions considered necessary in the design and construction of car parks can be found in the Approved Document B to the Building Regulations for England and Wales (ADB) and Scottish Technical Standards. This guidance currently does not require sprinklers to be installed in car parks.

Instead, reliance is placed upon smoke ventilation, either natural or mechanical systems; or 'passive protection' such as fire walls and doors. However, this guidance was based on fire tests carried out in the 1960s and on cars which are very different from those manufactured today.

There is a lack of up-to-date data on fire behaviour in the built environment resulting from the latest trends in automotive technology. This lack of up-to-date knowledge has led to concerns that current UK building standards are no longer entirely appropriate for modern day car park risks – particularly where they now contain electric vehicles (with or without charging facilities) or car stackers.

GOVERNMENT CONCERNS

In 2006, Communities & Local Government (CLG) Sustainable Buildings Division commissioned the Building Research Establishment (BRE) to carry out a three-year project looking at the problems associated with fires in car parks. The research provided valuable information for designers and other building professionals about the hazards and risks associated with modern cars, published by CLG in 2010 as, 'Fire Spread in Car Parks BD2552'. This work confirmed that the fire load of a car had indeed significantly increased (due to increased size, mass and use of plastics) since earlier research.

Of particular interest, the report highlights the fact that the provision of an automatic fire sprinkler system can restrict an outbreak of

fire to the vehicle of origin – and thus allow safe entry for firefighters to fully extinguish any remnants of a fire.

Indeed, without some form of early fire suppression, a fire may develop and spread quickly, producing very high temperatures, large volumes of smoke and a risk of concrete spalling, with conditions too dangerous for fire-fighters even to enter the building. Yet even this research is now dated, not considering electric vehicles nor plastic fuel tanks.

MODERN STORAGE METHODS

With increasing economic pressure on land use, combined sometimes with planning restrictions imposed on off-road car parking, developers are turning to automated mechanical parking systems – commonly known as 'car stackers' – to provide adequate parking, particularly beneath urban residential developments.

The result is a higher density of vehicles, in both horizontal and vertical arrays. This poses greater dangers to firefighters in accessing and fighting such a fire. Automatic fire suppression in all such developments should be an essential life safety feature. Indeed countries such as Germany and Spain have introduced legislation requiring sprinklers in these types of car parks.

SYSTEM DESIGN AND INSTALLATION

There is nothing mysterious about sprinkler systems. The high reliability and effectiveness of these systems has come about over the years by strict adherence to the sprinkler rules and design standards.

Car parks should therefore be protected by automatic fire sprinklers in accordance with BS EN 12845. As car parks are often unheated and highly ventilated areas, particular care and consideration should be given to the risks of sprinkler system water freezing (i.e. it may be necessary to employ a 'dry pipe' sprinkler system design). BS EN 12845:2015 recommends that car park sprinkler systems be designed to hazard classification OH2. These designs have proven able to prevent fire spread between multiple vehicles, affording firefighters time to enter the car park and complete extinguishment of any residual fire (cars are designed to keep rain out so it is unlikely that sprinklers will completely extinguish a vehicle fire). Recently, it has been asked whether OH2 designs can deal with fires in modern cars, in particular electric cars.

Research conducted to date by NFPA and RISE in Sweden indicates they can. Nevertheless, FM Global has increased the hydraulic demand for car park sprinkler designs, citing concerns about increased fire load. British insurers have followed suit and now require systems to be designed to HHP3, as in LPC Rules TB229. Such systems require about five times as much water as those designed to OH2. If a system is being installed to comply with Approved Document B, it can correctly be designed to BS EN 12845 without applying TB 229 (i.e. OH2 instead of HHP3). The discrepancy between the two current requirements is conspicuous.

When selecting contractors to design and install sprinkler systems it is essential to choose only those who are capable and competent with established track records and who can offer proof of compliance with an established quality assurance system.

BIF 10a: Car Parks can be downloaded here: https://shorturl.at/ruvOQ

7
FIREFIGHTERS DEAD

GRETSCHENBERG

200
CARS LOST

PARIS

1150
VEHICLES DESTROYED

LIVERPOOL

1
FATALITY
&
22
CARS BURNT OUT

BRISTOL

BAFSA together with BRE Global has conducted experimental work on car stacking risks and this provides useful information. Copies of this report can be downloaded from the BAFSA website.

Experimental Study of Fire spread in Car Parks by BRE Global

A test rig was constructed, measuring 6m x 12m, with space for four cars but leaving one vacant parking space. The structure was enclosed at high level but with low level ventilation.

In test number one, without sprinklers and with small to medium sized family cars, fire spread from the car of origin (car one) to involve all three vehicles. It took twenty minutes to involve car two; however, only twenty-one minutes from ignition to involve car three when the test was terminated to avoid serious damage to monitoring equipment! Nevertheless, with the data gathered revealing a 'peak heat release rate' of 16 megawatts, this test clearly revealed the ability of this type of fire to spread to other vehicles and severely damage buildings.

Similarly in test number 3, but this time using medium to large vehicles, the fire spread to all three cars taking just nine minutes to involve car two and a further one minute to involve car three. Once again, because of the rapid fire spread, the test was terminated early thus avoiding costly damage to the calorimeter.

Test with Sprinklers

However, in test number two, again with a similar arrangement to tests number one and three, the opportunity was taken to install a sprinkler system and observe the results; therefore the rig was provided with a sprinkler system, designed as closely as possible to replicate a typical underground car park sprinkler system, to BS EN 12845 Ordinary Hazard 2. After ignition, the first sprinkler head operated after four minutes and subsequently all heads within the rig operated; but in this case, the fire did not spread to either car two or car three. The test was terminated after one hour with the fire dying down.

Fire Spread in Car Parks' BD2552' published in 2010 by CLG

Monica Wills House, Bristol

- In December 2006, a fire occurred at a newly constructed residential care home with underground car parking in Bristol.
- In accordance with established principles for alternate compliance in support of building regulations (Approved Document B) the residential portion of the premises was sprinklered to allow for extended travel distances. However, the car park was not sprinklered as this is not required by Approved Document B.
- Fire destroyed 22 cars and spread to upper levels via external windows.
- One person died as a result of smoke inhalation – 60 residents were evacuated.
- A residential sprinkler system prevented the spread of fire into the residential area and, no doubt, saved many more lives.

The political landscape is continuously changing

RONNIE KING OBE, FIRE ADVISER &
HON. ADMIN. SEC.,ALL-PARTY PARLIAMENTARY
FIRE SAFETY & RESCUE GROUP

IT'S BEEN ANOTHER extremely difficult period for the All-Party Parliamentary Fire Safety & Rescue Group (APPFSRG) since I last submitted a political update: especially with the impact of Brexit; COVID; the Russian war with Ukraine and subsequent energy crisis; the changes of Prime Ministers and with the financial consequences affecting all of us. A succession of Ministers have held responsibility for various aspects of fire: commencing with the Home Office; and the Department for Levelling Up Housing & Communities (DLUHC); the Department for Business and Trade which includes the Office for Product Safety and Standards; the Department for Education which has direct responsibility for Fire Safety Guidance in new Schools, and the Department for Transport which has an increasing interest in Lithium-Ion e-scooters and e-bikes.

The confusion and complications which arise because of the different Ministries and Authorities now involved in fire safety is becoming increasingly significant. All this reinforces a belief that fire remains fragmented, with no single Department having overall responsibility for such an important subject. It seemed that never was there a better time to have a central coordinating fire safety group in Government as it seems to have just become even more complicated. The Technical Policy Team in DLUHC has moved into HSE/BSR. There appeared to have been no official announcement - or explanation - that we were aware of. Unclear whether they had taken responsibility for Approved Doc B with them? If so, how does that 'square' now for Ministerial responsibility for the Building Regulations? HSE doesn't have a Minister!!

Presumably the answer will be that the DLUHC Minister will maintain responsibility for decisions made in HSE. Additionally the recently appointed Chief Inspector Building Safety, Peter Baker has announced his retirement, which is very soon after being appointed. And an interim successor has been appointed pending a process.

Last month the APPFSRG supported an Event held by the Fire Sector Federation in the House of Lords, developing its "National Fire Strategy" which was sponsored by Lord Hendy KC, and supported by Sir Peter Bottomley MP, Andy Slaughter MP and overseen by Shadow Chief Whip of the House of Lords, Lord Kennedy of Southwark. The late Jonathan O'Neill former MD of the Fire Protection Association, and a former member of the NFSN Executive, gave a presentation to the 25th January APPFSRG meeting, which was also attended by DLUHC Minister Lee Rowley MP. Much discussion centred on automatic sprinkler protection, in for example, higher life risk premises like the Beechmere fire in Crewe, with APPFRSG Co-Vice Chair and Member of Parliament for Crewe & Nantwich Dr. Kieran Mullan MP speaking positively about the importance of such fire safety measures.

With the APPFRSG having recently held meetings with the new government ministers in the Home Office and the Department for Levelling Up since I last gave an update, the Rt. Hon. Chris Philp MP and Lee Rowley MP respectively; it is hoping to have a more settled period with the next meeting with Minister Philp planned for 6th June 2023; and we will shortly receive a date and time for the Group's second meeting with Lee Rowley MP.

The Grenfell Tower Public Inquiry closed on the 10th November 2022 saying: "No one should have died at Grenfell Tower", the inquiry into the disaster that killed 72 people heard as it closed after 400 days of evidence. The government said it was "truly sorry" for its own failures.

Richard Millett KC, counsel to the inquiry, used his final statement to declare: "Each and every one of the deaths that occurred in Grenfell Tower, on the 14 June 2017 was avoidable."

He accused organisations involved in the refurbishment of spinning "a web of blame" and denying responsibility despite evidence of "incompetence", "malpractice" and "dishonesty".

In front of survivors and the bereaved gathered at the west London inquiry room for the final day of a four and a half year process, he admitted his initial fears the process would become a "merry-go-round of buck-passing" had been confirmed and it "turns still, the notes of its melody, clearly audible" in statements by companies in this final week deflecting responsibility.

Richard Millett KC displayed a web diagram on screens in the inquiry room showing the dozens of occasions on which the companies, professionals and public authorities involved in wrapping the council block in materials that burned like petrol - had blamed one other.

He also accused organisations of disrespecting the victims by seeking to "minimise their own exposure" ahead of legal proceedings.

There was, he added, a "failure to pay due respect to the idea of home as a physical aspect of human privacy, agency, safety and dignity".

After Richard Millett KC spoke, Grenfell United, the families group, said the closure of the inquiry, which is not due to produce a report until at least October 2023, was a reminder "that we continue to live our lives knowing the evidence has been uncovered. And yet, there's no change. No accountability. No charges".

As Scotland Yard wait for the final report before moving towards potential criminal charges, any trials for offences ranging from corporate manslaughter to fraud may not start before 2025, more than seven years since the disaster, according to newspaper: "the Guardian".

Meanwhile an article from BBC News reported last week that "Grenfell Tower fire: Civil settlement claim is worth £150m". The settlement is separate from the Grenfell Tower Inquiry, which started in September 2017.

Lawyers acting for survivors of the Grenfell Tower fire and bereaved family members have been outlining the details of a civil damages claim settlement.

At the High Court, barrister Richard Hermer KC said a compensation sum of about £150m had been awarded across 900 cases in the "global settlement".

The June 2017 fire at the west London tower block killed 72 people.

Meanwhile, it would now seem to have been confirmed the Grenfell Inquiry report is unlikely to be published until 2024. The panel and team working on the phase two report have insisted they will "spare no effort" to finish it as soon as possible. Its final hearing was on 10 November 2022.

The long-running inquiry, chaired by Sir Martin Moore-Bick, is examining the circumstances leading up to and surrounding the blaze.

'DOESN'T RIGHT THE WRONG'

According to BBC News – "At the settlement hearing at the High Court, listings indicate the Royal Borough of Kensington and Chelsea was one of a number of defendants"… While cladding giant Arconic previously confirmed it was another. The firm said it had "agreed to contribute to a restorative justice project to benefit the community affected by the fire".

A total of £50m, including £25m from government and £6m from Arconic, has reportedly been pledged to the settlement fund.

"Lax guidance partly to blame for Grenfell – Sec. of State Michael Gove MP. Those who took part in the claim were represented by 14 legal firms although the settlement reportedly does not include all victims of the fire".

It has been stressed that the agreement does not affect the potential for any criminal charges to be brought in the future. Mr Hermer said: "No amount of money will ever truly compensate for what the claimants have had to endure".

"This is a settlement purely of the civil claims for compensation. The settlement does not right the wrong, it does not secure accountability."

CONCLUSION

Whilst the fire landscape is continuously changing, the APPFRSG is firmly focussed on being at the forefront of influencing the outcomes in Fire and Building Safety decision making, and it is now receiving the acknowledgement it rightly deserves and expects from Government Ministers, after years of seeking to contribute and influence Government policy.

Two weeks ago the DLUHC published Its long awaited Report into Construction Products Testing authored by Paul Morrell OBE and Anneliese Day KC, and APPFRSG Chairman Bob Blackman MP and Products Testing Adviser Mike Wood OXON (Hons) plus myself were one of the first (if not the first) to be consulted on the report.

Ministers are at last listening to the Group instead of just 'going through the motions' We have an increasing 'take up' of politicians interested in participating - with "Father of the House" Sir Peter Bottomley MP, Lord Hendy KC and the Rt. Hon. Sir Desmond Swayne MP all taking up Co-Vice Chair positions on the Group at last week's AGM.

The Group recognises what needs to still be done, and it values greatly the role which Automatic Fire Sprinkler protection plays in making buildings and people safer from the effects of fire. In offering the Group's congratulations to BAFSA on its appointment of a new Chief Executive Alasdair Perry; I would also like to pay tribute to the excellent work undertaken by his predecessor Keith MacGillivray MBE, MA, BSc, and hope that he won't disappear entirely from the UK Fire landscape.

Changing codes for the benefit of all

Alan Brinson
Executive Director
EFSN

The European Fire Sprinkler Network (EFSN) was set up 20 years ago to increase use of sprinkler systems in Europe. We focus on achieving changes in fire safety building codes that require or incentivise sprinklers in certain types of buildings. While these changes are usually incremental, together they signal a change in attitude to sprinklers. They also yield significant market growth – we estimate the European market is two-and-a-half times as large as when we started – and installers in many countries have told me their order books are well-filled. Incentives are where regulators codify the use of sprinklers to permit relaxations in other measures.

We already have some examples in Approved Document B, the regulatory guidance for England, such as where fire resistance requirements can be reduced in certain buildings if sprinklers are installed. More examples are in BS 9999 and BS 9991, codes of practice for fire safety in buildings and in residential buildings respectively. The latter is under review and we have now addressed three-quarters of the over 1,800 comments on the public draft. One change is to require sprinklers in common corridors of flats. While fire safety designs usually assume there is no fire load there, Fire & Rescue Service incident reports show that corridor fires are common. Another change in the draft is the option to use a battery for backup power supplies.

In Ireland both the Building Regulations and Technical Guidance Document B are under review, with a public consultation recently closed. Among the positive changes for sprinklers are proposals to require them in multi-storey care homes and in warehouses larger than 1,000 m2 with goods stored higher than 7m. This latter is about the largest fire area that firefighters believe they can extinguish – any larger and they most probably will have to let it burn. We hope that British jurisdictions will introduce similar limits!

It is often said it is smoke rather than fire that kills. Fire tests and CFD-modelling in Belgium and The Netherlands have shown that sprinklers greatly reduce smoke spread, so that smoke control measures can be relaxed. This is an important incentive for the use of sprinklers.

Several countries are discussing how to encourage greater use of wood in construction, while ensuring buildings are still safe from fire. They are looking to sprinklers as an additional measure to compensate for the added risk, in particular for exposed massive wood, such as cross-laminated timber. Insurers are supporting this thinking.

Another topical concern is the fire hazard posed by lithium-ion batteries, whether in cars, bicycles, backup power or other applications. While sprinklers may not be able to extinguish Li-ion battery fires they can prevent their spread and so avoid major fires and fatalities. As a first step this could lead to greater use of sprinklers in enclosed car parks.

Where fire codes invoke sprinklers they also refer to design standards. EN 12845-1 is the sprinkler system design and installation standard. Over 4,000 comments were submitted to CEN on a draft revision. Although many are duplications it is taking us a long time to go through them. A year on we have addressed about 40%. Meanwhile we are about to start addressing comments on the draft of EN 12845-2, which covers ESFR and CMSA designs. Most of the comments on EN 12845-3, which covers earthquake bracing, have been addressed and it should be published this winter. EN 14972-1, the water mist system design, installation and maintenance standard, is under review with signs that the opportunity will be taken to address long-standing British concerns.

To support design standards we need component standards. EN 12259-13 for ESFR sprinklers has been published. A draft of EN 12259-15 for large k-factor, extended coverage and CMSA sprinklers will soon be circulated by CEN for enquiry (comment). Pump standards are moving ahead, with EN 12259-12 for bare sprinkler pumps out for the formal vote (the last step before publication) and half the comments addressed on the draft of EN 17451, the pump set standard. Not to be outdone, water mist now has 10 fire test application standards and will soon have four more, complemented by a test protocol for filters and strainers with one for nozzles in development.

Over 370 delegates and visitors attended Fire Sprinker International 2023 in Amsterdam on 31st May and 1st June. This was a record attendance with delegates able to choose from over 40 presentations on a wide range of water-based suppression system topics.

If you missed this event please note that we will be holding Fire Sprinkler International 2024 in Dublin on 24th-25th April. A call for papers will go out in the autumn.

EUROPEAN FIRE SPRINKLER NETWORK

Put a firefighter in every room

INSTALL SPRINKLERS

bafsa.org.uk

From the sprinkler head

A ROUND-UP OF NEWS FROM BAFSA & ITS MEMBERS

Train to gain – future-proofing the construction industry

Investment in infrastructure is a key growth priority for many European governments, but how can this be reconciled with the current skills crisis facing the construction sector? According to the latest EURES report on labour shortages and surpluses, 38 per cent of European countries who ranked building construction labourer shortages noted the issue as 'high magnitude' . A combination of macroeconomic influences ranging from an aging workforce preparing to retire, to labour market shifts caused by Brexit and war in Ukraine are all having an impact on skilled worker availability in Europe. This is further complicated by retraining needs caused by continuous advancements in sector technology, tools and products which begs the question – how can we better future-proof the construction workforce?

Skills and competence are critical for the future of the construction industry, and various factors have accelerated the sector's skills shortage to a crisis point. There is no silver bullet when it comes to tackling the skills crisis within the construction industry, particularly given the number of external forces at play. However, if we want to meet growing construction demand then we must grow the available workforce to make this a reality – creating an imperative for companies to incentivize and invest in diversifying the skillset of their current workforce rather than relying solely on technology.

Through Victaulic's work and customer engagement, we have identified and responded to the need for more specialised and accredited training programs in both a hands-on and virtual format to facilitate greater upskilling. Whilst seemingly obvious, such programs have been scarce since the Covid-19 pandemic with existing staff unable to refine their skills with new technologies and entrants losing out on the opportunity to formally learn the basics with new tools and products. By bridging the training gap, construction professionals across all sectors and experience-levels can gain greater confidence in their proficiency, whilst

companies receive the critical assurances that their projects are up to code.

This is particularly the case for the fire protection industry. As an industry which is constantly evolving and premised on the delivery of safe and efficient fire protection systems, it is crucial that training is both readily available and regularly updated to ensure that engineers and contractors have the requisite knowledge for their reliable installation and comply with regulations. At a broader scale, investing in training is also crucial for a company's reputation building. Comprehensive training ensures industry professionals are getting the most from every application, whilst upholding and protecting standards.

Victaulic's increase in customer demand for training is a testament to this, with a recent in-person fire protection workshop attracting nearly 100 participants. With an age range of between 17-65+ and job titles spanning construction managers, design managers and subcontractors - there is a clear desire from customers and their employees to upskill and refresh their knowledge through in-person training. The workshop with construction engineering company, Mercury, provided an introduction to Victaulic fire protection products such as the VicFlex™ Flexible Sprinkler Fittings series and Firelock™ couplings, their applications in fire protection systems, and requirements for maintenance in accordance with applicable codes and standards. The value of this in-person training at their facility in Ireland could not be overstated, with Mercury implementing the bespoke demo rig at their facility to enable regular refreshers for their employees.

The training did not stop there, with additional e-learning services provided through our Victaulic University platform. What was historically a portal used exclusively by our internal teams, Victaulic University training has become a mainstay for e-learning for our clients. One of the key benefits of our e-learning training is that is offers a range of options to suit different levels of expertise.

For instance, beginner-level fire protection training covers the basics of fire protection system design and installation, whilst advance courses delve into the details of system testing and maintenance. Additionally, participants can work through the training programs at their own pace, providing the flexibility to manage their workloads while still acquiring essential skills. For the Mercury training alone, we saw 80 participants join online for 20 hours' worth of training prior to the hands on workshop. With every worker who completes our training receiving a certification, our courses not only support with our customer's credibility within the fire protection industry but also grant assurance that they have been equipped with the knowledge to properly install our products.

Ciaran Carrick, Operations Manager, Mercury: "Given the constraints of the Covid-19 pandemic, training for our employees has been scarce. This was why we were so appreciative of the practical in-person Fire Protection Customer Training provided by Victaulic - giving us an opportunity to see first-hand how the Victaulic valve-sets work and refresh our skills with the on-site demo rig."

"The Victaulic experts provided our 80+ team with comprehensive product knowledge and technical detail which will help us better deliver fire protection systems for our clients."

Whilst upskilling cannot entirely remedy the skills crisis that Europe is currently facing, what is clear is that there are simple, cost effective means to attract and retain a greater body of talent already at our fingertips. Training is only one piece of the puzzle, but the reputational benefits offered at a company level along with the empowerment derived at an employee level are vital steppingstones to future-proofing the construction industry.

victaulic.com

From the sprinkler head

A ROUND-UP OF NEWS FROM BAFSA & ITS MEMBERS

Zone Guardian maintenance

From time to time, writes Jenni Rose from SEP, we learn of of issues with the pump operation on our Zone Guardian unit. In a nutshell, with all types of 'canister' pumps (the competition included!), they need to be full of water and with no air in order to work properly. Any air will cause inefficiency with poor flow (at best), or overheating and permanent seizure (at worst). So far, touch wood as they say, we have had not one single failed/faulty pump in all the time we have made Zone Guardian.

Examples of how air can get into the pump are:

- Installation where the pump shaft is not level, so the pump cannot self-vent – if the flow switch is on top as per the O&M, then the pump shaft will be level;
- When first installed, the running and venting process is not carried out or not done for long enough;
- After installation, venting and commissioning, the system is drained and refilled for maintenance etc (without the pump being isolated), and re-venting has not been done.

How can this be avoided?

- If space is tight and the flow switch cannot be on top of a horizontal pipe, so the pump shaft cannot be level, then please speak to us because this is a problem to which we have a solution – this is not covered in the O&M or troubleshooting for approval reasons so you will need to ask us;
- Ensure on first commissioning that the pump is run for several minutes with the vent valve slightly open – it is self-venting, as in there is no bleed valve, but it needs to work to expel any bubbles over a few minutes;
- If the system needs to be drained, try where possible to ensure that, in accordance with the O&M, the isolation valves either side of the pump are closed – this ensures that the pump is kept full of water, but if this is not possible then the venting process will need to be carried out again. It's possible that this is the most common cause of post-commissioning problems.

What if there's a problem?

- Our ZG Troubleshooting Guide on the Download section of our web site is there to help, and if a pump is in fact seized then most cases can be resolved using a PH2 (not PZ2) screwdriver through the middle of the product label to free and rotate the impellor.
- In some stubborn cases, you may need to remove the pump motor and impellor after closing the valves (using an allen key, the same size as the flow switch lid) – the impellor in a nicely vented pump should look like the one on the top right… the other two pictures below show tell-tale signs of being left for a period with air, and it's clear the problem that this leaves behind. Even in this case it may be possible to clean up and resurrect the pump
- If a pump has been damaged beyond repair and has to be replaced, then DO NOT remove the whole pump manifold as this will create unnecessary work for you – just remove the motor and impellor plate then it's just a five-minute job.

firesprinkler.co.uk

New Residential and Domestic Training courses

Sprinktec have been working hard on getting accreditation on their new Residential and Domestic Training courses which are now an approved Customised award through the SQA, to allow Sprinktec to deliver these courses we have also gained our SQA training centre approval which allows us to deliver no only our own courses but also other Awards. We have developed the new Inspection and commissioning course on behalf of BAFSA and look forward to delivering this course on their behalf.

sprinktec.co.uk

Triangle rebrand

After months of hard work and dedication the Triangle team have unveiled a refreshed brand identity.

In April 2022 they secured investment from BGF, the UK and Ireland's most active growth capital investor, giving us the capital and the support to continue to expand the company, however our brand identity didn't reflect this development and growth, and as such, we have updated our brand to reflect our purpose and values.

The trianglefire icon represents the fire triangle with our initials T and F within. The new website is designed to be more modern and provide an enhanced user experience; highlights include:

- A blog which will be regularly updated with industry and group news, including our ESG strategy and commitments.
- A focus on Triangle people, who always go the extra mile

trianglefiregroup.co.uk

From the sprinkler head

A ROUND-UP OF NEWS FROM BAFSA & ITS MEMBERS

Fire Protection Association

Changes to sprinkler head testing

The Fire Protection Association (FPA) have announced some changes to its sprinkler head testing services following recent updates to the LPC Rules for Automatic Sprinkler Installations incorporating BS EN 12845.The LPC Sprinkler Rules for Automatic Sprinkler Installations is the UK's most significant sprinkler installation standard which incorporates the full BS EN 12845:2015+A1:2019 standard and related Technical Bulletins.

The number of sprinkler heads to be removed for testing is detailed in Table K.1 and TB203.T1:

Fewer than or equal to 5000 sprinkler heads per system
Up to 20 heads from one system to be tested

Fewer than or equal to 10,000 sprinkler heads per system
Up to 40 heads from one system to be tested

Fewer than or equal to 20,000 sprinkler heads per system
Up to 60 heads from one system to be tested

Following an update in September 2022, TB203.T1 now incorporates the following notes:

Note 1: Where there are different types of sprinkler heads installed which have been in service for 25 years, a minimum of 5 sprinkler heads of each different type shall be removed and tested.

Note 2: A batch of 20 sprinkler heads removed for testing shall consist of no more than 4 different sprinkler head types. Where more than 4 types are installed, 5 sample sprinkler heads for each additional type shall be tested (e.g., 6 different sprinkler head types would require a minimum of 30 sprinkler heads to be tested).

Note 3: Where there are sprinkler heads in the spares cabinet which are 25 years old, a minimum of 5 of these spare sprinkler heads shall be tested, in addition to the sample numbers listed in Notes 1 and 2.

thefpa.co.uk

Residential dry horizontal sidewall (HSW) sprinkler

The Viking SupplyNet has launched its new cULus Listed VK449 K4.0 residential dry horizontal sidewall (HSW) sprinkler. The VK449 is supplied from a wet system in a heated area, penetrating the wall to protect the hazard in areas subject to freezing, such as a balcony or a garage.

The VK449 is cULus Listed for use in residential properties and outdoor environments and is available with an Electroless Nickel PTFE (ENT) finish and is compatible with a wide range of pipe fittings, making it suitable for a variety of residential piping choices.

In addition to the Electroless Nickel PTFE (ENT) finish, the VK449 is provided in brass, chrome and white polyester. The VK449 is available in Ordinary 155°F (68°C) and Intermediate 200°F (93°C) temperature ratings, and features a 1" NPT (25 mm BSPT) connection. Its maximum rated pressure of 175 psi (12 bar).

vikinggroupinc.com

Residential system solutions

With the recent updates to BS 9251:2021 residential sprinkler code standards, Project Fire has been working to deliver cost effective residential zone equipment packages developed for use with our range of residential and addressable solutions, offering fully automated sprinkler testing and monitoring.

Project Fire offer Zonecheck Residential with a monitored valve, simplifying ordering and delivery of residential zone equipment. Valves can also be ordered separately as required with CPVC adaptors includes for easy on-site installation.

Project Fire's residential packages are designed to offer alarm, testing and monitoring equipment required for zones on residential systems, with the option of void or riser installation of Zonecheck with either a standard 15mm valve or a full bore drain and pressure gauge with no loss connector (depending on the systems requirements).

Supplied with either a key-switch for standalone applications or IMM for automated testing and monitoring (requires controller). To find out more about Project Fire's residential zone packages, visit their website.

projectfire.co.uk

From the sprinkler head

A ROUND-UP OF NEWS FROM BAFSA & ITS MEMBERS

Flow Switches - residential & domestic

Flow switches play a crucial role in fire sprinkler systems, providing alarm signals to notify the activation of a sprinkler head. Commercial fire sprinkler flow switches have had to conform to standards for years, however, the updates to BS 9251:2021 have brought in the addition of conformity for flow switches in residential and domestic fire sprinkler systems.

Updates from BS 9251:2021

The 2021 updates for BS 9251 now state that flow switches must be tested and approved to EN 12259-5. This is good news for the industry as it ensures that installers are using high quality products that have been rigorously tested. The section below highlights the different aspects of EN 12259-5 that residential flow switches must now also conform to, which therefore guarantees a high-quality product.

Metallic, water pressure retaining parts

A key aspect of fire sprinkler flow switches is that they should have metallic pressure retaining parts, this ensures they at least comply with the minimum pressure rating of 12 Bar. Although this is a minimum rating, some high-quality flow switches have pressure ratings of 16 Bar and upwards, this is often needed in larger pipe systems and can be commonly needed on residential sprinkler pump sets where the pressure is higher. Metallic threads on flow switches provide multiple benefits over plastic threads; the main benefit being the strength a metallic thread offers. Once installed on-site there is a high possibility that a flow switch will get knocked, especially in a new build when construction is still ongoing. Plastic thread & stem flow switches can have a tendency of snapping easily on large construction sites, whereas stronger brass stem flow switches are much more robust and therefore the chances of them snapping on-site are minimal.

Operation

The flow rate setpoint of a fire sprinkler flow switch is critical to prevent false activation. A continuous signal must be provided between 10 l/min and 80 l/min. A setpoint of less than 10 l/min could see a switch signal from a small surge in the system and not the activation of a sprinkler head. Any more than 80 l/min and the flow switch may not detect the operation of some low flow systems. Testing to EN 12259-5 must be conducted by a certified test house, this is LPCB in the UK, due to the severity of some of the tests the flow switches are put through. To prove their reliability, the flow switches are put through an operational cycling test of 10,000 cycles at different voltages. This test is above and beyond the usage they would see, thus proving their dependability in sprinkler systems.

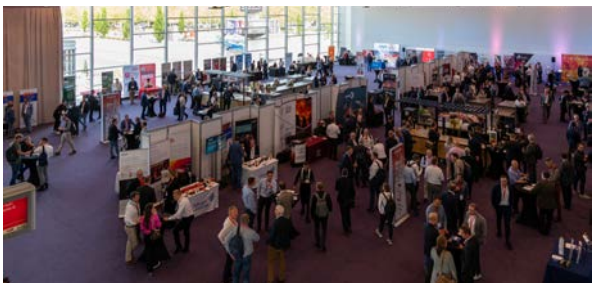
Endurance

Endurance is another important aspect in the testing of residential fire sprinkler flow switches. Flow switches must undergo an operating test at a flow velocity of 10 m/s for 90 min without suffering any permanent distortion, detachment, or breakage. This test was derived for commercial sprinkler flow switches and is generally a much higher flow rate than you would expect in a residential sprinkler system. Therefore, using an approved flow switch means they have been rigorously tested and can comfortably operate in a residential sprinkler system.

Conclusion

While simple, lower cost flow switches have been used in residential and domestic fire sprinkler systems for years, now only approved flow switches can be used to comply to BS 9251:2021. These changes have led to the improvement in quality of the flow switches on the market and all new products being approved, including most recently the AE-VKS-JB series by Applications Engineering Ltd receiving its LPCB certification in February 2023.

appeng.co.uk



Record attendance

At the end of May, 20 BAFSA members with more than 60 representatives participated in Fire Sprinkler International at the Rai in Amsterdam.

The two day conference, which was attended by more than 370 delegates, was complemented by an exhibition at which Armstrong Fluid Technology, CST Industries, Clarke Fire Protection Products, FM Approvals, FPA, Johnson Controls, Marioff, Potter Electric Signal, Rapidrop, Reliable Sprinkler UK, SPP Pumps, Tornatech, Victaulic and Viking – all BAFSA members - displayed their unique products and services to an eager audience.

Inspection & Commissioning courses

BAFSA is running Inspection and Maintenance courses in July, August and September. This course will be suitable for project managers and engineers (who do not do design work), senior supervisors and commissioning engineers.

As the course also covers maintenance requirements, it will also be beneficial for maintenance engineers. Candidates who pass the course can apply for the (NEW) Commercial Fire Sprinkler Engineer CSCS Card.

To sit the course, the candidate must have a valid SMSTS Certificate and three years' experience in the sprinkler industry.

25th, 26th & 27th July
Holiday Inn Gatwick Airport (Min 10 people, Max 15 People)

9th, 10th & 11th August
Holiday Inn, Aytoun Street Manchester
(Min 10 People, Max 15 people)

13th, 14th & 15th September
EKGTA – East Kilbride (Min 7 people, Max 12 people)

Other dates can be arranged depending on demand
Course cost: BAFSA members - £945.00; Non Members - £1050

To find out more or to register your interest, please email BAFSA's Technical Committee chairman, Alan Crichton: alan.crichton@bafsa.org.uk

FOCUS ON ...

From the sprinkler head

Solihull Council retrofitting 14,000 sprinklers in 37 tower blocks

Sara Benaissa of Project Fire, spoke with Steve Murray from Solihull Council regarding the Solihull sprinkler project which started in 2020.

37 TOWER BLOCKS

1,924 HOMES

14,430 SPRINKLERS

63,700 MILES OF PIPEWORK

The Solihull Council initiative installed sprinklers into nearly 2000 social housing apartments across Solihull, a positive change since the Grenfell disaster. Nearly 15000 sprinklers have been installed across 37 tower blocks.

Could you introduce yourself and your role within this project?

Yes of course, I work for Solihull Community Housing which is an ALMO, or an arm's length organisation, linked to Solihull Council. We help the council to better understand and protect their residents in a council area that is one of the biggest in the UK with a diverse range of residents, including the vulnerable. The Council specifically gave us the Solihull Council retrofit project which involved 37 blocks. We needed to ascertain the best way to protect those residents from fire, this included sprinklers, but as part of a larger holistic fire protection system, including cladding, panels and fire alarms.

How did the project come about?

Well, since the Grenfell tragedy, Solihull Council has been reviewing how they can better protect local residents against fire in the Solihull area. A feasibility report was created in 2018 to confirm without doubt that sprinklers were the best course of action to save lives. One of the reasons the report was commissioned is because there were specific engineering elements to review as the blocks were built in the 60s so the report needed to address if we could actually fit in the sprinklers.

So you got the go ahead... did everything go to plan?

Yes we did, as we expected the report clearly confirmed sprinkler retrofitting was the best option to fully protect the residents in those high rises. We then created a project plan and started to install the systems in 2020. As fate would have it, during the sprinkler system installation phase the BS 9251 regulations changed and the new BS9251:2021 regulations were put into place. We had two options, either stay with the original project (which we were legally allowed to do) or redesign the entire plan from A-Z so is it becomes compliant with the new 2021 regulations and it is fit for the future.

So you chose to redesign the system to BS9251:2021?

Yes, we chose to transform the project, so it was in line with the 2021 regulations. Protecting our residents is always our number one priority and as these regulations are a lot stricter it was logical to go with these to ensure we have done everything possible to ensure residents are fully protected from fire throughout the lifecycle of the 37 towers.

There was actually a substantial cost involved. If you think about the sheer size of the project, for example we needed 7 sprinkler heads per apartment, 2 sprinkler heads per common area. Then if you look at it in a larger sense that's approximately 390 sprinkler heads installed per block, 14430 sprinkler heads across all 37 blocks with 63700m of CPVC pipework installed across the 37 blocks. There were 24 litre tanks, secondary power supplies to name just a few of the redesigning elements involved.

As resident safety was our number one reason for transforming the project the extra investment was deemed necessary and the project design was approved. What was actually really helpful during this stage was that Project Fire's automatic testing and remote sprinkler monitoring system helped us to achieve the 2021 compliancy.

Once we evolved the system to fully protect our residents we actually become the first council to adapt to the 2021 regulations in the UK.

This is a great example of taking fire protection seriously for residential properties. have you already received positive results?

Gosh tons. Firstly, we actually had a kitchen fire a few weeks ago in a property while the resident was in the home. Thanks to Project Fire's monitoring system, we were immediately alerted that the sprinkler head was

activated. The sprinkler put the fire out in seconds, and we were able to ring the fire service and tell them with precision where the fire was located. We got the system running again immediately as we knew exactly which flow-switch had been activated. It's really impactful when you actually see the system at work, and you know that it has saved a life. We also know Project fire's system is helping to protect our residents by ensuring the system remains in compliance . With a click of a button we can see every flow switch and control valve is being continually monitored and will be ready in case a fire happens again.

We expected more resistance to change and prepared a huge communication campaign both online and door to door. But we largely received positive feedback. Residents feel more secure in their own homes and they really see now that the council has invested time and funding to ensure their safety. They really saw the fact that we were future proofing the entire neighbourhood and that we were forward thinking in how we would do that across the entire fire protection solution.

In fact, the benefits of retrofitting sprinklers went far beyond fire safety. We were really surprised to find that it also provided huge social responsibility benefits for both our residents and us as a council.

So your fire safety initiatives also allowed you to ensure resident safety across the board?

Yes exactly. We retrofitted resident homes during the peak of the COVID-19 pandemic during 2020 and would often spend 3-4 days installing the sprinklers systems which meant we were often a lifeline and the only contact available to them. We were able to identify very quickly other support that the resident might need and contacted the relevant council department who then got immediately in touch with the resident to fully support them. It truly opened up a door, literally and figurately. And that engagement and contact with the residents has revolutionised the way we work and invest in the neighbourhood. We are now fully addressing all aspects of resident safety, whether that is fire, mental health, financial or employment opportunities.

We also wanted to make sure that this project re-invested in the local economy as part of a wider social value objective. So we picked suppliers that are not only innovative and leaders in their field but they also had to be local.

Since project completion, we also applied for Digital Innovation in Fire 2023 Award. We hope that our forward thinking design choices and innovative fire products we installed for the Solihull project will go a long way towards winning the award.

Speaking of successes what would you say were the biggest for this project?

As I mentioned before, definitely community engagement. We originally thought we would be installing a state of the art sprinkler system to protect our residents and that's it. Now we understand that fire safety is part of a larger citizen safety piece. And once you connect truly with each resident on one safety element you can join the dots for the others and create a quality place to live where resident feel safe and secure.

The other big success for me was being able to future proof fire safety through the installation of many different fire protection products, including Project Fire's testing and monitoring system. For residents to be fully protected, sprinklers need to be part of a larger fire protection strategy that complies with the latest regulations and innovations in the industry. Fire safety is a holistic solution, and it is the responsibility of everyone involved to ensure what is provided to residents is compliant and long-lasting.

We totally agree. and what would you say were the lessons learnt for this project that would help other residential projects such as this one?

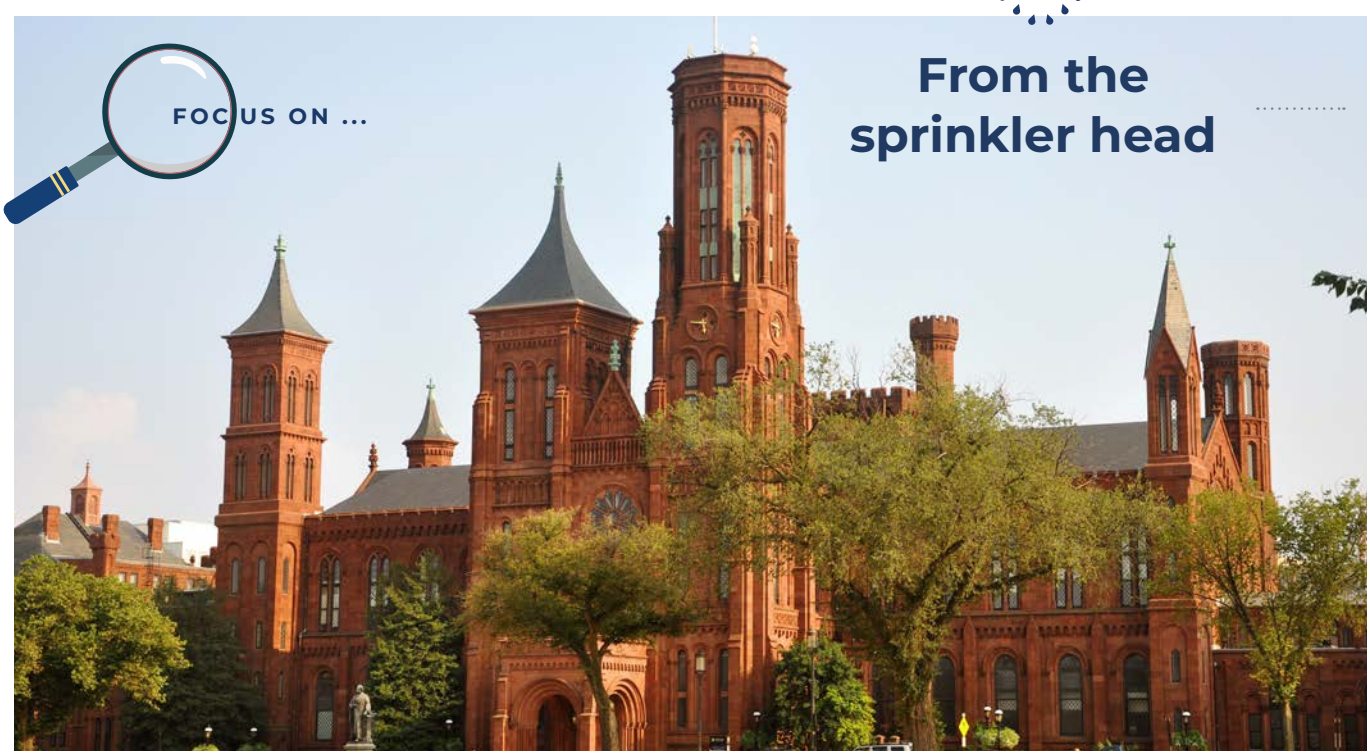
Definitely engage with the community as early as possible. We engaged with them right before the start of the project, but looking back it would have been useful to do it even earlier than that. Mediating between the resident and the fire protection solution was definitely one of the most important roles we had during the project.

I would also say stay open to what the project truly needs and try and achieve that in a realistic way. Always bear in mind that when retrofitting in residential properties there is a huge social responsibility, so resident safety should always be considered number one and everything else comes second.

Thanks Steve. Glad to see Solihull council is so committed to its residents for not just fire safety but protecting the community as a whole. looking forward to hearing if you win that award!

Project Fire is invested in developing solutions for both residential and domestic properties that use the latest fire sprinkler technologies protecting buildings and people from fire. For more information on this project contact Project Fire on info@projectfire.co.uk.

projectfire.co.uk



Protecting the largest museum in the world from fire

WITH MICHAEL KILBY, ASSOCIATE DIRECTOR FOR FIRE PROTECTION, SMITHSONIAN INSTITUTION

The Smithsonian Institution was established with funds from Englishman, James Smithson, a British scientist who left his estate, which totalled half a million dollars, to the United States to found an establishment for the increase and diffusion of knowledge." On August 10, 1846, the U.S. Senate passed the act organising the Smithsonian Institution, which was signed into law by President James K. Polk and is now the world's largest museum, education, and research complex.

Visitors can pay homage to Smithson with a visit to his crypt, located on the first floor of the Smithsonian Castle.

So, how big is the Smithsonian Institution?
The Smithsonian consist of 21 museums, galleries and gardens, the National Zoological park, and nine research centres including the Fort Pierce Marine Station in Florida and its Tropical Research Institute in Panama as well as the recently established National Women's History Museum and the National Museum of the American Latino.

You obviously have a variety of buildings, with many different functions... Tell us a little more about some of the individual sites.
The oldest is the Smithsonian Castle which was completed in 1855 and contains collections' highlights from each of the Institutions museums. 161 years later we opened The National Museum of African American History and Culture, where all Americans can learn about the richness and diversity of the African American experience, what it means to their lives, and how it helped shape this nation.

Spanning 140,000 square metres, the Natural History Museum, which opened to the public in 1910, is our largest building and home to the largest natural history collection in the world including the Hope Diamond and 46 million fossils.

And of course there are many thousands of square metres of specialist storage, conservation labs, archives and research libraries.

As a risk specialist, can you illustrate to the readership the risks the Smithsonian sites are exposed to?
Fire is the greatest threat to museums and cultural properties. One of the most estructives fires in recent years occurred in September 2018 when the National Museum of Brazil was heavily damaged by a large fire and although some items were saved, it is believed that 92.5% of its archive of 20 million items were destroyed. Brazilian President Michel Temer said that the loss due to the fire was "incalculable."

Museum Deputy Director Luiz Fernando Dias Daniel commented that curators "fought with different governments to get adequate resources to preserve what is now completely

destroyed". The museum lacked a fire sprinkler system, although there were smoke detectors and a few fire extinguishers.

What is the Smithsonian fire protection strategy?
I like to call it our three-legged stool approach…

Prevention: segregating operations - ignition sources – combustibles - wildfire precautions

Containment: fire-rated barriers - collection storage - hazardous operations

Detection & suppression: fire suppression - fire detection

It would be good if we could focus on fire suppression, and I would be especially interested to learn about the automatic fire sprinklers you have installed?
We have four types of suppression systems protecting the various Smithsonian buildings: total flooding gaseous; hypoxic air; water mist; sprinklers.

The benefits of sprinkler protection as I see it are: automatic response – no waiting for the fire department; sprinklers are heat activated; effective fire control; a fraction of the volume of water is released compared to hose streams; low maintenance and of vital import, they are extremely reliable.

Today approximately 90% of Smithsonian spaces are protected by sprinklers.

Has there ever been a major fire at the Smithsonian?
The original Smithsonian Institution Building, often called the Smithsonian Castle, caught fire in 1865 when workmen mistakenly installed a stovepipe in the building wall. The building was poorly fireproofed and the fire burned unnoticed within the walls for several days. When it erupted, it destroyed the lecture hall, apparatus room, Board of Regent's room, Secretary's office, the Picture Gallery, and all the priceless artifacts they housed. The main room of the museum and the library were saved. The Castle was rebuilt beginning in spring 1867 and fireproofed throughout.

In contrast a fire on a balcony in the Castle library in 2017 actuated a sprinkler head which extinguished the fire damaging little more than the carpet and the balustrade paintwork.

Retrofitting sprinklers into heritage buildings must present many challenges and require special care and attention.

What are the key things that concern you?
Obviously the protecting historic elements and aesthetics and the unique architecture of the building thus working with experienced and specialist architects and installers to ensure sympathetic but effective installations. This involved identifying and utilising building

shafts, ceiling cavities and other feature to conceal pipe – even using crown molding. Having said that we have used copper piping in exposed areas, painting it to match the surroundings. And of course concealed sprinkler heads, when factory painted to match the décor disappear into the background.

After more than thirty years developing a programme of sprinkler installations, what lessons have you learned?
It is essential to utilise a sprinkler contractor which has experience with museums and historic buildings and also incorporate precautions into the contract including physical protection for building features and collections and essentially pretest with air, not water, for areas highly vulnerable to water damage.

During the installation period regularly check that plans are being followed, approved materials and methods used, the workmanship is satisfactory and the historic fabric protected. A thorough final inspection should be undertaken examining all piping, fittings, heads, valves, drains, signage and verifying accuracy of as-built drawings and of course a pressure test for 200 psi for 2 hours, checking each joint for leaks. Also a final check on the proper number and type of spare sprinkler heads are supplied.

Inspections, testing and maintenance for the life of the system is also key.

There are still many people who are fearful of using water based suppression systems to protect precious and irreplaceable properties and assets, how did you convince your teams to accept accept and respect the value of sprinklers?
We undertook a programme to consider fire risk vs risk of water damage; presented examples of museum fires; examined how sprinkler systems work; illustrated the reliability of sprinklers; offered comparisons of water usage: -sprinkler ~ 80 – 180 lpm v fire hose ~ 950 lpm. And of course address and dispel the common myths:

- All the sprinklers activate at once during a fire – only in Hollywood!
- System will discharge as much water or more than fire department
- Incompatible with historic buildings
- Sprinklers are ugly!

In conclusion, I believe that with careful design and installation, and a more informed museum staff, comes greater acceptance and confidence in sprinkler systems.

Technical questions & answers

We have had many enquires over the past few months, they were varied, and the following are some examples and the responses given. This is the BAFSA weblink if you have any technical enquiry: www.bafsa.org.uk/contact-us/ask-bafsa/

Our sprinkler installer company has told us that we must sprinkler protect a 'cold room' that already has sprinkler protection at the high roof area above the cold store. They say not protecting it could cause a major non-compliance on our certificate of compliance. Is it really necessary to protect this room?

ANSWER

Small cold stores/freezers within a sprinkler protected building must also be sprinkler protected and are not listed as an 'exception' in BS EN 12845 or the LPC Sprinkler Rules. BS EN 12845 design expects all areas/rooms to be protected unless they are listed as exceptions in paragraphs 5.1.2 or 5.1.3. Omitting protection without a good sound/justifiable engineering reason would be, as stated by your installer, a major non-compliance and it is unlikely that their Third Party certification body would allow them to issue a certificate of compliance. Technical Bulletin TB219 of the LPC Rules goes into some detail of how 'dry pendant/dry horizontal sprinklers can be used to protect these areas. Note: the manufacturers data sheet for installers is quite comprehensive and must be followed precisely so there are no problems down the line.

When our sprinkler system is checked does the engineer have to check every single sprinkler head?

ANSWER

When the inspection/review of hazard is done it is expected that any changes affecting the sprinkler system would be picked up. This would be a combination of the inspector looking at the system including heads and the client advising about any work/changes they have been done that may affect the sprinklers. It may be impractical for the inspector to get to see every single sprinkler head (i.e. some may be in inaccessible area like over hazardous operating equipment, hot areas, areas with dangerous fumes etc), so they depend on the client telling them where any work has been done i.e. new partitions/walls, new equipment at roof, painting or spraying near the sprinkler heads and identifying the areas so the inspector can check. Note: your insurer should also be told about any changes of structure/services etc as well. In summary it's a combination of the inspector and client's engineers working together to identify any changes, damage, or impairments.

Do we need to consider 'dynamic pressure' when doing a flow and pressure test on a sprinkler system?

ANSWER

Dynamic pressure can also be described as 'velocity pressure'. In BS EN 12845 Para. 15.3.2 Pipe Friction Loss it states: The pressure loss due to velocity might be ignored. The pressure gauge is giving the pressure at its entry point whether the water is flowing or not. Note that any pressure reading we take is dependent on the accuracy of the equipment. One manufacturer's pressure gauge has an accuracy of +/- 2.5%. Flow meters can have an accuracy of +/- 5%. So, if we were testing for say 500 L/min at a pressure of 5 bar the numbers that are actually occurring could be: from 4.875 to 5.125 bar, and 475 to 525 litres, different temperatures will give different figures for the above. On commercial systems with many thousands of litres flow and high pressures and with the gauge indicator vibrating and the flow meter level indicator moving, if we record pressure to an accuracy of say 50 m/bar and flows to say 50 L/min we are doing well. Obviously with new digital innovations for pressure gauges and flow meters things are getting more accurate but the basic interaction between flowing water and the sensing elements there will still be some minor inaccuracies.

Can we have our life safety sprinkler system setup so that it can only be operated manually i.e., if a sprinkler head operated we would open the valve or can we have it set so there is a delay of maybe 5 minutes, so we can check for fire before water flows? We are worried about malfunction of the system.

ANSWER

Adding delays to the operation of a sprinkler system are considered in the UK sprinkler rules (BS EN 12845). I understand your reasoning, but I think your worry of malfunction is not borne out by the history of sprinkler systems. The only allowance in sprinkler rules for a time delay is usually to allow for fluctuations in a direct town's main water supply, and that's only for about a minute until the mains settles down again. There are sprinkler systems called 'pre-action systems that are a bit more complex and have added features for water sensitive area like data centres. You would need discuss this with the approving body to agree that they would accept that type for a 'life safety' system. Any electronic fire detector (smoke, heat, flame) will operate a lot quicker than a sprinkler head and may give you a minute or two to check the area. If the detection system is dependent on say two signals from separate detection loops than there probably is a fire or at least something smouldering.

When the fire gets to a stage where enough heat is generated the sprinkler heads/s will operate and control the fire until the fire service gets there.

Can sprinklers be installed in a hotel kitchen that has deep fat fryers?

ANSWER

Many industrial deep fat fryers will have their own specialised suppression system installed within the hood exhaust ducts. Sprinkler at ceiling level will usually be installed in a way that the hood acts as a 'baffle' and stops water spraying directly on to the hot oil. The specialised suppression system will most likely operate a lot sooner than the sprinkler system and will most probably extinguish the oil fire before/if the sprinklers are required.

Is there any requirement to protect a wet riser pipe from freezing?

ANSWER

BS 9990: 4.1.4.2 states that 'pipes should be 'adequately protected against frost' it refers to BS EN 806-2 which in Paragraphs 4.1.5 4.1.6 and 4.1.7 covers the topic of insulation and trace heating.

Our client has taken over a warehouse that has an old sprinkler system which was installed over 30 years ago. We are not sure if it's still working or redundant. Are there any rules that state what we should do with the system to get it working if possible.

ANSWER

A sprinkler system installed over 30 years ago was probably designed to LPC Rules for automatic sprinkler installations, incorporating the text of BS 5306-2, which eventually became BS EN 12845. Even a system that old could be brought back into service provided the water supplies are still functional. Any of our BAFSA Third Party accredited members would be able to advise on its present condition and what steps can be taken to get it working again if possible. You can find a list of members on our website under 'find a member' heading.

Do the sprinkler rules specify that the diesel pump has to be placed on a raised reinforced concrete base?

ANSWER

BS EN 12845 does not state the pump base requirements but LPC Technical Bulletin 210 in LPC Sprinkler rules 2015 does address it. It states that pumps should be installed on a concrete plinth and a few other base options. It also states that it should be installed to the manufacturers data sheet recommendations.

We are installing air conditioning units in rooms with sprinklers. Is there a requirement in sprinkler rules about how far we have to be away from the head?

ANSWER

In circumstances like this the A/C Units would be treated as the face of a beam and BS EN 12845 'beam rule' would be applied, refer to Paras 12.4.6 and 12.4.7 for further information.

Do the pumps for residential and domestic sprinkler systems have to have Third Party approval?

BS 9251 does not specify precisely that pumps for domestic systems must be Third Party certified. But it does 'strongly advise the desirability of Third Party certification' in the FOREWORD of BS9251. It also mentions that users of fixed firefighting systems are strongly advised to consider the desirability of third-party testing/inspection/certification of conformity to the relevant standards.

Only pump sets suitable for use in sprinkler systems should be installed and used in accordance with the manufacturer's instructions.

All of these and more are available to download at bafsa.org.uk

British Automatic Fire Sprinkler Association
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