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Foreword

Peter Armstrong, Chairman, BAFSA

It's again my privilege, sadly for the last time, to welcome you to the latest edition of the Blue Book, BAFSA's Sprinkler Yearbook. This is our sixth appearance and I'm delighted that in its 40th year, BAFSA Council has seen fit to authorise the expenditure to keep this publication real as opposed to virtual - in other words, we're still printing it and we hope you are still reading it, keeping it and referring to it regularly (unlike many other fire industry publications which can only be read on line).

Since our last edition in November 2013 much has changed, but a great deal has stayed the same. We are still suffering the effects of the fiercest recession since the Great Depression and the sprinkler industry has not been immune to the sad toll of companies who are no longer with us. I also mentioned in my last foreword the potential impact of skill shortages (and elsewhere in this Yearbook you will find evidence of how much BAFSA is doing to help the industry (see page 45).

The issues (and problems) of certification and product approvals are still with us and we are still occasionally bounced between the Fire Protection Association (FPA), the authors of the *Sprinkler Rules* and LPCB/BRE Certification as our primary industry regulator. One of the ways with which we mark our 40th anniversary is a brief history of the association, and even a casual perusal will reveal just how much time and effort over the last 40 years has gone into helping the LPC and then LPCB to impose burdens on the industry. After 14 years as BAFSA's Chair, and more than 40 years in the sprinkler industry, I sometimes wonder why we allow other people to tell us how to run our businesses – and pay handsomely for the privilege.

Changes in legislation in Wales are most welcome and while we are excited by the opportunities which compulsory sprinkler protection will bring, it is certain that this new requirement will change the industry and bring the

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housebuilders and other construction companies into the picture. It's also likely that there will be more and more attempts to use unapproved or non-compliant fire suppression systems or to try to dilute standards in the name of cost-saving. It would be interesting to see a similar exercise undertaken if the construction industry was required to eliminate the use of combustible materials or materials which generate toxic smoke in fires.

Mentioning standards reminds me that as an industry we are also facing considerable upheaval in respect of the standards to which we work. Before the end of 2014 we will have a new standard for residential and domestic sprinkler systems and early in 2015 we will also have a revised standard covering industrial and commercial systems. All of this work has involved many hours of attendance at meetings and working groups by BAFSA members and staff and the implementation of the new standards will involve not insignificant expenditure by both installers and designers. Again, I find myself asking, who benefits from all this?

However, it's not all doom and gloom, there has been a discernable change in public attitudes about the provision of fire protection systems as evinced by the general outcry and surprise at the fire in the Glasgow School of Art. One BAFSA staff member found that a journalist simply wouldn't believe him when he told her that there were no legal requirements for sprinkler protection in such buildings. The work by the Business Sprinkler Alliance (of whom BAFSA is a founder member) has also been credited with changing attitudes in the upper echelons of commerce by its work on the costs of fire in warehouses (see page 14) and we are pleased to be actively collaborating with them in our own work to promote sprinklers in large, single storey buildings.

Other welcome developments demonstrate our willingness to collaborate with other organisations. I have said frequently that BAFSA believes that the most effective way of promoting its objectives is by working with other groups. Perhaps the greatest change in the way in which sprinklers are promoted is in the attitude of the fire and rescue service.

In the past 15 years, probably mainly as a result of the efforts of the National Fire Sprinkler Network, we have seen a major shift in the appreciation of the value of sprinklers by the fire service. Without exception, every single fire and rescue organisation has issued statements supporting sprinklers and all have also taken steps to actively promote wider use of fire suppression. BAFSA has assisted in these objectives by supporting events run by individual services and provided resources for seminars and demonstrations.

We've now gone further and have entered into formal agreements by an exchange of Memoranda of Understanding with London Fire Brigade, the Scottish Fire & Rescue Service and Buckinghamshire Fire & Rescue Service. At the time of writing, discussions are underway with Cheshire Fire & Rescue

Service (on behalf of the NW Fire Service) and South Wales (on behalf the Welsh Fire Service) to formalise our already cordial relations. I'm convinced that this work will be more effective in changing attitudes in government than any lobbying we can do ourselves.

I mentioned earlier that this would be my last Foreword as I shall be stepping down as Chair of BAFSA at the end of this year. It's been more than 14 years since I took on the role and, while I can't pretend all has been plain sailing and calm weather, I am conscious of the great privilege and honour to have been entrusted with the stewardship of our Association. BAFSA is a very different organisation from the one I took over in January 2000, it's a great deal larger, it's significantly more inclusive, democratic and transparent and above all, better funded. Getting to this stage has required a huge effort from many people, volunteer leaders, members and staff and I'm grateful to all. However it would be wrong not to single out one name that has done the most to allow me to continue as Chair. Karen Taylor, then my PA, took over the role of Council Minutes Secretary in 2004. Within a short time she had taken on the administration of the Council and her work is known and appreciated by all members. She also has one unique skill in that she is probably the only member of 'Team BAFSA' to whom our Secretary General defers.

I was taught by my mother not to outstay my welcome, and that now threatens, so I believe it's time for me to go. I leave BAFSA in good heart at the end of its 40th year with an expectation of a new leadership to take it onward and upward. My company will continue to support the Association and I will continue to take an in interest in its progress and activities.

Part 1: The sprinkler scene

1 Review of the year: a personal view

Secretary General Stewart Kidd reviews the last two years, which have been particularly busy for the British Automatic Fire Sprinkler Association (BAFSA)

I recently attended a seminar, where a speaker talking about business resilience and the impact of weather incidents on industry and commerce, remarked that in 2013 'there had been a lot of weather around'. I guess a similar view applies to BAFSA's world, since a great deal has happened since the publication of the 2013/14 Yearbook.

The most significant single event (although one which has taken a long time to arrive) was the implementation of the first phase of new sprinkler requirements under the building regulations in Wales (see page 23). As the full measure will not come into effect until the end of 2015, it is obviously much too early to assess the practical impact of the changes. But one very important fact is now clear; in Scotland and Wales, the occupants of new and refurbished residential care premises will be protected by automatic fire suppression systems. It is also likely that the Scottish parliament will go further and may make the requirement for fire suppression retrospective – at least in larger premises – since, as a member of the Holyrood parliament commented: 'No-one wants a two-tier care system'.

In England, the impact of these changes will take time to sink in. However, one thing is very clear, should there be a serious life loss fire in an unprotected care home in England in the near future, serious questions about fire protection standards in such premises will be asked.

Let us not forget that the 2004 BRE sprinkler cost-benefit study (often used by Whitehall as a reason for not doing things) suggested that fire suppression in residential care premises *was* cost effective. There has never been a satisfactory explanation of why the government rejected this finding when issuing the 2007 update of Approved Document (AD-B). One might also ask why AD-B sets the bar for sprinklers in high-rise flats at 30m, while in Scotland it is 18m? Or even more controversially, why weren't sprinklers fitted in Lakanal House (as required by AD-B) at the time of its £3.6 million refurbishment – did Building Regulations not apply?

Holding those thoughts for a moment, let's look at what actually does motivate our legislators – deaths! It is conventional wisdom that prior to the introduction of the Regulatory Reform (Fire Safety) Order 2005 and the Fire (Scotland) Act 2005 that new fire legislation was only ever introduced after a serious incident – stable door (or tombstone) legislation if you like. Such legislation included:

- 1956 Keighley Mill: 8 dead – Factories Act 1961
- 1961 Henderson's Department Store: 11 dead – Offices, Shops and Railway Premises Act 1963
- 1969 Rose and Crown Hotel, Saffron Walden: 11 dead – Fire Precautions Act 1971[1]
- 1985 Bradford City Football Club: 75 dead – Fire Safety and Safety of Places of Sports Act 1987
- 1987 Kings Cross Underground Station: 38 dead – Fire Precautions (Sub-surface Railway Stations) Regulations 1989

However, there were also several notorious post-war fires which did not provoke new legislation:

- 1960 Cheapside Street Whisky Bond, Glasgow: 13 firefighters and 6 Salvage Corps men dead,
- 1961 Top Storey nightclub fire, Bolton: 19 dead
- 1968 James Watt Street factory, Glasgow: 22 dead
- 1972 Coldharbour Hospital, Sherborne: 30 dead
- 1973 Summerland fire, Douglas, Isle of Man: 51 dead
- 1979 Woolworth's, Manchester: 11 dead
- 1980 Denmark Street nightclub, London: 37 dead
- 1981 New Cross, house, London: 13 dead
- 1994 (Illegal) Clerkenwell cinema, London: 11 dead

Also missing are the most recent tragedies involving the multiple deaths of firefighters at Stevenage (2005), Atherstone (2007) and Southampton (2007).

Is it really still the view that 'new legislation will only be enacted when it is justified by the risk to life' being actually sustainable? Or is legislation driven by other imperatives such as the location of the fire, the extent of media comment or public outcry?

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1 I was once told by a very senior Home Office official that work had actually started on the 1971 Act before the fire

The establishment view is that the significant reduction in fire fatalities since 1999 (together with a very welcome reduction in the total number of fires) suggests that present legislation is entirely satisfactory. This of course ignores the reality that the decline in fires and fire deaths has complex causes (see below). A more cynical view would be that society places more value on some lives than others and that only the lightest touch of regulation should interfere with commerce and industry. This last voice is reflected in the consistent failure of the European Union to regulate on uniform standards for hotel fire safety (mustn't upset the hotel industry), while at the same time placing legal restrictions on the power consumption of hairdryers (all made in China).

However, there is a problem with this argument. The UK effectively has a two-tier system where new and refurbished buildings have to comply with a regularly updated set of fairly prescriptive[2] fire protection measures, while occupied buildings have to comply with a wholly different set of performance-based requirements, based on self-assessment and minimum standards of implementation.

The AD-B criteria are focused on purpose/occupancy groups which are probably long overdue for revision (I've commented previously on the artificial and outdated distinctions between large single storey warehousing, retail and factory use). Consider also that one of the more critical life safety occupancy categories is 'Homes in Multiple Occupation' – not mentioned in AD-B, apparently on the grounds that 'no one actually builds HMOs'.

In fact, virtually all HMOs start life as dwellings and are converted to their new use, often by internal division. Surely this would bring the regulations into play? Wales will have to address this point soon to avoid the risk that HMOs will escape the requirement for automatic fire suppression. On a related topic, when are we likely to see a sensible resolution to the present anomaly that a block of flats in England has to be sprinklered if it exceeds 30m in height but a developer can build an unprotected 100m tall block if it's designated as student accommodation?

How many lives have been saved by legislation compared with the efforts of community educators in the fire service, insurance surveyors, the work of the Fire Protection Association and other groups in the fire industry? I would suggest that the answer is a resounding 'nobody knows' – although the

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2 Yes, I know that Approved Document B is performance-based and that there are various ways of complying with its essentials, but it's fair to say that the building regulations/standards are essentially prescriptive in impact.

provision of domestic smoke alarms and the foam-filled furniture regulations (under threat of dilution, by the way) can take credit for saving many lives in dwellings since 1990.

For example, following on from this, should we look again at the arguments for reducing the maximum size of unsprinklered warehouses? Building regulations are not only about life safety, as any examination of the suite of approved documents will show.[3] It is often forgotten that there is no 'legal requirement' to provide sprinklers in warehouses over 20,000m^2 as shown by the rebuild of the Sony, Enfield property[4] (see page 21). All a developer has to do is convince a building control offer – or increasingly, an Approved Inspector, that a fire engineering study has been carried out and that sprinkler protection is not necessary. Some Approved Inspectors even advertise their expertise in helping to eliminate 'unnecessary costs' from projects.

And then there is the problem of mezzanines. Modern logistics, especially in the fashion business, demand extreme flexibility, resulting in some warehouses installing as many as four mezzanine floors. Not a happy prospect for a fire officer responding to what was believed to be a large single storey building but is in fact, a multi-storey building. This change in practice needs to be reflected in building standards.

So, apart from a need for changes in building occupancy groups and a more enforceable limit on the size of unprotected buildings, what (or rather who) else has annoyed me in the past two years?

The changes to the Welsh regulations have inspired a number of new heights of ingenuity from the inventors in our society. Perhaps the strangest is the plastic radiator valve which is designed to fail at a preset temperature and spray (presumably hot, rust-inhibited) water on the occupants of a room should there be a fire. Setting aside issues of: what happens in summer?, the inventor has not endeared himself to the fire community by a dogged persistence in denying the life safety potential of sprinklers, and suggesting that people will be injured or even killed by thermal shock from cold water when sprinklers open. My personal advice would be to do more work on the plastic valve – it might be a useful alternative for a sprinkler head actuator or other fire detection system.

We've also had a domestic smoke venting system offered as a better alternative to sprinklers – apparently because 'everyone knows that it is smoke that kills

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3 For example: AD-C *Resistance to contaminants and moisture*; AD-E *Resistance to sound*; AD-L *Conservation of fuel and power*.

4 After being totally destroyed in an arson fire in the 2011 urban riots.

and sprinklers won't protect you in a cold smoke fire' (whatever that is). More recently, we've seen proposals for the wider use of smoke curtains in dwellings.

I suppose close on the heels of the inventors on my 'bucket list' are the (now relatively few) water suppliers who appear to believe that connecting sprinklers direct to a service main will bring about the collapse of civilisation. It is strange how this group demands tanks and pumps for sprinklers in case there is an interruption to the water supply network. Presumably they also believe that the electricity supply network is never interrupted?

To conclude what I hope has been an iconoclastic and entertaining rant, a few reflections on the past and the future.

The history of BASA/BAFSA covers 40 years of service to sprinklers – so far. It does not end here. BAFSA is a vibrant, active and well-funded organisation, with a committed volunteer leadership supported by a team of enthusiastic and knowledgeable staff, who all believe in what the association does.

When comparisons are made between the problems faced by the pioneers who founded the association in 1974 and those facing the association and the sprinkler industry today (for they are the same), it is clear that some issues are perennial and may never be resolved to everyone's satisfaction. However, sprinklers are perceived very differently in 2014. When journalists ask after a major fire: 'Why wasn't the factory sprinklered?', we can see how far we have come.

Initiatives in Scotland and Wales, which make sprinklers the norm, show how far England has lagged behind. The view that loss of life is the only criterion for the introduction of new building legislation is flawed and should be discredited.

Similarly, the idea that property protection is only a concern for owners and insurers ignores the reality of how modern commercial buildings are procured, designed, constructed and operated. I hope that BAFSA and its allies will continue to work on destroying these outdated and discredited concepts as hard as they have worked to dispel the traditional sprinkler myths that previously prevented the wider use of sprinkler protection.

As BAFSA enters its fifth decade, it is in good heart and has a confident step. It is sure of purpose and has the support of the industry and its many adherents.

2 Sprinklers in warehouses

2014 saw the culmination of nearly three years of work by the Business Sprinkler Alliance[5] (BSA), when it launched two major pieces of research. Both were undertaken in collaboration with research partners, but commissioned, funded and directed by the Alliance, with the support of BAFSA, which provided a senior member of its leadership team to the BSA board to provide guidance and direction on all aspects of the organisation's work, from the technical details to campaign management.

The first piece of work was an analysis of the cost benefits of installing sprinklers in warehouses, delivered by research partner BRE Global. The second piece of research was a review, by the Centre for Economics and Business Research (Cebr) of the financial and economic impacts of fires in warehouses where no sprinklers were fitted. These two reports have combined to create a compelling and comprehensive overview of the benefits of fire sprinklers in business buildings. They set out a clear commercial imperative for the installation and maintenance of sprinklers, and demonstrate the inherent vulnerabilities of businesses that do not invest in such risk mitigation and physical resilience.

The reports were launched in Parliament early in 2014 and supported by a large-scale media campaign that resulted in coverage and conversations across print, broadcast and online media at both a local and national level.

Momentum has been maintained since publication of the studies, with the BSA using the new evidence to better educate the industry and start conversations with priority audience communities. Target stakeholder groups include architects and designers, local and national politicians and business leaders from both the occupier and builder communities.

The BSA is already working with its research partners to determine if an equally robust business case can be made for the installation of sprinklers in other categories of commercial property. If there is sufficient data to support a study, the BSA will next focus its attention on the business benefits for factories and manufacturing premises.

Creating a credible evidence base has already driven new levels of interest and started better informed and more constructive conversations about the

5 The Business Sprinkler Alliance is largely funded by insurer FM Global in the wider public interest; membership includes: BAFSA, CFOA, EFSN, NFSN, LFB, RISC-A, Zurich Insurance.

commercial benefits of sprinklers. The ultimate aim of the BSA is to create a culture where sprinklers are the accepted norm in business.

2.1 The case for sprinklers

Fire sprinkler systems are one of the most robust and reliable forms of fire protection available on the market; they provide a dependable way to protect business premises from fire and resulting losses.

Fire loss is more than just monetary. A fire in a business premises or warehouse can result in a multitude of issues that go way beyond the traditional concept of risk. These include interruption to business, cash-flow volatility, risk to life safety and reputational damage for the business involved – not to mention the impact on the supply chain, the local community and the environment.

Buildings are often unusable after a fire. By comparison, a premises protected by a sprinkler system may be back up and running in just a few hours, and the rest of the building will often be unaffected. A valuable asset sprayed with water from a sprinkler can frequently be recovered or restored, whereas one that has been burnt is usually destroyed. Sprinklers render fires in industry as non-events with normal operations resuming quickly. They do so time and time again with irrefutable reliability.

2.2 Fire sprinklers in warehouses

In recent years, warehouses have increased in height and floor-size to the point where units measuring up to 50,000m^2 are commonplace; these warehouses operate very differently from the traditional model. Modern logistics demand large un-compartmentalised spaces, densely-packed goods, high-bay storage

and largely automated systems, with the type of goods stored constantly changing on a daily basis. All these factors increase the risk of fire spreading quickly through the premises.

Warehouse businesses have seen the UK's largest fire losses, according to the Association of British Insurers (ABI) and the Fire Protection Association (FPA). Though there are fewer fires than in manufacturing, the financial impact can be disproportionately higher because of the loss of property and stock, business interruption, and liability implications. In an era when businesses are still recovering from the worst recession in living memory, these mounting and unnecessary losses are inexcusable, because they are wholly preventable.

Warehouse facts:

- There are 80,000 warehouses in England and Wales
- There were 621 fires in warehouses in 2012 – 588 in warehouses without sprinklers
- One in five warehouses in England and Wales will have a fire requiring the attendance of firefighters in its lifetime

The low-level of sprinkler use in UK warehouses can be attributed to a number of factors, including a lack of knowledge of the business benefits of sprinkler systems, as well as the nature of the regulated environment.

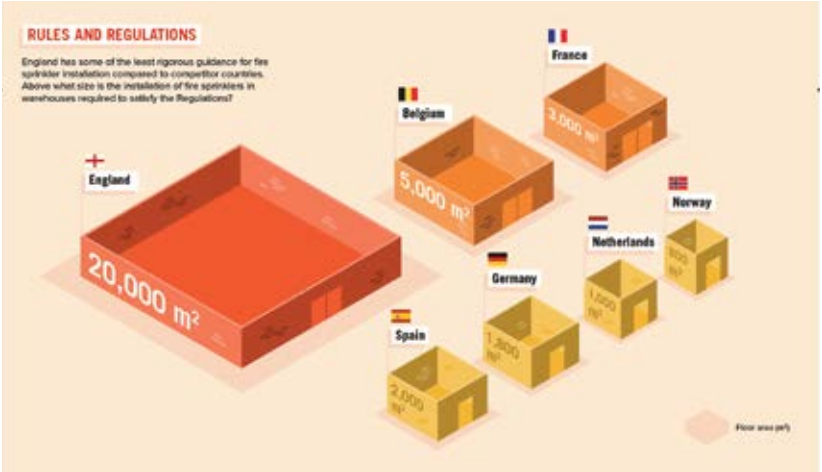
The published guidance from the Department for Communities and Local Government (DCLG) recommends that warehouses in England and Wales should be provided with a fire sprinkler system or equivalent fire prevention mechanism if they are larger than 20,000m^2. By comparison, in the majority of European Union countries fire sprinklers must be installed in commercial and industrial properties with an average floor space one tenth of that size:

- Belgium: 5,000m^2
- France: 3,000m^2
- Spain 2,000m^2
- Denmark: 2,000 – 5,000m^2 (dependent upon fire load)
- Germany: 1,800m^2
- Austria: 1,800m^2
- The Netherlands: 1,000m^2
- Norway: 800m^2

2.3 Building regulations

Guidance is provided by Approved Document B ('AD-B') of the Building Regulations (under the Building Act 1984 and the Building Regulations 2000). The BSA and others have for some years been calling for AD-B to be reviewed, to make it more appropriate to changing business needs, to simplify its provisions, to make design trade-offs more explicit, and to redress anomalies (such as the one requiring blocks of flats taller than 30m to have sprinklers, unless the block is designed to accommodate students).

The Government has recently acknowledged that the cost benefit analysis for the next review of AD-B will be broadened so that its focus covers environmental impacts as well as life safety considerations. The Government's decision was informed by the 2011 Bureau Veritas report into the environmental impact of fires, a study commissioned by the BSA as part of its campaign for better information and positive change.



The 20,000m^2 threshold for sprinkler guidance in warehouses is a consequence of AD-B being limited to considerations relating solely to life safety. Fortunately, there are very few injuries or deaths as a consequence of fires in commercial buildings. This is testament to the efficacy of AD-B in ensuring that buildings are designed to allow safe evacuation in the event of a fire. However, AD-B does not take into consideration property or business protection. Although evidence suggests that the number of commercial building fires is decreasing, the cost of these fires is increasing!

2.4 Robust research

The BSA commissioned research to gain an understanding of the benefits of sprinklers and the true economic and societal costs and impacts of warehouse fires in the UK. The findings of these reports are detailed below and they support the conclusion that any future review of AD-B must consider all of these impacts. Otherwise UK businesses, the national finances and local communities will continue to bear the spiralling costs of avoidable fires.

This research should be welcomed by all involved in the build process as it will result in more appropriate and user-friendly regulation. A thorough review of AD-B will, however, take time and in the meantime, the BSA will continue to work to stimulate a business-led increase in sprinkler use. Achieving universal understanding and appreciation of the benefits of sprinklers for UK businesses will be the ultimate measure of success for BSA's work. To this end it is working with industry partners to ensure that companies are increasingly aware of the critical role fire sprinklers have to play in physical resilience.

What became clear from the research is that insurance alone is not enough to fully protect companies from the long-term impacts of fire. Uninsured risks, such as business interruption and damaged supplier relationships, can cause lasting damage to companies. Such consequences can be avoided if businesses understand the importance of physical resilience and how to protect against the devastating impacts resulting from a blaze.

2.5 Environmental impact and cost benefit of sprinklers

The BSA commissioned a three-year study, conducted independently by BRE Global, in response to increasing annual costs of fire, to determine whether it is cost-effective to install and maintain fire sprinklers in warehouses in England and Wales. The findings of the study are focused solely on warehouses, and as such they only begin to reveal the true financial return fire sprinklers bring to the wider business community.

The report's findings conclusively show that sprinklers are, on average, a cost effective investment for warehouses with a floor area above 2,000m^2, with the greatest benefit arising from the reduction in direct fire losses.

The study looked at the whole-life cost benefit analysis for fire sprinkler installation in three ranges of warehouse sizes.

Key findings from the BRE study include:

- The whole life costs for warehouse buildings larger than 2,000m^2 (around half a football pitch in size) with fire sprinklers are on average 3.7 times lower than ones without them. (The life of a warehouse was estimated at 45 years)
- Fire sprinklers were, on average, not cost-effective in warehouses with an area below 2,000m^2
- Environmental benefits from sprinklers include a reduction in CO_2 emissions from fire, reduced size of fire and reduced quantities of water used to fight fire
- Only 20% of warehouses between 2,000 and 10,000m^2 are fitted with fire sprinklers, compared with 67% for warehouses above 10,000m^2
- Businesses in England would save up to £210m annually if all warehouses above 2,000m^2 were fitted with sprinklers

2.6 The financial and economic impact of warehouse fires

Based on the findings of the BRE Global study, the BSA commissioned the Centre for Economics and Business Research (Cebr) to look into the impacts to business and the wider economy of fires that do not fall within the requirements of UK buildings guidance (AD-B).

The results show that the British economy has lost £1 billion in GDP and 5,000 full-time jobs through preventable fires in commercial warehouses over the past five years. By way of comparison, this cost is equivalent to the annual productivity of the UK's soft drinks industry.

Fires in warehouses without sprinklers are estimated to have had the following impacts on the business, the economy, employment and the Exchequer:

- A direct financial loss to business of £230m per year
- A loss of £190m per year in productivity and impacts to the supply chain
- Approximately 1,000 direct and indirect job losses annually through disruption and business failure
- A £160m loss to the Treasury in tax receipts over five years
- 135,000 tonnes of carbon dioxide released into the atmosphere annually
- Carbon dioxide emissions and water used in firefighting valued at £11 million per year
- Knock-on effects of each fire (such as road closures and air and water contamination) impacting more than 20 local business for every fire recorded

2.7 The role for fire sprinklers

The environmental impact of commercial building fires is usually all too evident, with air pollution caused by smoke and contaminated extinguishing water and foams polluting local water courses.

In 2011, the BSA commissioned a study by Bureau Veritas which investigated the impact on the environment and communities of fires in sprinklered and unsprinklered business buildings.

The study estimated that the installation of fire sprinklers across England and Wales would save an estimated nine billion litres of water per year; the equivalent of five times the UK's entire annual bottled water consumption.

The report also found that fires in business buildings without sprinklers emit more than 350,000 tonnes of CO_2 each year, the equivalent of the annual emissions of more than 140,000 cars.

Key findings:

- Between 25,945,920 and 18,865,392,000 litres of water are used to fight unsprinklered commercial and industrial fires per year nationally
- In comparison, only 4,368,000 litres of water would be used per year to fight fires in sprinkled buildings
- Sprinklered fires are estimated to release between 7.8% and 21.6% less carbon emissions compared with an un-sprinklered fire in a similar building

2.8 Case studies

To support understanding of the financial, economic and environmental impacts of warehouse fires, the BSA examined a number of notable warehouse fires in England and Wales. Two of these cases are examined in greater detail below:

Sony warehouse fire, London, August 2011:

On Monday 8 August 2011, the Sony Warehouse in Enfield was set on fire in a suspected arson attack during the London riots. The warehouse was 25,000m^2 in area. The fire resulted in the loss of the building's structural integrity, as well as 3.2 million units of stock including over 1.5 million CDs and other media. The damage done to the building alone was estimated at £10 million, and over £80 million was paid out in insurance for the burnt and damaged contents.

A further cost of £0.21 million should be added to the total impact; this was the cost of the London Fire Brigade's attendance at the fire, which burned for 14 days. The fire also caused severe disruption to many other businesses' supply chains, with 150 businesses directly affected by damage to their stock.

On top of these longer-term supply-chain disruptions, the fire had an immediate impact on the businesses in close proximity to the warehouse and to activities in the local area. These included the closure of a series of other warehouses in the Solar Way Business Park (to the West), which ceased to operate for up to three days.

A replacement building was opened 13 months later by the Prime Minster, David Cameron. However, it remains un-sprinklered!

NEY Ireland, Coventry, August 2012:

The fire at NEY Ireland's head office and plant in Coventry occurred on 8 August 2012, as a result of suspected arson. The premises included both a factory and warehouse facility for woodworking materials intended for use by furniture manufacturers.

The fire destroyed at least 95% of the building which had to be completely demolished within a matter of days. The majority of the building's contents and production machinery were also lost in the fire.

Fears that acetylene cylinders inside the factory could explode resulted in a precautionary 400m exclusion zone which in turn caused a major traffic blockage to the industrial estate and neighbouring area.

2.9 Promoting business resilience

Current regulation and guidance levels in Europe and other competitor economies, means they enjoy a higher level of protection and can recover more quickly from fires that threaten their businesses and economy. In short, they are regulated in a way that encourages physical resilience.

For the UK to achieve this, businesses need to abandon the commonly-held belief that fires will not happen in their premises. Research reveals that one in five warehouses in England alone will require the attendance of firefighters in its lifetime. Current business practices, common misconceptions and existing legislation, are also barriers to the widespread installation of fire sprinklers in business buildings.

The BSA recognises it will be a slow and often challenging project, but UK plc needs to promote a better understanding of the importance of fire resilience in business. Greater understanding of this critical component of commercial success will create a cultural change. In the future, the BSA hopes people do not ask why they should install sprinklers, but instead embrace them as a new and welcome norm.

3 Sprinklers in Wales

In October 2013, the Minister for Housing, Carl Sargeant, signed the regulations into law, issuing the Domestic Fire Safety (Wales) Measure 2011 (Commencement No.1) Order 2013. Since 30 April 2014, all new and converted residential care homes, certain hostels, B&Bs and student accommodation in Wales have been required to include fire sprinklers in their design before approval can be given by building control authorities.

A second tranche of legislation will require all new and converted residential property, including houses and flats, to be protected by sprinkler systems from 1 January 2016. The new rules will not, however, apply to hospitals or hotels.

The legislation is intended to reduce the number of deaths and injuries from fire, improve firefighter safety and contribute to the sustainability of new developments.

3.1 Legislative Competence Order

Under the 2006 Government of Wales Act, the Welsh Assembly can create its own legislation and subsequently Vale of Clwyd Assembly Member (AM), Ann Jones, won an assembly ballot to be the first individual AM to introduce a Legislative Competence Order (LCO).

Having worked in the fire service for almost 30 years, Anne put forward the LCO to require automatic fire suppression to be installed into all new homes in Wales. Her work in the fire service had made her aware of the devastating impact of fires – not just on the victims of fires and their families – but also on those responding to incidents that have caused death and injury to people in their own homes.

In Wales alone, data from the previous 10 years had shown that on average 17 deaths and 503 injuries per year were caused by fires in residential properties; and, while there had been a reduction in the number of deaths from fires in the home during this period, the Welsh Government believed that the number was still too high.

The Vale of Clwyd AM's proposal, which was originally passed with cross party support in 2011, has been described as historic by Chief Fire Officers across Wales and has attracted the support of organisations such as the Fire Brigades Union and Chief Fire Officers' Association. BAFSA not only actively supported the Measure by giving evidence to the Welsh Assembly,

but also provided technical input to the working group set up to implement the Measure. It also organised and funded three very well attended seminars across Wales.

3.2 Cost benefit analysis

Financial cost and proportionality has been a major concern, especially for social housing providers and builders. For this reason, and as part of the regulatory process, the Building Research Establishment (BRE) was tasked with analysing the losses caused by fires in residential buildings in Wales and the projected costs of protecting new buildings with sprinklers.

Published in April 2012, the BRE report, *Cost Benefit Analysis of Residential Sprinklers for Wales*, has generated considerable discussion and debate; particularly as it found that, while sprinklers were cost effective in new care homes and halls of residence etc, they were not so in single occupancy houses. However, supporters of the Measure, such as the Chief Fire Officers' Association, have challenged this view by pointing out that the figures used to determine the statistical value of a life in the UK are lower than those used in other countries. For example, the figure used in Norway is almost double and in the USA it is three times larger.

Furthermore, although the figures indicated that the average cost of a sprinkler system would be approximately £3,075 per house and £879 per flat, organisations such as the European Fire Sprinkler Network believes that the costs will reduce – as has happened in other countries where similar legislation has been introduced.

3.3 Water supplies

With an eye to both effective and efficient systems, the fire sprinkler industry believes that: provided sprinkler installations are properly designed and installed to the current British Standard (BS 9251) and that the co-operation of the local water company is obtained, savings should be achievable on the figures quoted.

This is because connections can be made directly to the town main, alleviating the need to always supply water from a dedicated tank and pump, which the 'Regulatory Impact Assessment' figures assumed would be necessary. Indeed, the British Automatic Fire Sprinkler Association (BAFSA) is of the opinion that, given adequate pressures and flows in supply pipes, almost 90% of new single occupancy houses could be fitted with sprinklers in this way, thereby reducing the estimated cost by about one third.

To ensure that all parties appreciate the need for cost effective life safety sprinkler systems that comply fully with water regulations, efforts have been

made to secure the support of the water supply companies both in Wales and the rest of the UK. BAFSA is working closely with them and the organisation Water UK.

An important outcome of this work has been the publication, in December 2013, of *Guidelines for the Supply of Water to Automatic Fire Sprinkler Systems*, a new protocol agreed between the fire and water industries through the National Fire Sprinkler Network Water Liaison Group.

3.4 Competent contractors

The growing demand for sprinklers will require the recruitment of extra staff and the potential exists for many existing companies to expand and even new companies to evolve. The challenge will be to ensure that contractors employ competent workers so that equipment is properly installed and maintained.

Suitable training and 'up-skilling' courses and qualifications are considered to be essential and work is underway, in collaboration with Neath Port Talbot College in Swansea, to provide additional training capacity for Wales (see page 45). The college has recognised the need for practical vocational training in this field and has already secured the services of an experienced fire sprinkler engineer. Interestingly, this is probably the first building college in Europe to develop such training.

3.5 Pilot study

To prepare for the change (particularly for those properties that will be subject to the regulations post 2016) the Welsh Government has agreed to run a series of pilot projects, designing and installing fire sprinkler systems in a number of new social housing developments across Wales. The project is to be monitored by the Building Research Establishment (BRE Global) and will be fully funded by the Welsh Government.

To date there are sixteen separate developments, involving 234 social housing units and 10 housing associations, taking part in the study. The majority of the schemes are new build although two are conversions, which may create additional challenges. They cover all the building categories i.e. flats, bungalows, houses, extra care schemes and supported housing.

Furthermore, despite the desire to include projects from a range of geographical areas that would allow for experience to be gleaned from all three Welsh water companies: Dwr Cymru, Dee Valley Water and Severn Trent. Most are located in South Wales, with three under construction in the North.

Those responsible for pilot study social housing projects will be procuring the services of fire sprinkler contractors and installing equipment during late

2014 to early 2015. The systems are expected to be designed and installed in accordance with BS 9251: 2005 and will include direct main connections, boosted main connections and independent tank and pump supplies.

The results of the study will be of interest to a variety of interested parties but particularly home-builders and water companies throughout the UK. A report is expected to be published early in 2015.

3.6 Summary

Wales has taken a major step forward in the fight against fire; but will surely be joined by others soon. It therefore behoves all involved with the provision of good quality housing to take note. After all, as one delegate bluntly put it at a recent seminar on the topic: "housing is currently so scarce we really cannot afford to let it burn down."

4 Fire suppression in heritage buildings

While all modern buildings include the provision of a range of fire safety measures to protect the lives of occupants, these cannot be taken for granted for structures built before 1961.

Problems can arise when an old building undergoes a major refurbishment or where there is a change of use (adaptive reconstruction), which may require work to be carried out in accordance with modern building standards.

Compliance with UK fire regulations generally includes:

- The provision of means of escape
- The structural protection of escape facilities and the structural stability of the building in the event of a fire
- The provision of access and facilities for the fire and rescue service
- Early detection and warning of fire
- Facilities for fighting fires
- An effective fire safety management regime

Traditionally, the first four of these have been imposed on new or altered buildings under building standards, while the last two are imposed by the fire and rescue authority on the building occupier. In Scotland, the latter requirement is covered by the Fire Safety (Scotland) Act 2005, while in England and Wales, the Regulatory Reform (Fire Safety) Order 2005 must be complied with.

Regardless of how these regulations are specified, it is important to understand that they all form important components of an integrated fire safety package. It should be noted that even where fire protection improvements are being undertaken as a statutory requirement, Listed Building Consent should still be obtained.

4.1 Ensuring compliance

In the past, a prescriptive approach to building regulations laid out rules such as the maximum distance an occupant should be required to travel in the event of a fire. Invariably this was related to the structure of the building and reliant on the close proximity of an outer wall fire exit or doorway into a

protected route, where smoke and other products of a fire could not overcome people making their escape.

Unfortunately, in historic buildings it is rarely easy to ensure that walls, floors and doors are sufficiently resistant to the effects of a fire. Upgrading existing structures can be both difficult, costly and may cause damage to the very features worthy of preservation. Moreover, new structures may be totally inappropriate in a heritage setting.

Fortunately, there is now an objective 'performance based' criterion that may be used rather than specific measurements. In addition, much better use can be made of active systems such as automatic fire suppression.

It is an established principle in the UK, that there are three possible ways that a new building can be assessed as 'fit for purpose' in respect of its fire safety provisions:

a. The 'General Approach'. This is applicable to the majority of new building work undertaken within the UK. In this case, the fire precautions designed into the building usually follow the guidance contained in the documents published by the relevant government departments to support legislative requirements. In the case of Scotland, this would be Part 2 of the Technical Handbook Non Domestic 2013, in England and Wales Approved Document B: 2006[6]

b. The 'Advanced Approach'. This is now supported by the publication of *BS 9999: Code of Practice for Fire Safety in the Design, Management and Use of Buildings*. The information and guidance provided in this document should provide a more transparent and flexible view of fire safety design, using a structured approach to risk-based design, where designers can take account of varying physical and human factors

c. The 'Fire Safety Engineering Approach'. This is the level for which *BS 7974: 2001 Application of fire safety engineering principles to the design of buildings - Code of practice*, is provided. This provides an alternative approach to fire safety and can be the only practical way to achieve a satisfactory standard of fire safety in some large and complex buildings, and in buildings containing different uses. Caution should be exercised in adopting this approach without specialist input from a competent fire engineering practice

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6 In this case, the advice in Historic Scotland's Guide for Practitioners No 7 *Fire Safety Management in Traditional Buildings* should be utilised.

4.2 Adaptive reconstruction

The most difficult question any owner of a traditional property undergoing adaptive reconstruction (ie conversion to a new use) can be asked is 'What would you wish to have left after a fire?' Whilst 'everything' might be an obvious response, the answer in reality needs to consider a complex set of interlinked issues, including the safety of the building structure, the contents of the building and, crucially, human safety.

Achieving this balance requires careful consideration of some of the basic principles of fire protection such as detection and suppression systems. Primarily, any insertion of fire protection systems (or indeed, any other modern systems or equipment) in historic buildings should be:

1. Essential - The fire systems should be central to meeting the objectives of the protection of life, buildings and contents
2. Appropriate to risk - Any system that is installed should be apposite to the risks being considered
3. Compliant with legislation - Systems should be installed according to demonstrable performance-based and other legislatively prescribed standards of safety
4. Minimally invasive - The retrospective fitting of fire systems should involve minimal degrees of physical intervention on the historic structure
5. Sensitively integrated - Installed systems should be designed to be integrated sympathetically with the historic fabric and its detail
6. Reversible - Fire systems should be installed, where possible, according to a reversible, 'plug-in, plug-out' installation philosophy

4.3 Use of automatic fire suppression systems

Recent experience of fire suppression installations (mainly in Scotland) makes it clear that a well-designed system can compensate for a range of deficiencies in other areas, such as means of escape and containing fire and smoke spread. In the case of Corgarff Castle, a Scheduled Monument and Grade A 17th century property in the care of Historic Scotland, the installation of an automatic fire suppression system provided multiple benefits:

- Compensation for compromised means of escape in the form of a single timber staircase
- Enabled premises to comply with current fire safety legislation for property open to the public

- Protection for an asset with no on-site fire water capacity and very restricted fire service response for three months of the year

Automatic fire suppression and firefighting systems are unique in that they not only detect and notify the presence of a fire but fight the outbreak as well. A properly designed, installed and maintained system will, at the very least, contain a fire to a small area and consequently reduce the extent of damage. In many cases, the system will often manage to extinguish the fire before the arrival of the fire and rescue service. The potential of suppression systems to minimise damage is especially beneficial in heritage buildings where historic fabric or contents may be irreplaceable.

There is a choice of automatic fire suppression and firefighting systems. Each one employs different extinguishing equipment, techniques and firefighting media. The suitability of a particular protection system will be determined by a number of factors including the type of fire likely to be encountered and the circumstances of the protected space.

Water is probably the most readily recognised extinguishing medium suitable for the majority of fires. It is inert, low-cost and plentifully available with minimal impact on health and safety and the environment.

There are two main types of water-based systems; sprinkler and water mist systems. Each is radically different in design, cost and application.

4.3.1 Sprinkler systems

Sprinklers have been in use for over 140 years and are one of the oldest forms of firefighting technology. The earliest recognisable installations were in British and US cotton mills between 1852 and 1860. A primitive form of sprinkler system is also known to have been installed in the Theatre Royal, Drury Lane, London as early as 1812.

Objections to the installation of sprinklers are usually on the grounds of potential water damage. Contrary to popular belief, only the sprinkler heads in the immediate vicinity of the fire operate, so the amount of water released to suppress the fire is kept to a minimum. Water damage from a sprinkler system reacting immediately to control fire growth or to extinguish it altogether will be relatively tiny when compared to water used later by fire and rescue hoses fighting a developed fire.

Concerns are also frequently raised about water leakage from heads and distribution pipework. In fact, a properly installed sprinkler system is less likely to leak than other building water supplies as the components have been subjected to a rigorous quality assurance approval and are listed by a third party certification body. The designer and installer of the system

will also have been subjected to the scrutiny and approval process of the appropriate certification body. As a final safeguard, systems are also provided with an automatic water leakage alarm. This alarm is water powered and so independent of an electrical supply. Most modern systems also have an electric water flow alarm valve, connected to the fire detection control panel, to summon the fire and rescue service should the sprinkler system operate.

The chemical content and nature of the water supply should be carefully taken into account when specifying a sprinkler system. For example, incompatibility between component metals could cause corrosion through electrolytic reaction.

In some circumstances, the installation of sprinklers will be rewarded by more favourable insurance terms. Large discounts are likely to be offered for commercial risks such as hotels, care homes and offices. There are also lower deductibles and extended coverage when properties are left empty for much of the year.

Scotland has pioneered the use of water-based fire suppression systems in historic buildings and has gained significant experience in designing and installing these systems in a sympathetic and non-intrusive way. Buildings known to be protected include Duff House, in Banff, the National Library of Scotland in Edinburgh, Newhailes House in East Lothian and Broughton House in Dumfries and Galloway. In 2007, the first Scheduled Ancient Monument was protected when a sprinkler system was installed in Corgarff Castle, West Aberdeenshire.

Sprinkler systems should be designed and installed in accordance with *BS EN 12845 Fixed firefighting systems - Automatic sprinkler systems: Design, installation and maintenance: 2009*. The former standard, BS 5306 Part 2 was withdrawn in October 2007 and should no longer be used for new installations or extensions to existing systems.

Domestic and residential properties (for example, residential care homes, hostels and school boarding houses) can be protected by sprinkler systems designed and installed to BS 9251:2005: *Sprinkler systems for residential and domestic occupancies. Code of practice*. Note that sprinkler systems in hotels and boarding houses and like premises should be installed to BS EN 12845: 2009.

4.3.2 Water mist systems

Water mist systems superficially appear very similar to conventional sprinkler systems but the heads discharge aerated water in a mist or fine spray.

There are several different proprietary systems, ranging from very high pressure (up to 110 bars) producing a fine water particle mist, to low pressure systems providing a fine water spray similar to a conventional sprinkler system. The water is propelled either by pumps or by an inert gas and dispensed from nozzles that deliver water in fine droplets to the area of fire. The suppression mechanism relies on a combination of cooling by the water, steam production to displace the oxygen that sustains the fire and inhibition of the chemical processes of combustion.

Compared with sprinklers, water mist systems use comparatively small amounts of water to fight a fire. This in turn means that water damage is minimised and less water needs to be stored resulting in substantial cost savings. Mist systems can also be installed in locations too small to accommodate the pumps of a conventional sprinkler system.

Pioneering applications of water mist protection include a gallery in the National Portrait Gallery, London and a number of very old Norwegian churches which were at risk from arson. The largest heritage-related mist installation to date is believed to be in the National Gallery of Art in Washington, DC. A significant number of mist systems are installed in large *palazzos* in Venice (although these systems reportedly only protect the roof spaces).

Much research has been undertaken into the appropriate use of water mist systems in both confined spaces and large volume areas. High ceilinged rooms with large floor areas can pose a design problem in ensuring that potential fire locations fall within the effective range of the nozzle distribution, although 6m high rooms in the Royal Apartments in Stirling Castle are protected with a low pressure mist system.

Tests have also shown that the design of water mist systems needs to take into account significant air movement as this may impact on the effectiveness of the mist. Mist systems are less effective at extinguishing slow, deep-seated fires in 'normal combustibles' than traditional sprinkler systems. In one particular test, the performance of water mist protection in cellular archive storage areas was disappointing.

These factors, together with the presence of personnel and detection parameters, means that a careful technical assessment needs to be made before any conclusion is reached about the optimum type of protection required. This assessment needs to take into account the fact that (unlike sprinkler systems) each mist system has to be specifically designed for the space it is to protect.

In the absence of any independent design standards, care needs to be taken when considering the validity of manufacturers' claims. Many of these

claims are based on system technology and components developed for use in marine applications and may not be directly relevant for building protection. Caution should be exercised in specifying water mist systems for large areas or complete buildings until design standards are resolved and the British Standards documents published.

Water mist in domestic or residential occupancies should be installed in accordance with BS 8458: 2015, while mist in all other types of buildings should comply with BS 8489: Part 1 and Part 7 (2015), or alternatively, EN TS 14972: 2014.

4.4 Sprinkler benefits

There are likely to be significant benefits from installing a fire suppression system in a refurbished or modified historic/heritage building. In addition to compliance with current building standards the system will make it easier to meet fire safety standards, reduce damage to the fabric of the building and be less intrusive than the conventional escape routes and compartmentation.

Two historic buildings fires – two different outcomes

A strong case for sprinklers

In May 2014, the Rennie Mackintosh Glasgow School of Art made headlines when this Grade A listed building was seriously damaged by a fire. Sadly work had stopped on the installation of a high pressure water mist system due to asbestos having being found, and it was not operational at the time of the fire. Much of the interior of this iconic building was damaged despite the valiant efforts of the Scottish Fire & Rescue Service.

This story contrasts greatly with the outcome of a fire at Southampton's historic Solent Flour Mills building. In August 2014, a fire started in a second floor, milling machine but was extinguished by the successful operation of a sprinkler system. Damage was restricted to the affected machine and the iconic building was saved.

5 BS 9251 revision

Following an eighteen month review, an updated and revised BS 9251: *Fire sprinkler systems for domestic and residential occupancies – Code of practice* was published on 31 October 2014.

This British Standard is intended for the use of designers, engineers, architects, surveyors, contractors, installers and authorities having jurisdiction (AHJs). It provides much clearer guidance in a number of areas and has taken account of the lessons learned from the increasing number of installations and projects utilising residential sprinklers since the previous revision in 2005.

The review panel, chaired by BAFSA Council member Steve Seaber, was drawn from a wide spectrum, with representatives from the sprinkler industry, approval bodies, government regulators, fire and rescue services, insurers, water industry, building control bodies and house-builders. A draft for public comment was published in late March 2014 and attracted 328 comments from a wide range of organisations.

5.1 Principal changes

This is a full revision of the standard, and introduces the following principal changes:

- Introduction of building categorisation based on occupancy risk
- Change of building height limit (from 20m to 45m)
- Variation in sprinkler head design density
- Increase in sprinkler head spacing
- Expanded guidance on preliminary work and consultation
- Expanded guidance on water supplies
- Additional measures for vulnerable people and multi-occupancy premises

The revised document has expanded guidance on the important area of preliminary work and consultation, which will help to ensure that systems are fit for purpose, take account of the occupancy and are able to satisfy the requirements of AHJs.

It highlights the need to consider factors relating to the likely fire loading, occupancy, water supplies and special circumstances where enhanced performance, reliability and resilience may be required. It also draws attention

to the need to consult with appropriate AHJs and how sprinklers may be used as compensatory features.

A major change in the revised document is the introduction of three categories of building based on occupancy and size, as opposed to the generic terms 'residential' and 'domestic ' which were used previously (see Table 1 from the standard).

Table 1 – Category of system

Category of system	Description of building
1	Single family dwellings such as: A) • Individual dwelling house • Individual flat • Individual maisonette • Transportable home Houses of multiple occupation (HMOs)A), B) Bed and breakfast accommodationA) , B) Boarding housesA), B) Blocks of flats 18 m or less in height and with a maximum total floor area of 2400m^2 A) , C)
2	Blocks of flats greater than 18 m in height D) Small residential care premises with ten residents or fewer Sheltered and extra care housing D)
3	Residential care premises with more than ten residents Dormitories (e.g attached to educational premises) Hostels

A) If any of these buildings permanently house vulnerable people this should be taken into account in determining the building category
B) Buildings with more than two floors and five or more lettable bedrooms should be treated as Category 2.
C) Where the fire strategy requires the communal rooms and corridors to be sprinkler protected, or where the floor area is greater than 2400m^2 then the building should be treated as a Category 2 building.
D) Where the fire strategy requires the communal rooms and corridors to be sprinkler protected, then the building should be treated as Category 3.

Another key change associated with the new standard and the categories, outlined above is the replacement of the flow rate requirements with minimum design densities. These requirements are outlined in a table in the document as shown in Table 2.

Where a system is installed in addition to other fire protection measures or in compliance with Approved Document B or Scottish Building Standards (e.g. blocks of flats over 30m in England, blocks of flats, new care homes in Scotland and all properties included in the Welsh Measure), then the design densities in the main body of the table apply, and a maximum number of sprinklers in a design compartment and water supply duration apply. These figures are lower than those in previous versions of the standard and reflect those used for residential systems elsewhere in the world.

Table 2 – Minimum design parameters

Category of system (see Table 1)	Minimum design discharge density	Number of design sprinklers	Minimum duration of supply
	mm/min		min
1	2.04[A)]	1 or 2	10
2	2.80[B)]	1 or 2	30
3	2.80[C)]	2 to 4[D)]	30

A) Where the sprinkler system is installed as a compensatory feature or as part of a fire engineered solution, the minimum design discharge density should be increased to either:

a. 2.80mm/min for a single head operation, or 2.04 mm/min minimum through each sprinkler operating up to a maximum of two sprinklers in a single area of operation; or

b. 4mm/min for a single head operation, or 2.80m/min through each sprinkler operating simultaneously up to a maximum of two sprinklers in a single area of operation.

B) Where the sprinkler system is installed as a compensatory feature or as part of a fire engineered solution, the minimum design discharge density should be increased to 4mm/min for single head operation or 2.8mm/min through each sprinkler operating simultaneously up to a maximum of two sprinklers in a single area of operation.

C) Where the sprinkler system is installed as a compensatory feature or as part of a fire engineered solution, the minimum design discharge density should be increased to 4mm/min for single head operation or 2.8 mm/min through each sprinkler operating simultaneously up to a maximum of two sprinklers in a single area of operation.

D) Where communal areas/corridors are managed areas and considered to be sterile within a fire strategy report or with agreement by the AHJ, the number of design sprinklers can be limited to two in these areas only.

The standard has taken into account that it may be appropriate for enhanced performance where sprinkler systems are used to compensate for a relaxation of other fire safety measures. The notes beneath the table provide guidance

on the requirements for increased design densities or duration of supply for the three categories of occupancy. The minimum design parameters and associated guidance have been agreed with the regulators in England, Wales and Scotland.

In addition to the revised guidance on design densities the *Design* section provides enhanced guidance on all aspects of design, the components used and water supplies. This takes account of changes in technology and the experience gained by the industry since the publication of the 2005 version of the document. It also provides information on the alarm systems with particular reference to the configuration of alarms in multi-storey blocks of flats and interfacing with an automatic fire detection and alarm system.

The section on *Installation, commissioning and documentation* has been updated and now includes detailed information on a system data label which should be attached adjacent to the main stop valve; an example of which is included in an annex to the document. This label is not the same as a compliance certificate, which must also be provided.

In line with other sections, more detailed guidance is also provided on the requirements and methodology for carrying out maintenance on the sprinkler system once installed and record keeping associated with it. The revised document also contains a number of appendices and drawings to provide greater clarity and more detailed technical information to support the main text.

The successful completion of this major revision was well supported by all participants with broad agreement in many areas. Although there were some areas of contention, these were resolved following open debate and a willingness to find a solution which was acceptable to all parties.

The outcome is a standard which has built on its predecessor and the experience gained by the sprinkler industry, AHJs and end users. It will ensure that, at a time when the market for new and retrofit residential and domestic sprinkler systems is growing, such installations can be installed to a high standard and be fit for purpose.

At present any decision to reprint BAFSA Technical Guide No 1 has been deferred until it is clear whether there is still a need for supplementary guidance.

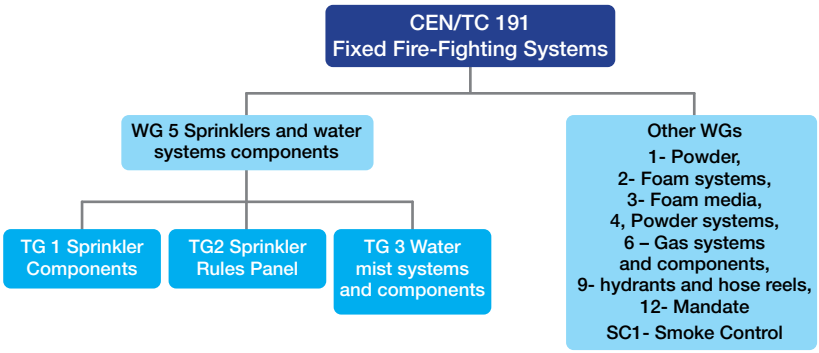
6 Standards update

The sprinkler standards most widely used in the UK are from CEN and BSI. This report focuses on the current activity within these standards bodies and committees.

6.1 CEN committees

CEN/TC 191 has a number of working groups for various extinguishing media. WG 5 is responsible for standards relating to sprinklers and water systems components. This working group has three task groups responsible for sprinkler components, the *Sprinkler Rules* (systems) and water mist respectively. The current activities of each are summarised below:

EUROPEAN STANDARDS COMMITTEE STRUCTURE



CEN/TC191/WG5/TG 1 - Sprinkler Components

The main responsibility of this task group is to oversee the development and revision of standards in the EN 12259 series for various components. These component standards are now required to be written in accordance with the requirements of the Construction Product Regulations. It was agreed that the initial focus would be on redrafting EN122259-9: *Deluge valves* in the required format to serve as a template for other standards in the series.

This has not proved as straightforward as hoped but the reappointment of a CEN consultant on 1 August will help meet the end of 2014 deadline.

The task group has also been working on a new standard, prEN 12259-12 for pumps. The convenor for this group is BAFSA Council member Alex Playfair of SPP and it is anticipated the final draft will shortly be circulated for approval.

Earlier in 2014, a draft EN 12259-14: *Fixed firefighting systems — Components for sprinkler and water spray systems. Residential Sprinklers* was issued for consultation. The UK expressed the view that the document should proceed as a Technical Specification (TS) rather than a full standard. This was not the majority view and the standard will now be progressed at a special meeting on 11 March 2015. The adoption of this standard means that the equivalent British Standard BS 9252 will not be revised as the standstill rules restricting the development of national standards applies.

CEN/TC191/WG5/TG 2 – Sprinkler Rules

Several years ago this task group proposed a number of amendments to the 2009 version of BS EN 12845 but were advised that the number of amendments was such that the rules required they be issued as a revision. This has proved to be quite a complex process but agreement was finally reached and the document issued under the Universal Acceptance Procedure (UAP). Following completion of the consultation process a revised document will be published.

In parallel with the discussions on Revision 1, work has commenced on a major revision to the structure and the contents. The convenor has set an ambitious time scale of 12 months for completion. The work is being carried out in seven sub groups, some of which have no UK involvement. The UK has expressed some concern over proposals for changes to the Hazard Groups and the fact that the seven groups are working independently of each other. This may cause some conflicts when the draft is complete and as the UK is not represented in all groups it will be unaware of some proposals.

CEN/TC191/WG5/TG 3 – Water Mist

This task group are currently revising the existing TS 14972 to full EN status, although the UK view is that it should remain a TS until more robust fire test protocols are available.

Residential Sub-Group

An informal sub-group has drafted a proposal for a European standard for residential sprinkler systems. The UK view was that it should be developed as a TS but the majority thought it should proceed as an EN. The draft document is based on the Scandinavian INSTA 900 standard which has now been adopted as a formal work item by CEN, under the chairmanship of Alan Brinson.

At present the document is aimed at a smaller range of premises and occupancies than the revised BS 9251, which will hopefully be used to influence the development of the EN. Should this document be issued as an EN, BS 9251 would eventually have to be withdrawn

6.2 BSI committees

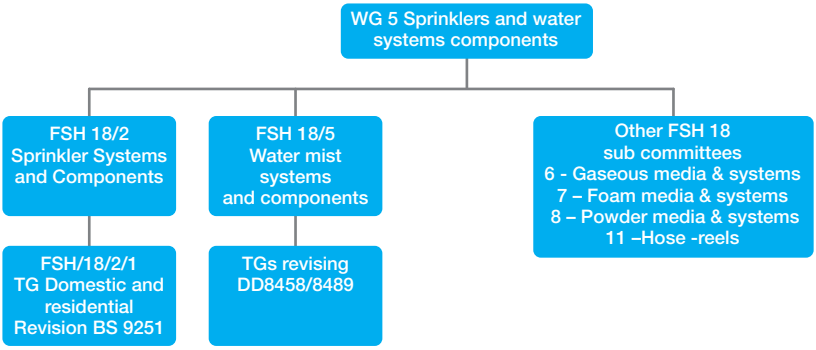
As with the CEN committees, BSI FSH 18 has a number of working groups identified for different extinguishing media. FSH 18/2 is responsible for sprinklers and the newest, FSH 18/5 for water mist.

FSH 18/2

The role of FSH 18/2 is to consider national standards work and the standards developed by CEN for both components (EN 12259 series), sprinkler systems (BS EN 12845) and to consult and co-ordinate UK responses and brief UK delegates accordingly.

A separate task group FSH/18/2/1 has recently completed the revision of BS 9251 (see page 35).

BSI STANDARDS COMMITTEE STRUCTURE



FSH 18/5 – Water mist

Agreement was reached in late 2013 to revise the existing Drafts for Development; DD 8458 (Residential and domestic) and DD 8489 Parts 1,4,5,6 and 7 (Commercial) to full BS status.

In the case of DD 8458, the task group has sought to align the standard with BS 9251 where possible. Drafts of both standards were published for public comment in August with a closing date of 29 October. A publication date in early 2015 is expected following a review of the comments.

Engagement in CEN/BSI

Representation on full CEN committees is limited by country, the UK has three places. UK representatives are mandated on how to respond to proposals by FSH/18 and FSN 18/2. BSI committees have nominated representatives from organisations such as BAFSA and other interested parties in the fire protection sector including insurers and regulators.

When attending CEN and BSI working groups, representatives and independent experts are not required to adhere to collective views, although clearly they may be mandated by their individual organisations.

As an organisation BAFSA needs to ensure it plays a full and active part in the various committees and task groups and that the broader membership has the opportunity to comment on documents issued for consultation. Members also have a responsibility to ensure that BAFSA is well represented to ensure that the views of the industry are taken account at each stage of the development process.

International standard-making bodies

- **ISO/TC 21/SC 5 Fixed fire-fighting system using water:** Currently has 16 published standards for components. 20 participating countries are involved in preparing these standards, with a further 17 countries observing the work. European and UK involvement is limited, although there has been some discussion over the possibility of adopting ISO standards where equivalent versions have not been published by CEN.
- **CEN/TC191 Fixed fire-fighting systems:** Has a number of working groups for various extinguishing media. WG 5 is responsible for standards relating to sprinklers and water systems components.
- **BSI FSH 18 Fixed fire-fighting systems:** BSI FSH 18 has a number of working groups identified for different extinguishing media. FSH 18/2 is responsible for sprinklers and FSH 18/5 for water mist.
- **NFPA:** NFPA has a number of sprinkler-related standards. Most notably, NFPA 13, NFPA 13R and NFPA 13D relate to sprinkler systems widely used throughout the world including some used in the UK. NFPA also publishes a standard for inspection, testing and maintenance of water-based fire protection systems, NFPA 25.
- **Other national standards:** In Europe, INSTA (Scandinavia); DIN (Germany); and NEN (Netherlands) have standards relating to sprinkler components and systems.
- **Insurance body standards:** In additional to national standards bodies, a number of insurance bodies publish sprinkler related standards. These include FM, UL, VdS and in the UK the Fire Protection Association, which publishes the LPC Rules /Technical Bulletins on behalf of the RISC Authority

7 Skills & Development Committee

The BAFSA Skills and Development Committee (formerly known as the Training Committee) meets four times a year and is chaired by Mike Green from Hall Fire Protection. Its core remit is to '*develop vocational qualifications and training to ensure competency for persons working within the sector*'. The Committee's role is to understand, review, advise and comment on all aspects of fire sprinklers training including:

- UK sprinkler standards
- European sprinkler standards
- Technical Bulletins to the LPC Rules
- Government departments' initiatives and documentation
- Schemes of third-party approvals bodies such as FIRAS and LPCB
- City and Guilds courses
- National Vocational Qualifications

On request, the Committee will provide technical support to member companies and individuals. Resources are also available for members to participate in working groups with other organisations concerned with the development of training standards for sprinklers in the UK and Europe. For example:

- LPCB/BRE Certification Ltd
- British Standards Institution
- RISC Authority/ Fire Protection Association

A member wide 'Labour Market Information & Intelligence Survey' was undertaken in 2014 in line with BAFSA's 'Developing a Skills & Qualification Strategy'. The survey looked at:

- Nature of the sector – size, type of employers, composition of workforce, economic contribution
- Drivers of demand – key factors driving change in the sector
- Current and future skill needs – assessment of current skills and how the demand for skills and labour are likely to change. This will include insight into the likely volume and composition of the workforce in the future

- Current Learning Provision – an overview of the type of learning in the sector and how well that provision meets the needs of the sector

Key findings of the survey indicated:

- The future of the industry is positive with the majority of employers recruiting staff in the past 12 months
- Training is recognised as a vital part of doing business
- A high proportion of organisations have training plans and dedicated training budgets
- The workforce has an ageing profile - more than 16% of the workforce are over 55, the majority over 40 and less than 12% are under 16-24
- Vacancies are hard to fill in half of businesses
- More than one third of organisations felt that employees have skills gaps
- Evidence of a need to develop skills directly related to the industry

In 2014, BAFSA in partnership with Neath Port Talbot College Group, developed an 'Award in the Installation of Automatic Fire Sprinklers'. This Award delivers a qualification for the active fire industry and introduces existing practitioners to the practical skills and knowledge required to install automatic fire sprinkler systems in domestic dwellings. The qualification has been signposted to the National Occupational Standards for Mechanical Fire Protection and has five Learning Outcomes:

- Ability to prepare the working environment for the installation of automatic fire sprinkler systems
- Understand the cold water supply regulations as they relate to automatic fire sprinkler systems in the local area
- Be able to correctly install the automatic fire sprinkler system
- Confirm that the planned installation has been carried out in accordance with the installation specification
- Be able to carry out a suitable sequence of maintenance checks of a fire sprinkler system

Since BAFSA instigated the development of National Occupational Standards (NOS) for Mechanical Fire Protection work and, to address the findings of the Labour Market Survey, the Skills and Development Committee has been developing an initial qualification mapped to the National Occupational Standards for Mechanical Fire Protection. The Skills and Development Focus

Group has completed the development of a Level 2 Qualification Structure and Specification. This Specification will identify the desired learning outcomes, establish appropriate content and assist with the development of qualification units by the Awarding Organisation, IQ. The new qualification is expected to be launched in April 2015.

Accreditation of Prior Learning has also been discussed within the Committee, and with the Awarding Organisation, to ensure transferability within sectors and to recognise experience. In addition, the Skills and Development Committee has developed an overarching Assessment Strategy for qualifications based on NOS which sets out the criteria for Assessors and Assessment.

The Skills & Development Committee meetings are generally attended by four to six members and new recruits would be most welcome - please contact BAFSA for details.

8 CFOA Sprinkler Week

The UK's first Chief Fire Officers' Association (CFOA) Sprinkler Week took place during the first week of February 2014. Aimed at raising national awareness of water-based suppression systems, it achieved considerable local and national media coverage.

Organisers secured more than 100 articles in regional press across England, Wales and Scotland; a total of 26 national articles, primarily in the trade press; and TV coverage including ITV.com – Merseyside and West Yorkshire, and BBC Warwickshire. Twitter coverage also played its part, with 270 Tweets between 14 January and 10 February, representing a total potential reach of 2,215,250 followers. During the week itself, there were 226 Tweets, representing a total potential reach of 2,041,496 followers.

Launched at the House of Commons in January, Sprinkler Week was timed to coincide with the publication of the Business Sprinkler Alliance's (BSA) sponsored reports produced by BRE and Cebr (Centre for Economics and Business Research) (see page 14). These reports looked at the business case for fitting sprinklers into smaller warehouses not currently included in Building Regulations for England and Wales. The launch also included an open letter for MPs to view and sign, calling for the wider take-up of sprinklers in the UK.

The Sprinkler Week planning team consists of a broad coalition of interested parties. Led by CFOA and supported by the BSA, BAFSA, National Fire Sprinkler Network (NFSN), Local Government Association and Royal Institute of British Architects (RIBA), along with representatives from the fire and rescue services.

A key element of the agreed strategy was empowering local fire and rescue services with the tools to promote 'sprinklers' in their own area. A Sprinkler Week 'Toolkit' was developed to help them make the most of their resources and local opportunities. This invaluable resource included an information sharing checklist to help involve the media in events such as 'sprinkler saves'. There was also a live 'Twitter' feed with updates on sprinkler related news during the week.

Sprinkler Week 2014 was the first of a series of three annual events to promote the use of sprinklers for a range of property types. The key aims of the 2014 campaign were to:

- Increase knowledge of the commercial and safety benefits of sprinklers in preventing loss

- Quash some commonly held myths and misunderstandings about sprinklers
- Increase the knowledge and understanding of those who can influence the installation of sprinklers and show how politicians, business owners and the property/building industry can play their part

As part of this strategy local fire and rescue service were encouraged to lobby local politicians and decision makers and work with local stakeholders to encourage the fitting of sprinklers in appropriate premises.

Participation by local fire and rescue services was very encouraging, with 42 UK services using the week to publicise the effectiveness of sprinkler systems. Their activities included:

- Production of specific sprinkler web pages for their web sites
- Introduction of videos highlighting the effectiveness of sprinklers in fighting fire and dispelling some myths and misconceptions about their use
- Sprinkler seminars focused on target audiences
- Press releases to highlight sprinkler effectiveness

Planning is already in progress for Sprinkler Week 2015, which is scheduled to take place on 16-22 March 2015. The event will continue to:

- Spread the good news about sprinklers and increase awareness of the facts and figures
- Promote greater understanding and acceptance across target influencer communities
- Encourage target influencers to get more involved in supporting and promoting sprinklers at key moments

In recent years there has been a much more coordinated approach to promoting the benefits of sprinklers. CFOA Sprinkler Week is a prime example of this coordination; by working in partnership we can bring many more benefits to members and communities.

9 Personal protection fire suppression systems

In February 2004 Steve Mills met with fire service colleagues, John Sparke (Merseyside) and Paul Hardy (Hertfordshire) at the Fire Service College, Moreton-in-Marsh. They had come together to view the testing of a prototype portable fire suppression system for the protection of vulnerable people. The idea had originally come from John Sparke and the system had been developed in conjunction with a water mist system manufacturer. It looked for all the world like a patio heater!

The temperature inside the 'domestic' fire house was 5˚C, just a little above the outside air temperature. The first signs were not encouraging and it was a while before a successful activation was witnessed. However, it did demonstrate that, given the right conditions, there was the potential for such a device to control a localised fire. Subsequent tests at Wakefield Fire Station were more encouraging.

Home Fire Safety Check initiatives by fire and rescue services have demonstrated the need to offer more than just smoke detection to some very vulnerable persons. This had increased the fire and rescue service interest in 'first generation' personal protection systems (PPS).

Potential drawbacks with the systems were identified from the outset. They included:

- The units were heat activated
- They had a limited duration of about 3 minutes
- They only covered a limited area of about 6m²

The West Midlands Fire Service (WMFS) purchased a limited number of units to test whether they could be effective in the community.

9.1 Use of PPS

Through intensified community fire safety work, it is possible to identify people who are very vulnerable to fire and need a reduction in fire risk. For these people, PPS, in conjunction with other risk reduction measures, provide short term and immediate protection prior to the installation of a fixed system.

There is reticence in some quarters about the viability of these devices to protect vulnerable persons. However, they should be viewed as part of the measures which could be used in specific circumstances. In consultation with community fire safety personnel, two main criteria for using such systems were determined as:

1. Where there is a very high likelihood that a fire could occur
2. Where there is a low likelihood of escape from fire for the occupant

These two criteria were the basis of guidance notes developed in 2005 for the West Midlands Fire Service and formed the basis of policies providing active fire suppression systems for the most vulnerable.

During a five year period from 2005-2010, a total of 20 first-generation PPS units were delivered to WMFS. Steve Mills was responsible for client assessment, deployment, recovery, maintenance and servicing up until his retirement in 2010. During this time the units were deployed over 35 times. These first generation systems have subsequently been phased out in favour of later-developed PPS systems.

Some deployments had a longer duration than originally planned, due to the nature of the client, changing circumstances or difficulty in facilitating full suppression systems. On four occasions, despite being only heat activated, the systems operated in a fire scenario, helping to control the fire and enabling the persons to escape or be rescued.

9.2 Newer design developments

Before Steve left the service, there were already new developments in the field of PPS with the advent of Scandinavian designed self-contained mist systems, which activated upon operation of a smoke detector. These had the clear advantage of not having to wait for the heat from a fire to develop

before activation. Earlier activation is clearly beneficial in reducing risk to occupants. The potential draw-back however is that they may be liable to spurious activation and consideration had to be given to how this issue could be alleviated.

Since that time, several companies have been active in producing units which can satisfy the needs of fire and rescue services, housing providers and social care organisations for wherever a higher level of fire risk to persons is identified. One issue with the original Scandinavian units was that they were totally reliant on mains electricity and this could not always be relied upon since some vulnerable persons could be reliant on a pay as you go meter for their electricity supply. This led to the incorporation of a battery which could operate the unit if mains power was lost.

These units have proved to be popular and have been responsible for at least 10 successful activations where the life of the occupant was at risk.

9.3 Raising standards

The wider use of PPS, and the absence of any overall governing criteria, has led the industry to believe that some form of standard should be introduced. This would give end users confidence in the product they are using, but also help manufacturers clarify the design and performance parameters they need to achieve.

BAFSA Secretary General Stewart Kidd made a submission to BS/FSH/18 in 2013 proposing a new work item to develop a PAS for PPS. This was in the form a scope and content for a new BSi document including Scope, Normative References, Terms and Definitions, Consultation, Design, Installation, Suitability of Premises/Location with regard to the person to be protected, Commissioning and testing process, Briefing Occupier/Carers, Maintenance and Informative Appendices. The proposed BS document will, it is hoped, make it clear where these units can be used and also where they should not be specified.

In the meantime, BRE has instigated a working group, under the chair of Nigel Firkins, which is well on the way to producing an LPCB Loss Prevention Standard (LPS) for PPS. This group was formed of a number of interested parties, including BAFSA representatives.

Prior to work commencing, a questionnaire was circulated amongst fire and rescue services and other users, seeking to collect information on how many units were in use, where they are being deployed, any activations that had taken place and what maintenance issues were apparent. This data was useful in formulating a way forward for producing the LPS. Stakeholder meetings

took place at BRE and a draft document has been produced, which will be circulated for wider comment in due course.

The document covers: Scope, Definitions, Requirements, Component examination and test methods, Marking and labelling, End user instructions and Additional guidance with Annexes covering fire tests and amendments.

One crucial element of the standard was the incorporation of fire performance and functionality testing – to cover the kind of issues likely to be faced in real deployments.

The parameters verified by testing are: discharge area, nozzle location in relation to hazard, nozzle height, additive quantity (if any), effective discharge time, system flow rate and discharge duration.

These tests replicate what may happen when a fire has been caused by smoking materials in a living room or bedroom. They include tests to simulate:

- a fire on top of a bed or chair
- a shielded fire beneath a bed or chair

Another important element of the LPS relates to how systems may be linked to monitoring stations in order to illicit a fast response from emergency services. There is still work to be done but a working document is well on the way to being approved and published.

From those early beginnings and despite the scepticism, the role of PPS in helping to protect vulnerable persons has been acknowledged. Although there are obvious limitations, such as limited coverage, duration time and standards, PPS have an important role to play in future years.

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10 Fire suppression in waste management facilities

Fires in recycling and other waste management premises are recognised as a significant problem for communities, the fire and rescue service, the environment and insurers. With over 230 fires recorded in 2013 alone – that's more than 4 per week – BAFSA has produced a new BAFSA Information File (BIF) aimed at providing advice on the options available to protect such sites

10.1 The problem

The scale as well as the frequency of fires in recycling centres can cause major logistical problems for communities, with some fires burning for days or even weeks. This results in a drain on firefighting resources, as well as having a significant impact on the environment. For example, a recent fire at a recycling site in Smethwick involved 100,000 tonnes of recycled plastic, consumed 14 million litres of water and released an estimated 19,000 tonnes of carbon into the atmosphere. It required 39 fire appliances, 200 firefighters and over 200 hours of firefighting activity.

UK fire legislation and specifically the fire elements of building regulations in England & Wales are solely concerned with life safety. Since there is no historic evidence of fire related fatalities or injuries, the building regulations tend to place few requirements on such sites beyond ensuring that the occupants can escape safely and that neighbouring buildings are not put at risk from fire spread. As a result, concerns about such sites can only be alleviated through the intervention of the Environment Agency or local fire authority. Such intervention can be effective. A prosecution in Derbyshire led to a facility being closed and the manager imprisoned.

However, as some enlightened operators have discovered, the installation of automatic fire suppression systems can offer significant benefits. Where such systems have successfully operated they have significantly minimised damage, the need for fire service intervention and the downtime which often follows such fires.

In 2013, sprinkler systems prevented serious damage to a wood pellet plant in Bridgend, recycling plants in Stockport and Shropshire and a paper recycling plant on Deeside. A major fire was averted in March 2014 in a plant in Westbury, Wiltshire, where the sprinkler system contained the fire to one area. All of these protected plants were quickly back in operation with little or no damage to the structures and equipment.

BAFSA's new BIF 25: *Fire Suppression Systems for the Waste Management Industry* outlines the operator or owner's fire safety responsibilities, as well as offering advice on fire safety management and introducing firefighting and fire suppression options for such centres. It also details other sources of advice.

10.2 Fire safety responsibilities

The operator or owner of a recycling centre has a responsibility to manage fire safety in a structured manner. They must:

- Develop and issue a written fire safety policy
- Undertake a fire risk assessment (FRA) and review it regularly
- Take steps to eliminate or reduce any hazards disclosed by the FRA
- Ensure that a single person is made responsible for all fire safety matters and that everyone on site knows who this is
- Compile a fire safety manual for each centre setting out its strategy and detailing its plans in case of fire and as a basis for training. Locations should also maintain a logbook to record all fire-related events including training, drills, inspections and equipment maintenance
- Upgrade and maintain both passive (fire separation, construction etc) and active fire safety measures (detection and suppression)
- Introduce a systematic and effective training programme to ensure that all staff know how to minimise fire risks and raise the alarm; and to provide enough trained staff to tackle fires quickly
- Put in place effective precautions to manage contractors and maintenance work and in particular, to control all hot work
- Set up regular liaison meetings with the local fire and rescue service and, in the case of larger sites, consider inviting personnel from the nearest fire station to visit the site and familiarise themselves with its access roads, layout and equipment
- Ensure that the risk of arson (fire setting) is considered and appropriate security precautions are taken
- Consider the need for a business continuity plan

New guidance on the management of fire safety, and options for fire suppression is being prepared by a consortium of owners, operators, insurers, regulators and the fire service. This will supplement existing Environment Agency guidance given in TGN 7.01 and other sources of advice, such as from insurers and CFPA Europe, which has produced a European Guideline:

Treatment and storage of waste and combustible secondary raw materials, available from http://www.cfpa-e.eu/wp-content/uploads/2013/01/CFPA_E_Guideline_No_32_2014_F1.pdf

10.3 Firefighting


bafsa Information File
Fire Suppression Systems for the Waste Management Industry

The most effective way of dealing with any fire is to attack it in its earliest stage. This minimises the damage caused to the centre by heat and smoke and the collateral damage caused to the environment by water run-off. A sprinkler system activated 2 or 3 minutes after a fire starts will use up to 90% less water than the fire service when fighting a fully developed fire.

There are a number of available firefighting equipment options. These include hand-operated portable and larger wheeled extinguishers and fire hoses/reels; private hydrants or water tanks; fixed manual systems supplying deluge/waterspray projectors (nozzles); and water monitors/cannon to cover outdoor storage.

However, sprinkler systems provide the optimum level of protection inside buildings and structures, including storage areas, sorting areas, conveyors and hoppers. Foam additives which can be injected into sprinkler systems and may also be considered for sites accepting high volumes of plastics or other higher risk wastes. Watermist systems are most effective in protecting plant and machinery in recycling centres rather than open spaces.

Smoke ventilation must also be considered. Most waste fires generate very large volumes of toxic smoke, making it difficult to locate and direct water onto the seat of the fire. Passive or automatic smoke vents in the roof in conjunction with some form of smoke barrier should be considered, taking into account the possibility of interaction problems with some fire detection and suppression systems.

10.4 Standards and third party certification

All fire protection equipment and systems should be designed and installed to British and European (CEN) standards. This means also ensuring that

the installer has third party certification. By doing so, the owner of a site will demonstrate that he or she has discharged their statutory duty. For more information on third party certification refer to BAFSA Information File No 20, available to download from http://www.bafsa.org.uk/pdfs/publications/2/00000092.pdf

Any installed sprinkler systems should be designed, installed, commissioned and maintained in accordance with one of the following standards:

- BS EN 12845
- FM Global Datasheets 2.0 *Installation Guidelines for Automatic Sprinklers*
- NFPA 13
- CEA 4001

Systems being installed to satisfy UK insurers' conditions may also have to comply with the *LPC Sprinkler Rules for Automatic Sprinkler Installations* which incorporate the contents of BS EN 12845, together with additional Technical Bulletins.

Note that in certain circumstances, for example, where there is a very high roof and a dry sprinkler system, the design requirements set out in BS EN 12845 for non-storage hydraulic criteria and choice of sprinkler heads might not be adequate or appropriate. In such cases, specialised insurance input is essential.

Watermist systems should be installed to BS 8489. Alternatively, systems designed to EN TS 14972 or FM Global data sheets may be called for. Deluge/waterspray systems should be designed to NFPA 15 or EN DD TS 14816.

10.5 Essential guidance

Recycling is vital to the economy and critical in enabling the UK to comply with its international obligations. But centres processing waste need a properly thought out strategy and adequate management to ensure they are operated safely. The number of serious fires over the past five years demonstrates the need for a re-think in the design, construction and operation of recycling centres and this must include modern automatic fire protection and suppression systems where necessary.

BAFSA's BIF 25: *Fire Suppression Systems for the Waste Management Industry* offers essential advice for all involved in the recycling sector. It is available to download from http://www.bafsa.org.uk/publications/bafsa-information-files.php

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11 Sprinklers and the Fire & Rescue Service

The success of automatic sprinkler systems in protecting life and property has made them increasingly popular in a wide range of commercial and domestic environments. Sooner or later all firefighters will find them at the scene of a fire and it is essential that fire and rescue services personnel understand the basics of how they work.

Part 1 of this new BAFSA Information File (BIF) provides useful information about sprinkler systems for firefighters and community fire safety personnel. Part 2 provides advice on the benefits and use of sprinklers in fire and rescue service buildings.

11.1 Sprinkler basics

Part 1 of the BIF provides an introduction to sprinkler systems for firefighters. It details the two main standards for sprinkler systems within the UK as covering commerce and industry (BS EN 12845: 2004) and domestic and residential premises (BS 9251), before explaining how such systems work.

The BIF outlines the five key objectives of sprinkler installation as:

- Life safety
- Prevention of fire spread from building to building
- Asset protection/business continuity
- Protection of the environment
- Safety of firefighters

It offers an introduction to the main features of a system of which firefighters need to be aware and provides a detailed description of procedures that should be followed by firefighters entering a sprinklered building involved in an incident.

11.1.1 Commercial and industrial buildings

While sprinkler systems are fitted with a wide variety of controls and gauges, it is the main stop valve (MSV) and sprinkler alarms that are the main focus for firefighters.

The MSV isolates the incoming water supply from the service main or sprinkler pumps/tanks and must be right hand (clockwise) closing. The hand-

wheel must indicate the direction of operation and whether the valve is open or shut and be secured open with a strap and lock.

The location of the MSV must be clearly shown on a building plan that can be easily seen by firefighters. An indicator plate must also be fixed to an external wall as close to the MSV as possible.

Every installation must be fitted with an approved external water motor alarm (gong), which is activated by water flowing in the system. Ideally, where there is more than one gong, each will be labelled to indicate where in the building the sprinklers are operating.

If the building has more than one installation, each gong should be clearly numbered to identify the controlling valves of each installation along with a description of the area protected.

Sprinkler alarms are activated for four main reasons: opening of a sprinkler head; opening of a drain or test valve; leakage from the system due to damage; or fluctuations in the incoming water supply pressure.

11.1.2 Residential or domestic properties

Sprinkler systems in dwellings are similar to commercial buildings, but smaller in scale. Where a BS 9251 system is installed, there will be a main stop valve located near to the water supply inlet. It is important to identify whether the water supply is from a pump and tank, pressure vessels or directly from the service main. Once identified, a crew member should be allocated to ensure it remains open until firefighting operations are completed and the fire is out. The temptation to shut off the sprinkler system before this must be avoided. However, if the fire in the immediate vicinity of the operating heads is fully extinguished and there has been no fire spread in concealed spaces, the heads may be stopped using wedges or purpose-designed sprinkler stoppers.

Once firefighting operations are over the stop valve can be closed and the system drained to facilitate replacement of the opened sprinkler heads, although there will rarely be more than two of these. The system drain valve is usually located near to the stop valve. A pipe can be connected to the drain outlet to feed water away from the premises.

11.1.3 Recording of sprinkler system activations

Information relating to sprinkler activations must be recorded as accurately as possible in the Incident Reporting System (IRS) and every effort made to bring the circumstances to the attention of the relevant person in the fire and rescue service. For partially-protected buildings, this should indicate whether the fire was in the sprinklered part of the building or not.

It is also important to know why a sprinkler system failed to operate. If it was because the MSV was shut off, the pumps failed to operate, or some other obvious reason, this should be recorded. This information is invaluable to community fire safety officers, fire engineering personnel, BAFSA and the National Fire Sprinkler Network.

11.2 Automatic fire suppression systems in fire stations

A sprinkler system is installed in Cheshire Fire & Rescue Service's headquarters

There have been a number of serious fires in fire stations which have resulted in the total destruction of fire appliances and buildings. The high cost (£500,000 for a fully equipped Type B water tender alone), embarrassment and negative media coverage underline the need for a modern approach to asset protection. As a result, several fire authorities have already decided to include fire suppression in new or redeveloped fire stations.

Most fire stations to date have been fitted with wet sprinkler systems to BS EN 12845, although the hazard classification within this standard does not specifically mention 'fire stations'. Ordinary Hazard 3 (OH3) covers industrial occupancies including 'car workshops' and BAFSA believes that this is most appropriate for all but the very smallest fire stations. The 'Light Hazard' (LH) classification might seem at first sight to be appropriate for smaller locations, such as a single pump retained station, although the presence of fuel and lubricating oil may contradict this.

It is BAFSA's view that BS 9251: 2014 is not appropriate for fire stations even where there is living accommodation. The only exception is where there is at least one hour's fire resistant construction between the residential sections of the building and appliance bays/workshops, offices and storerooms.

It is not good engineering practice to design a system to LH or OH1 for some parts of the building and OH3 for the remainder and such a design is unlikely to be approved by an insurer. Where possible, only wet systems should be

specified. If there is a risk of freezing (for example in appliance bays or roof spaces), then advice from the installer should be sought at the earliest stage.

The main difference between water mist and sprinkler systems is that they are 'made to measure' for the premises they protect. They should only be specified if a particular application is supported by BS 7974:2015. If this is not the case, the supplier needs to be able to prove, by fire testing, that the system will work as designed.

The reception area of Cheshire Fire & Rescue Service headquarters

Specific issues with mist systems in fire stations tend to restrict their use to appliance bays and vehicle workshops. BAFSA believes that water mist systems in stores and other workshops, welfare facilities, sleeping accommodation and offices etc are covered by BS 7974 Part 7 (Low hazard occupancies). Insurers should also be consulted before any decision is taken to specify a watermist system.

The latest revision of BAFSA's BIF 11: *Sprinklers and the Fire & Rescue Service* offers essential advice for fire & rescue services and is available to download from http://www.bafsa.org.uk/publications/bafsa-information-files.php

HI-FOG®
water mist fire protection

Protecting people, property and business continuity

HI-FOG® water mist fire protection system safely controls and suppresses fire

Fire destroys commercial assets worth billions of Pounds every year with the damage caused by both fire and the water used to fight it. Traditional water-based systems rely on wetting to fight fire, but the flooding is devastating and can spread far beyond the fire area. This leads to downtime or loss of business because weeks or even months can pass while the damage is repaired.

There is a way to make water more effective in fighting fire. HI-FOG® suppresses fire by discharging a fine water mist at high velocity swiftly controlling and suppressing a fire while minimising smoke-related damage. With minimal clean up, HI-FOG® helps reduce downtime so for example hotels can get back to normal operation soonest as HI-FOG® uses significantly less water compared to conventional sprinkler systems.

Marioff has a vast experience in protecting cultural heritage sites. HI-FOG® protects internationally renowned places as well as historic sites of local importance. In cultural heritage sites, collateral damage can never be a secondary consideration. Along with heritage sites, high-rise buildings, data centers, libraries and archives can all be protected with HI-FOG® water mist fire protection systems.

Thanks to the use of small diameter tubing, compact pump units, small water tanks and discrete sprinkler and spray heads, HI-FOG® is easy to install into retrofits and new structures alike, therefore minimising structural impact and preserving aesthetic integrity.

About Marioff and HI-FOG®

Marioff is a leading developer of water mist fire protection technology and supplies system solutions worldwide. The company's innovative HI-FOG® water mist fire protection system safely controls and suppresses fire using significantly less water than conventional sprinkler systems, reducing water damage, cleanup time and operational downtime.

Marioff is a part of UTC Building & Industrial Systems, a unit of United Technologies Corp., a leading provider to the aerospace and building systems industries worldwide. For more information, visit ***www.marioff.com****.*

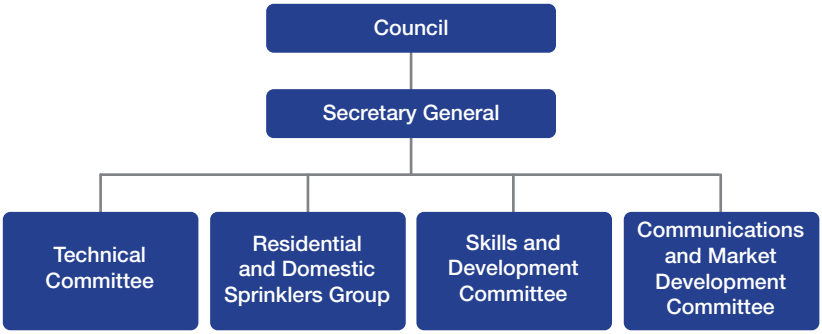
Marioff
United Technologies

Marioff Ltd
Tel. +44 (0) 1224 784844, Fax. +44 (0) 1224 784885
info@marioff.co.uk
www.marioff.com

12 BAFSA at work

BAFSA has been supporting the sprinkler industry for 40 years and now has in place a highly effective volunteer leadership supported by a team of specialists to ensure the Association's objectives are delivered. Its structure incorporates a number of permanent committees and other groups where volunteers from the industry and supportive organisations meet together to work on tasks and projects in support of the Association's objectives and to deliver the policy set out by BAFSA's Council. The organisational structure is described below.

BAFSA ORGANISATIONAL STRUCTURE



12.1 BAFSA Council

The Council is made up of representatives of all categories of membership elected by all the membership. There are up to nine installer members, five manufacturer and supplier members and three associate members. A new Council is elected at each Annual General Meeting. The Chairman, Vice Chairman and Treasurer are elected by Council at its first meeting each year. Where there are two or more members employed by the same company or group, a resolution is required to confirm the right of the member to sit on Council. This requires a majority of 75%.

Currently Peter Armstrong of Armstrong Priestley is BAFSA's Chairman, the Vice Chairman being Mike Green of Hall Fire Protection who also chairs the Skills and Development Committee and the Treasurer is Kate Scourfield of Tyco Fire Protection Products. The three officers are directors of the British Automatic Fire Sprinkler Association Ltd and together with the Secretary

General form the Association's Executive. In 2015, the Executive will be expanded by the addition of the Chair of the Technical Committee and the Chair of the Communications and Market Development Committee.

12.2 Technical Committee

The purpose of the Technical Committee is to understand, review, advise and comment on all technical aspects of fire sprinklers with respect to:

- Current UK sprinkler standards
- Current European sprinkler standards
- Technical Bulletins to the LPC Rules
- Government departments' initiatives and documentation
- Schemes of third-party approvals bodies such as FIRAS and LPCB

In addition, the Committee is resourced to attend and be involved in working groups with other organisations involved in the development of standards for sprinklers in the UK and Europe, such as:

- LPCB/BRE Certification Ltd
- British Standards/CEN /ISO
- FPA/RISC Authority

Technical support to member companies and individuals will also be provided.

The Technical Committee – under its current Chairman John McCann of Vipond Fire Protection Ltd – meets four times a year. Staff support is provided by Joe McCafferty. Attendance is generally 12 or more individuals and new members are most welcome to join the group. In the first instance, please contact the Secretary General.

In 2014, the Technical committee incorporated the work of the Service and Maintenance Committee.

Providing guidance for:

- Adequate design, control and monitoring of heating and frost protection measures to safeguard systems
- 25-year maintenance regimes/checks for sprinkler heads and pipework
- Means of recycling fire pump cooling and minimum flow water to minimise the environmental impact of sprinkler systems
- Water storage tank condition inspections and maintenance regimes

Pegler Yorkshire

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- The only UK press-fit system with Kitemark approval
- Available for use on copper, carbon steel or stainless steel tube
- Extensive range of applications: Heating, Chilled water, Potable water, Hot and cold water, Gas, Solar and Fire protection
- Available in sizes 15mm to 108mm
- Installed cost savings - joints made in a fraction of the time
- Heat-free. No hot works
- Leak before press technology
- Superb quality manufacture

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XPress

FREE Phone: **0800 156 0010**
email: **uk.sales@pegleryorkshire.co.uk**

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www.pegleryorkshire.co.uk

- Consultation with BRE/LPCB on minimum standards and listings for specialist sprinkler maintenance companies
- Prescriptive maintenance routines for sprinkler fire pumps in order to standardise the scope of maintenance

12.3 Residential and Domestic Sprinklers Group

The R&D Group is the part of the Technical Committee that deals with matters affecting residential and domestic sprinkler installations. Under its current Chairman, Ray Hammond from FIRAS (Exova Warringtonfire), it meets approximately four times a year. R&D is a busy sector at the present time and the Committee's work is varied. It includes:

- Providing BAFSA's input to the BSI Working Group which is reviewing BS 9251
- Revisions to TGN1
- Helping new BAFSA installer members achieve accreditation
- Maintenance issues affecting pumps
- Scrutiny of publications such as Approved Document B to the Building Regulations and statutory documents such as the Water Regulations

12.4 Watermist Group

Matters affecting watermist systems are now handled by the UK Joint Watermist Group which includes representatives from both BAFSA and the Fire Industry Association. The Group is chaired by BAFSA Council member Bob Whiteley, Tyco Fire and Integrated Systems.

12.5 Communications and Market Development Committee

This committee meets four times each year and the Chairman is Nick Scull of Victualic plc. He is supported by Wendy Otway, BAFSA's marketing advisor.

Meetings are on average attended by 12 or more members from a wide background, including the fire & rescue services, manufacturers, commercial/industrial contractors, residential and domestic member contractors and BAFSA staff. The Committee works on a wide range of tasks, which include:

- Development of new marketing and promotional literature
- Production of new BAFSA Information Files (BIFs)
- Promoting the benefits of sprinklers by attending target market exhibitions
- News/editorial developments

- Arranging annual members' meetings and conference
- Production and promotion of the BAFSA Yearbook and other ad hoc reports

New members would be welcome to join the Marketing Committee – enquiries in the first instance to marketing@bafsa.org.uk

12.6 Skills and Development Committee

Formerly the Training Committee, it was renamed in 2014 and given a greatly enhanced role in developing industry wide qualifications. The Chairman is Mike Green, Hall Fire Protection is supported by skills specialist Ruth Oliver. The Committee meets four times a year and its role is to understand, review, advise and comment on all training aspects of fire sprinklers (see page 45).

Skills and Development Committee meetings are generally attended by up to 10 members and new recruits would be most welcome - please contact Ruth Oliver reo.consultancy@gmail.com

12.7 Secretary General and support staff

The Secretary General is Stewart Kidd who is based at the Ely office. The Secretary General is effectively the chief executive of the Association and is responsible to the Council for its day to day administration, with particular emphasis on meeting the association's primary objectives of promoting the wider and more effective use of sprinklers. There are also statutory, formal duties under the Companies Acts as the Company Secretary. The Secretary General's role is part-time and paid and involves him in all aspects of BAFSA's activities.

He is supported by a range of other specialists including Ian Gough (Senior Technical Adviser), Steve Mills (Fire & Rescue Services Coordinator), Wendy Otway (Marketing Advisor), Steve Seaber (Special Projects) Joe McCafferty (Technical Advisor), Keith McGillvray (Sprinklers Scotland), Anna Hayes (Publications Consultant) and Andrew Heskins (Design Consultant), as well as the office team at BAFSA's accountants, Price Bailey who provide accommodation, accounts and office services.

13 Efficacy insurance for fire contractors and consultants

Tom White from First Insurance Solutions considers the need for efficacy insurance for the fire industry in an increasingly litigious society

The fire industry is often associated with the electronic security industry and there are many similarities between the two industries. The insurance requirements and regulatory and accreditation bodies are also very similar.

Working with the fire protection industry for over 25 years, First Insurance Solutions has a thorough understanding of the primary risks and claims. Insurance cover for fire protection consultants and contractors should include efficacy/inefficacy cover in case a product or system should fail to perform and fulfil its purpose.

First Insurance Solutions believes that cover for fire detection and protection systems is crucial. Any contractor that supplies/installs fire protection equipment should ensure that efficacy/inefficacy cover is included as part of their public/products liability insurance programme. If in doubt, members should check with their current provider. It covers against insurers and claimants alleging that the system did not trigger or respond as expected.

The risk associated with efficacy cover is similar for both the fire and security industries. However, the security industry's two main certification bodies the National Security Inspectorate (NSI) and SSAIB both have longstanding requirements for their members and accredited contractors to hold "adequate levels" of cover including efficacy/inefficacy cover.

The situation is less clear for the fire industry in terms of both the requirement to hold efficacy cover and at what limit. Only one of the certification bodies specified the requirement to hold cover and other trade associations or certification bodies believed that the responsibility for checking that contractors had cover up to an "adequate" limit lay elsewhere in the chain.

First Insurance Solutions believes that the efficacy requirement should be as clear, entrenched and rigorously enforced for the fire industry as it is in the security industry. Efficacy cover protects both the contractors and consultants carrying out the work, as well as the customer/end user of the systems.

The security industry has a broader awareness of efficacy cover and a more structured set of protocols for checking contractors are holding and maintaining it. First Insurance Solutions would like to help the fire industry understand and develop their own protocols.

This is an increasingly litigious society where liability is attributed after an event. Anyone from the consultant, to the principal contractor down to the smaller sub contractor can be held accountable, in some cases, many years after the work was done.

For advice specific to the Fire Protection Industry contact First Insurance Solutions on 01634 868444.

Part 2: Reference information

14 List of BAFSA members

The list of BAFSA members is in two sections.

Section 14.1 is a listing of members under the different categories of membership.

Section 14.2 provides details of member organisations, listed alphabetically by member name, with particulars of addresses. It also contains descriptions of members' activities and other details, based on information supplied by members.

14.1 Categories of membership

Installer level 4

A&F Sprinklers Ltd
API Vipond Fire Protection Limited
Argus Fire Protection Company Limited
Armstrong Priestley Ltd
B&C Fire Engineering Ltd
Compco Fire Systems Limited
Domestic Sprinklers Ltd
Hall & Kay Fire Engineering
Hall Fire Protection Ltd
Mercury Engineering
Nationwide Fire Sprinklers Ltd
Pyro Protection Limited
Tyco Fire & Integrated Solutions (UK) Ltd

Installer level 3

AD Sprinkler Protection Ltd
Automatic Fire Control Ltd
Blue Shield Fire Protection Ltd
DIS Sprinklers
EMTEC Fire Systems
Eton Fire Ltd
FVS Limited
Marioff Ltd (Watermist installer)
RMD Fire Control Ltd
Solent Fire Protection Services Limited
Thameside Fire Protection Co Ltd
Thermotech Fire Protection
Ultra Surefire Ltd (Watermist installer)
Writech Industrial Services Ltd

Installer level 2

First Fire Protection Ltd
FireFighter 247 LLP (Trading as Fire Sprinkler Systems)

Installer level 1

Adima Group Ltd
AFT Group (Wales) Ltd
AML Fire Protection Ltd
Aquablaze Fire Sprinklers Limited
BMS (EA) Ltd (Trading as AES Sprinklers)
Fire Design Solutions Ltd
Fire Prevention Works Ltd
Fire Sprinkler Systems (UK) Ltd
Fireworks Fire Protection Ltd
Indigo Fire Systems Ltd
Phoenix Fire Services Ltd

RAD Fire Sprinkler Co UK
Residential Sprinkler Protection Ltd
Residential Sprinkler Solutions Ltd
Triangle Fire Systems Ltd
Ultra Surefire Ltd

Associate installer

Amsco Fire Ltd
CDL Sprinkler Protection Ltd
Fire Protection Services Ltd
Fire Sprinkler Systems (UK) Ltd
Firemain Engineering Ltd
Flamefast (UK) Ltd
FSE Sprinklers & Risers Ltd
Integrated MEP
K Hewitt & Co Ltd
KIA Fire Safety Ltd
PEL Services Ltd
Residential Sprinklers Ltd

Sprinkler head manufacturer

Rapidrop Global Limited
Reliable Fire Sprinkler (UK) Ltd
Tyco Fire Protection Products Ltd
Victaulic
Viking SupplyNet Ltd

Manufacturer and/or Supplier

Armstrong Integrated Ltd
Bailey & Mackey Limited
Balmoral Tanks Ltd
Booles Ltd
Clarke UK Limited
CST Industries (UK) Ltd
Fire Protection Centre Limited
Franklin Hodge Industries Limited
Grundfos Pumps Limited
IPS Flowsystems
JEM Fire Pumps Ltd
Job GmbH
Lubrizol Advanced Materials UK Ltd
Marioff Ltd
Pegler Yorkshire Group Limited
Potter Electric Signal Company
Project Fire Products Ltd
Sale Engineering Products Ltd
Shawston (International) Ltd
SPP Pumps Limited
Thermocable Flexible Elements Ltd
Triple P Projects Ltd
Tubetrade plc

Associate organisation

Anglian Water Services Ltd
Automated Material Handling Systems Association
Avon Fire & Rescue Service
Bedfordshire and Luton Fire & Rescue Service
Buckinghamshire Fire & Rescue Service
Cheshire Fire & Rescue Service
Cornwall Fire & Rescue Service
Cumbria Fire & Rescue Service
Derbyshire Fire & Rescue Service
Dorset Fire & Rescue Service
East Sussex Fire & Rescue Service
Essex County Fire & Rescue Service
FM Global
Greater Manchester Fire & Rescue Service
Hampshire Fire & Rescue Service
HDI-Gerling Industrial Insurance Co.
Hertfordshire Fire and Rescue Service
Humberside Fire & Rescue Service
IFC Certification Ltd
Kent Fire & Rescue Service
Lancashire Fire & Rescue Service
Liberty Mutual Insurance
London Fire & Emergency Planning Authority
Marsh Risk Consulting
Merseyside Fire & Rescue Service
Michael Slattery Associates
Mid and West Wales Fire & Rescue Services
Norfolk Fire & Rescue Service
North Wales Fire & Rescue Service
Nottinghamshire Fire & Rescue Service

NPTC Group, School of Building Engineering Services
Royal Berkshire Fire & Rescue Service
Scottish Fire & Rescue Service
South Wales Fire & Rescue Service
South Yorkshire Fire & Rescue Service
Staffordshire Fire & Rescue Service
Suffolk Fire & Rescue Service
Tokio Marine Europe Insurance Ltd
United Kingdom Warehousing Association
Warrington Certification Ltd
Warwickshire Fire & Rescue Service
West Midlands Fire Service
West Sussex Fire & Rescue Service
West Yorkshire Fire Service
Wiltshire Fire & Rescue Service
Xact Consultancy and Training Limited
Zurich Risk Engineering UK

Associate trade

Applications Engineering Ltd
ASLR Fabrication Services
Canute LLP
Firemain Engineering Ltd
Firetech Pump Services Ltd
First Insurance Solutions Ltd
Harris Pipework Fabrication Ltd
Henderson Group
Influx Measurements Limited
International Tube & Fittings
Lenpart Group
Liquitech Ltd
PEL Services Limited
Pipework Engineering Services Ltd
Powerpro UK Limited
Powertec Pumps Ltd
Progman Oy
Steve Leigh & Associates (Trading as Firebreaker)
Universal Fixings Ltd
Xylem Water Solutions UK Ltd
Zeffire Limited

Associate individual

Aquaspray Fire Protection Ltd
D Mackinnon Fire Protection Services
DKP Associates
Fire Rail Consultants Ltd
Mark Bedford
Risk Consulting (davidrsmith) Ltd

Honorary members

Leslie Heaviside MBE
John Stephens

14.2 List of BAFSA members

A&F Sprinklers Ltd
Unit 4, Transpennine Estate
Gorrels Way
Rochdale
Lancashire OL11 2PX

Telephone: 0845 5051550
Fax: 0845 5051660
Email: mstansfield@afsprinklers.co.uk; lhill@afsprinklers.co.uk
Web: www.afsprinklers.co.uk

Membership category: Installer level 4

Accreditation: LPCB

Contact: Mark Stansfield, Managing Director

Installs domestic/residential systems, commercial and industrial systems

AD Sprinkler Protection Ltd
2nd Floor
Heaton Mill
Grey Street
Denton
Greater Manchester M34 3RG

Tel: 0161 336 0001
Fax: 0161 336 6608
Email: lee@sprinklers.co.uk; mail@adsprinklers.co.uk
Web: www.adsprinklers.co.uk

Membership category: Installer level 3

Accreditation: LPS 1048-1

Contact: Lee Redikin, Sales Manager

Design, supply, install, test, commissioning and servicing of sprinkler systems.

Adima Group Ltd
Colston Office Centre
Centre Gate
Colston Avenue
Bristol BS1 4TR

Tel: 0117 317 8140
Fax: 0117 317 8093
Email: enquiries@adima-group.com
Web: www.adima-group.com

Membership category: Installer level 1

Accreditation: FIRAS (domestic and residential)

Contact: Steve Lloyd-Jones, Manging Director

Specialists in the design, installation and maintenance of domestic and residential sprinkler systems in accordance with BS 9251: 2005 and NFPA 13D/R. We work closely with builders, architects, local authorities, regulatory bodies and private householders. Clients and projects range widely by type and size, from small homeowners to major residential developments. The company has installed systems in a variety of listed/heritage buildings, from country cottages to churches and water mills. Other services are also available.

AFT Group (Wales) Ltd
Unit A1
Trecenydd Business Park
Caerphilly
Mid Glamorgan CF83 2RZ

Tel: 0844 911 9991
Fax: 0844 911 9992
Email: sales@advancedfiretech.co.uk
Web: www.advancedfiretech.co.uk

Membership category: Installer level 1

Contact: Andrew Mock, General Manager

AML Fire Protection Ltd
59 Carlton Avenue
Gillingham
Kent ME7 23X

Tel: 020 3651 3870; 07913 266487
Email: gary@amlfireprotection.com
Web: www.amlfireprotection.co.uk

Membership category: Installer level 1

Accreditation: LPCB

Contact: Gary Lee, Director

We can install and maintain: all types of sprinkler installations (including wet, alternate, pre-action, foam and deluge systems); dry risers; hose reels; fire extinguishers; and all other types of fire protection systems (including gaseous and water mist). Our engineers are fully trained in all aspects of sprinkler servicing and maintenance and are conversant with all current health and safety procedures. All fire protection system service and maintenance is performed to recognised standards and we will carry out regular service visits in accordance with customers' requirements.We will provide a detailed report on the results and findings from any service visit.

Amsco Fire Ltd
Innovation centre
Highfield Drive
Churchfields
St. Leonards on Sea
East Sussex TN38 9UH

Tel: 01424 812883
Fax: 01424 858101
Email: kaj@amscofire.co.uk; nick@amscofire.co.uk
Web: www.amscofire.co.uk

Membership category: Associate installer

Contact: Kaj Haines, Managing Director

Anglian Water Services Ltd
Water Regulation Team
PO Box 495
Huntingdon
Cambs PE29 6YY

Tel: 07725 608422
Web: www.anglianwater.co.uk

Membership category: Associate organisation

Contact: John Wood, Water Regulations Team Leader

API Vipond Fire Protection Limited
10/12 Glenfield Road
Kelvin Industrial Estate
East Kilbride
Lanarkshire G75 0RA

Tel: 013552 37588
Fax: 013552 63399
Email: john.mccann@vipondltd.co.uk
Web: www.vipondfire.co.uk

Membership category: Installer level 4

Accreditation: LPS 1048 certificated sprinkler installer and supervising body. LPCB ISO 9001:2000.

Contact: John McCann, Managing Director

The company offers total fire protection by means of the design of complete detection and suppression systems. We provide first quality installation, service and training for the operation and maintenance of customers' fire protection systems. Our dedication ensures that our customers receive the most advanced, custom-designed fire protection system using the best products available. Among our specialisms is the installation of sprinkler systems in new and existing buildings, both commercial and residential.

Applications Engineering Ltd
16 Horsted Square
Bellbrook Industrial Estate
Uckfield
East Sussex TN22 1QG

Tel: 01825 764737
Fax: 01825 768330
Email: ccocklin@appeng.co.uk
Web: www.appeng.co.uk

Membership category: Associate Supplier

Accreditation: ISO 9001:2008

Contact: James Goddard, Managing Director

Suppliers of flow switches and manifolds (valvesets), pressure gauges and pressure switches.

Aquablaze Fire Sprinklers Limited
Munnieston
Thornhill
Stirling
FK8 3QG

Tel: 01786 850820
Email: william@aquablaze.com
Web: www.aquablaze.com

Membership category: Installer level 1

Accreditation: Installer level 1

Contact: William Ferguson, Director

Design, installation and maintenance of fire sprinklers systems. Third party certificated through FIRAS.

Aquaspray Fire Protection Ltd
61 Horringer Road
Bury St Edmunds
Suffolk IP33 2DQ

Tel: 01284 754335
Fax: 01284 754335
Email: jscmonteiro@aol.com

Membership category: Associate individual

Contact: J S C Monteiro

Self-employed design engineer of automatic sprinkler installations with over 30 years experience.

Argus Fire Protection Company Limited
Hendglade House
46 New Road
Stourbridge
West Midlands DY8 1PA

Tel: 01384 376256
Fax: 01384 393955
Email: info@argusfire.co.uk
Web: www.argusfire.co.uk

Membership category: Installer level 4

Accreditation: LPS 1048 certificated sprinkler installer and supervising body. LPCB ISO 9001:2000. LPCB OHSAS 18001:1999. LPCB certified to LPS 1014 (certificated fire detection and alarm system firms)

Contact: Martin Hartley, Technical Director

The principal activity of Argus Fire is the design, installation and maintenance of active fire protection systems such as automatic sprinkler, waterspray, water mist, expanded foam and inert systems, together with electrical fire detection and alarm systems. We can supply any ancillary items that may be required to make a complete 'turn-key' package such as breathing apparatus, safety suits and fireman's equipment.

Armstrong Integrated Ltd
Wenlock Way
Manchester
M12 5JL

Tel: 0161 223 2223
Fax: 0161 220 9660
Email: jcarr@armlink.com; kgingell@armkink.com
Web: http://www.armstrongpumps.com/

Membership category: Manufacturer

Accreditation: LRQA ISO 9001: 2000, ISO 14001: 2004. Pumps approved to FM Global 1311, 1319 and 1371: LPS 1131.

Contact: John Carr (UK North)/Ken Gingell (UK South)

Manufacturer of centrifugal and reciprocating pumps, pressurisation units, booster sets and packaged pump room enclosures for fire protection installations.

Armstrong Priestley Ltd
Seventy Seven Holbeck Lane
Leeds LS11 9UL

Tel: 0113 394 4040
Fax: 0113 394 4041
Email: info@armstrongpriestley.co.uk
Web: www.armstrongpriestley.co.uk

Membership category: Installer level 4

Accreditation: LPS 1048 Level 4 certificated sprinkler installer and supervising body. FIRAS Certificated for the installation of residential and domestic sprinkler systems designed to BS 9251. BSI ISO 9001: 2008 Quality management.

Contact: Terry Bennett

Armstrong Priestley are specialists in automatic fire suppression systems and with over 38 years of experience we are able to offer clients a wealth of expertise. From our head office in Leeds and our Newcastle office, we design and install automatic fire sprinkler systems, hose reel and hydrant packages, low and high pressure water mist and gas suppression systems which are all designed to recognised national and international design standards throughout the UK.

- 24 hour call-out service
- Planning supervisor service for CDM contractors
- In-house fabrication
- Own employed workforce
- Authorised Ultramist and Viking/Minimax Econaqua Partner
- Member of the Confederation of Construction Specialists
- Safecontractor, CHAS and Construction Line approved

ASLR Fabrication Services
Opal Way
Stone Business Park
Stone
Staffs ST15 0SS

Tel: 01785 286060
Fax: 01785 818728
Email: sales@aslr.co.uk
Web: www.aslr.co.uk

Membership category: Associate Supplier

Accreditation: BRE Global assessed to ISO 9001: 2008, Quality management

Contact: Lee Norris/Chris Shenton

ASLR are a leading supplier of powder coated pre-fabricated steel pipework to the fire protection industry. All aspects of fabrication are carried out at our purpose-built facility in Staffordshire where we continually strive to create an efficient and service-driven package to our clients, utilising our state-of-the-art equipment. An in-house powder coating facility gives our pipework the tough, durable and attractive finish which befits the high standard of fabrication which we set ourselves and apply to all contracts.

Automated Material Handling Systems Association
Harborough Innovation centre
Airfield Business Park
Market Harborough
Leicestershire LE16 7WB

Tel: 01858 414229
Email: secretary@amhsa.co.uk
Web: www.amhsa.co.uk

Membership category: Associate Organisation

Contact: Dave Berridge, Secretary

Automatic Fire Control Ltd
Unit 7
Kingsdown Orchard
Hyde Road
Swindon
Wilts SN2 7RR

Tel: 01793 821588
Fax: 01793 821587
Email: info@automaticfire.co.uk
Web: www.automaticfire.co.uk

Membership category: Installer level 3

Accreditation: LPS 1048 approved sprinkler installer: ISO 9001: 2000; Quality System LPS ISO 9001:2008; Quality Management System Environmental ISO 14001:2004; Occupational Health & Safety OHSAS 8001:2007

Contact: Julian Taylor

Automatic Fire Control Ltd is an LPCB listed sprinkler installer approved to Design, Install, Maintain and Service sprinkler systems conforming to the LPC Rules for Automatic Sprinkler Installations. Established in 1984, Automatic Fire Control Ltd supports commerce, industry, retail and residential sectors, together with education and school establishments. Working from a UK base it covers the whole of the UK and Ireland and offers bespoke services in the design, installation and commissioning of sprinkler systems, inspection, testing and servicing. Quality is the key and the company has ISO 9000: 2000 by the LPCB, together with a full Integrated Management System.

Avon Fire & Rescue Service
Technical Fire Safety
Patchway Fire Station
Rodway Road
Bristol
Avon BS34 5PE

Tel: 0117 926 2061 ext 8409
Fax: 0117 925 0980
Email: simon.hill@avonfire.gov.uk
Web: avonfirebrigade.gov.uk

Membership category: Associate organisation

Contact: W/M Simon Hill, Technical Fire Safety

Avon Fire & Rescue Service is active in providing advice and consultation to employers and owners of industrial and commercial premises on a wide range of safety topics. It also gives specialist advice about workplace fire risk assessment as part of its objective of assisting employers to comply with their legal obligations. With regard to automatic sprinkler protection, the Service has a number of officers qualified to advise about the design, installation, commissioning and maintenance of domestic/residential sprinkler systems to BS 9251. It is also closely involved in the fitting of sprinkler systems in school premises and in houses in multiple occupation in Avon.

B&C Fire Engineering Ltd
Unit 12 Hampton Street
Joiners Square
Stoke-on-Trent
Staffs ST1 3EX

Tel: 01782 206144
Fax: 01782 201311
Email: alan.heath@bandcfire.net
Web: www.bandcfire.net

Membership category: Installer level 4

Accreditation: FIRAS - Domestic and Residential Scheme; FIRAS - Level 4

Contact: Alan Heath, Managing Director

Bailey & Mackey Limited
Baltimore Road
Birmingham
West Midlands B42 1DE

Tel: 0121 357 5351
Fax: 0121 357 8319
Email: alanpithers@baileymackey.com; enquiries@baileymackey.com
Web: www.baileymackey.com

Membership category: Manufacturer/Supplier

Accreditation: LPCB; BSI

Contact: Alan Pithers

Bailey & Mackey are manufacturers of LPCB-approved pressure switches, pressure gauges and pressure transducers for fire protection use in sprinkler, deluge and extinguishing gas systems.

Balmoral Tanks Ltd
Unit 2
Comber Way Estate
Croydon
Surrey CR0 4TQ

Tel: 0208 665 4100
Fax: 0208 665 0200
Email: n.ross@balmoral.co.uk
Web: www.balmoralfiretanks.com

Membership category: Manufacturer/Supplier

Accreditation: Tanks assessed to LPCB/LPS 1276; BS ISO 9001: 2008 Quality management

Contact: Norman Ross

Balmoral cylindrical sectional tanks for fire sprinkler protection application are manufactured in accordance with LPCB and FM standards. Designs in accordance with NFPA 22 can also be supplied. Balmoral Tanks strives to provide the best quality product on the market. To achieve this, the company adheres to a production Quality Management System that is accredited to ISO 9001: 2000 standards. Thus, all panels and accessories are produced under the most stringent quality audit to meet the required structural and durability performance.

Bedfordshire and Luton Fire & Rescue Service
Southfield Road
Kempston
Bedford
Beds MK42 7NR

Tel: 01234 845000
Fax: 01234 845035
Email: john.foolkes@bedsfire.com

Membership category: Associate organisation

Contact: John Foolkes, Fire Safety Technical Officer

Bedfordshire Fire & Rescue Service is working to increase the number of domestic sprinklers in 'at risk' premises, as well as sprinklers in newly built schools and residential care premises. The Service is working with the National Fire Sprinkler Network, local councils, building control departments, social care services, schools, landlords, architects, construction companies and others to achieve this.

Blue Shield Fire Protection Ltd
Blue Shield House
Queen's Street
Tring
Herts HP23 6BQ

Tel: 01442 828000
Fax: 01442 828001
Email: sales@blueshieldfire.co.uk
Web: www.blueshieldfire.co.uk

Membership category: Installer level 3

Accreditation: LPCB ISO 9001: 2000.

Contact: Ashley Gorton, Director

From its base in Hertfordshire Blue Shield Fire Protection delivers its services of design, supply, installation and maintenance of safety systems to all types of premises - office blocks, factories, warehouses and shopping malls are its main areas of work - throughout Great Britain.

Blue Shield's expertise embraces fire sprinkler systems, hose reels, wet and dry rising fire mains and fire alarm and detection systems. Since it is not affiliated to any equipment manufacturer its clients can be reassured that it gives independent advice on equipment matters.

At its Tring stores, Blue Shield keeps a huge stock of automatic sprinkler system components covering everything from pipework to sprinkler heads to valves to pumps and much else. In the event of an emergency call-out it will usually have the required materials in stock.

BMS (EA) Ltd (Trading as AES Sprinklers)
Part of Anglian Energy Services
Cedar Cottage
Church Street
Eye
Suffolk IP23 7PS

Tel: 01473 320350
Fax: 01473 620443
Email: info@aessprinklers.co.uk
Web: www.aessprinklers.co.uk

Membership category: Installer level 1

Accreditation: FIRAS third party certified

Contact: Mark Bedford, Director

Domestic and residential design supply and installing company operating throughout East Anglia, London and Home Counties. Trading since 2000.

Booles Ltd
Haigh Avenue
Whitehill Industrial Estate
Stockport
SK4 1NU

Tel: 0161 480 7900
Fax: 0161 474 7142
Email: enquiries@booles.co.uk; terry.seville@booles.co.uk
Web: www.booles.co.uk

Membership category: Manufacturer/Supplier

Contact: Terry Seville, Sales Manager

Buckinghamshire Fire & Rescue Service
Headquarters
Stocklake
Aylesbury
Bucks HP20 1BD

Tel: 01296 744684
Email: jrobinson@bucksfire.gov.uk
Web: www.bucksfire.gov.uk

Membership category: Associate organisation

Contact: John Robinson, Station Manager, Prevention Policy

The Fire & Rescue Service Prevention Department is looking to be more involved in portable misting systems for vulnerable people.

Canute LLP
77 Holbeck Lane
Leeds
West Yorkshire LS11 9UL

Tel: 0113 328 0350
Email: info@canutesoft.com
Web: www.canutesoft.com

Membership category: Associate trade

Contact: John Moore, Partner

Canute provides FHC, a hydraulic analysis package suitable for calculating water-based fire protection systems including all types of fire sprinkler systems, deluge, water-mist, hydrant and foam monitor systems. FHC has hundreds of users in over 40 countries and is accepted by all major design authorities and fire insurers.

- Complies with international standards such as EN 12845, LPC, NFPA, BS 9251 and FM
- Any type of pipe network can be modelled, such as trees, loops, grids or any combination
- Can use Hazen-Williams or Darcy-Weisbach pressure loss equations
- Easy to read and inclusive reports.

CDL Sprinkler Protection Ltd

86 Shilton Road
Carterton
Oxfordshire OX18 1EL

Tel: 08448 778778
Email: colin@cdl-sprinkler.co.uk; info@cdl-sprinkler.co.uk
Web: www.cdl-sprinkler.co.uk

Membership category: Associate Installer

Contact: Colin Walker MIFPO SIIRSM, Director

CDL Sprinkler Protection can design, supply, install and maintain cost effective and innovative domestic and residential fire sprinkler systems throughout the UK. We keep updated with changes in standards, including requirements under BS 9251 and the application of the NFPA 13D/13R regulations where appropriate. Our dedication to our customers ensures you receive a custom designed fire protection system using the best, most reliable and suitable products available.

Cheshire Fire & Rescue Service

Headquarters
Sadler Road
Winsford
Cheshire CW7 2FQ

Tel: 01606 868760
Email: mark.abram@cheshirefire.gov.uk

Membership category: Associate organisation

Contact: Mark Abram, Protection Manager

Cheshire Fire Authority has a vision of 'a Cheshire where there are no deaths, injuries or damage from fires or other emergencies'. Sprinkler systems are proven to save lives and property; they improve firefighter safety, minimise environmental damage and reduce economic loss. In support of these aims, Cheshire Fire & Rescue Service proactively endorses the installation of sprinkler systems in domestic, educational, commercial and industrial premises. Cheshire Fire & Rescue Service is also a member of the National Fire Sprinkler Network and actively involved in raising the profile of sprinklers at a national level.

Clarke UK Limited
Grange Works
Lomond Road
Coatbridge
Lanark ML5 2NN

Tel: 01236 429946
Fax: 01236 427274
Email: jblackwood@clarkesystem.com
Web: www.clarkefire.com

Membership category: Manufacturer/Supplier

Accreditation: Diesel engines approved/listed by LPCB via LPS 1239.

Contact: John Blackwood, General Manager

In 1980, Detroit Diesel bestowed on Clarke Fire Protection the UL-FM certification and global marketing activities for the fire pump industry. Clarke then became the manufacturer of UL-FM engines. Today Clarke manufactures 35 different models of UL-FM engines for more than 78 customers around the world and, since 1980, more than 21,000 diesel engines have been sold under the Clarke name. The training of service dealer network staff has been an important commitment by Clarke in helping to support its customers. It links to the provision of a continuous and assured supply of service parts, a key element in the Clarke mission to protect people and property from the hazard of fire.

COMPCO Fire Systems Limited

Head Office: Sales, Service
Contracting & Accounts
Cleeve House, Malvern Road
Lower Wick
Worcester
Worcestershire WR2 4YX

Tel: 01905 741600
Fax: 01905 741620
Email: john.sinclair@compcofire.co.uk
Web: www.compcofire.co.uk

Regional offices:
Hemel Hempstead; tel: 01442 242821
East Kilbride; tel: 01355 570033
Newcastle; tel: 0191 404 7118

Membership category: Installer level 4

Accreditation: LPS 1048 certified sprinkler installer.

Contact: John Sinclair, Managing Director

COMPCO Fire Systems is an independently owned fire engineering company based in the Midlands with branch offices in Glasgow, Hemel Hempstead and Leeds. Founded in 1988, the company has carried out work in the UK and Europe. Its team of engineers has a wealth of experience to carry out contracts for active fire protection systems of any size or complexity, with expertise in automatic sprinkler systems being a particular strength. COMPCO works closely with clients at every stage of a project to provide them with a quality, yet competitively priced, package of solutions and support.

Cornwall Fire & Rescue Service
Old County Hall
Truro
Cornwall TR1 3HA

Tel: 01872 323745
Email: kthomas@fire.cornwall.gov.uk
Web: www.cornwall.gov.uk/fire

Membership category: Associate organisation

Contact: Kevin Thomas, Area Manager

Cornwall Fire & Rescue Service strongly encourages the fitting of fire sprinklers in all types of buildings at the design stage, and points out that the fitting of sprinklers can often lead to benefits arising in other aspects of fire safety design.

CST Industries (UK) Ltd
Cotes Park Lane
Cotes Park Industrial Estate
Alfreton
Derbyshire DE55 4NJ

Tel: 01773 835321
Fax: 01773 836578
Email: ukinfo@cstindustries.com
Web: www.cstindustries.com

Membership category: Manufacturer/Supplier

Accreditation: Suction tanks approved to procedures in LPCB scheme document SD037 and LPS 1254 and 1276. Vortex inhibitors LPCB approved.

Contact: Damian McClay, Sales Manager

Design, manufacture and installation of bolted, sectional storage tanks manufactured from galvanised steel, glass fused to steel and epoxy-coated steel, suitable for the fire sprinkler market and many other industries. The company also inspects and repairs all types of storage tanks.

Cumbria Fire & Rescue Service
Fire Safety Department
Service HQ
Carleton Avenue
Penrith
Cumbria CA10 2FA

Tel: 07917 305774
Email: michael.smith@cumbria.gov.uk
Web: www.cumbriafire.gov.uk

Membership category: Associate organisation

Contact: Mike Smith, Fire Safety Manager

D Mackinnon Fire Protection Services
5 Place Farm House
Place Farm Way
Monks Risborough
Princess Risborough
Bucks HP27 9QJ

Tel: 01844 273 436
Email: mackinnon333@btinternet.com
Web: www.dm-fire.co.uk

Membership category: Associate individual

Contact: Doug Mackinnon

Consultancy for fire protection projects.

DIS Sprinklers
183 Westgate Street
Gloucester
Gloucestershire GL51 2RW

Tel: 01452 304927
Fax: 01452 300195
Email: info@dis-ltd.co.uk
Web: www.disgroup.co.uk/fire.htm

Membership category: Installer level 3

Accreditation: LPCB ISO 9001: 2008; LPCB LPS 1048 approved sprinkler contractor (approval level 3).

Contact: Wayne Davies, Manager

DIS Sprinklers is a division of the DIS Group and was formed to complement the group's building services package. Since formation in 1985, the division has completed a large range of automatic sprinkler projects in industrial, retail and commercial buildings, covering all hazard categories, together with domestic and residential installations.

Design is carried out by highly qualified personnel to the appropriate national and international standards. All designs implement sprinkler system design software and the DIS team have the resources to meet today's needs for fast-track design and installation. They achieve close cooperation and coordination with all trades in order to meet the requirements of the authorites having jurisdiction, the client and/or the end user.

DIS Sprinklers actively support the wider use of fire sprinkler systems for all types of occupancies, in particular schools, care homes, large warehouses, HMOs and high rise buildings.

Derbyshire Fire & Rescue Service
The Old Hall
Burton Road
Littleover
Derby
Derbyshire DE23 6EH

Tel: 01332 771221
Fax: 01332 270360
Email: rmackie@derbys-fire.gov.uk
Web: www.derbys-fire.gov.uk

Membership category: Associate organisation

Contact: Rob Mackie

Promotion of domestic and residential sprinklers through the DF&RS Think Sprinkler campaign.

DKP Associates
2 Longleat Court
Great Holm
Milton Keynes
Herts MK8 9HD

Tel: 01908 568278
Email: despotten@aol.com

Membership category: Associate individual

Contact: Des Potten

DKP Associates provides quality assurance and health and safety consultancy and training to the fire protection industry. The company also presents training courses on behalf of BAFSA, the Association of Building Engineers and the Institution of Occupational Safety and Health. It also provides independent fire protection consultancy to the end user.

Domestic Sprinklers Ltd
6 Kent Close
Weymouth
Dorset DT4 9TF

Tel: 01305 765763
Fax: 01305 77770
Email: email@domesticsprinklers.co.uk
Web: www.domesticsprinklers.com

Membership category: Installer level 4

Accreditation: FIRAS (restricted ordinary hazard, commercial and industrial sprinkler installations). QMS ISO 9001: 2000.

Contact: Colin Taylor, Director

The company designs and installs: domestic and residential sprinklers to BS 9251: 2005; and restricted ordinary hazards commercial and industrial systems to BS EN 12845: 2009. It also designs and installs mist systems to DD 8458-1: 2010.

Dorset Fire & Rescue Service
Service HQ
Peverell Avenue West
Poundbury
Dorchester
Dorset DT1 3SU

Tel: 01305 252600
Fax: 01305 252799
Email: steve.underhill@dorsetfire.gov.uk
Web: www.dorsetfire.gov.uk

Membership category: Associate organisation

Contact: Steve Underhill

East Sussex Fire & Rescue Service
Headquarters
20 Upperton Road
Eastbourne
East Sussex BN21 1EU

Tel: 01323 462404
Fax: 01323 462044
Email: jo.fowler@esfrs.org
Web: www.esfrs.org

Membership category: Associate organisation

Contact: Jo Fowler, Fire Engineer

East Sussex Fire Authority is committed to reducing the impact of fire on people, property and the environment. We will play a key leadership role in promoting the better understanding of the benefits of sprinklers and will encourage building managers, owners and developers to install sprinklers where there is a risk-based case for doing so. Wherever it is able to influence, the Authority will lobby for the creation of a legal requirement to fit sprinklers in domestic dwellings, high rise premises, care homes, schools and other buildings where the risk to life and property from fire are most significant.

EMTEC Fire Systems
Elsmuir Way
Tannochside Park
Uddingston
Glasgow
Strathclyde G71 5PW

Tel: 01698 808 030
Fax: 01698 808 040
Email: ac@emtecfire.co.uk
Web: www.emtecfire.co.uk

Membership category: Installer level 3

Accreditation: LPCB Level 3 Approved sprinkler installer; LPCB 9001 Certificate of Management System

Contact: Alan Crichton

Emtec Fire Systems offer a complete and comprehensive service in relation to the design, supply, installation and maintenance of all fire limiting and suppression systems, including automatic sprinkler systems. Our systems, processes and staff operate to provide a friendly, efficient and professional service throughout the UK, tailoring solutions to that of our customers' needs while ensuring compliance to the related requirements of the Loss Prevention Council, National Fire Protection Association and Factory Mutual as appropriate.

Essex County Fire & Rescue Service
ECFRS HQ
Kelvedon Park
Rivenhall
Witham
Essex CM8 3HB

Tel: 01376 57627; 01376 576000
Fax: 01376 570466
Email: mike.sparrow@essex-fire.gov.uk; mark.earwicker@essex-fire.gov.uk
Web: www.essex-fire.gov.uk

Membership category: Associate organisation

Contact: Mike Sparrow, ADO Technical Fire Safety

Eton Fire Ltd
Printers Gate
Limehouse Court
3-11 Dod Street
London
E14 7EQ

Tel: 0207 517 6300
Fax: 0207 538 5231
Email: fire@etonfire.com
Web: www.etonfire.com

Membership category: Installer level 3

Accreditation: LPS 1048 Level 3, LPS 1204, ISO 9001.

Contact: Mike Ballard, Managing Director

Eton Fire Ltd is a privately owned, LPCB approved company approved under the LPS 1048 and 1204 schemes to design, install, commission and maintain sprinkler, gas and watermist systems in compliance with ISO 9001 quality management.

Eton Fire Ltd: Midlands Office
Aynsley House
Waterside Business Centre
Wolverhampton Road
Cannock
WS11 1SN

Tel: 01543 431 340
Fax: 01543 571 680
Email: fire@etonfire.com
Web: www.etonfire.com

Membership category: Installer level 2

Accreditation: LPS 1048 Level 2, ISO 9001.

Contact: Tony Weatherley, Divisional Manager

Fire Design Solutions Ltd
152-154 London Road
Greenhithe
Kent DA9 9JW

Tel: 01322 387411
Fax: 01322 386361
Email: info@firedesignsolutions.com
Web: www.firedesignsolutions.com

Membership category: Installer level 1

Contact: Helen Jeffery, Marketing Exceutive

Fire Design Solutions provides a fully integrated, cost effective design and install service for residential sprinkler systems, engineered to offer occupants the safest possible protection from fire. In the event of a fire they are designed specifically to control the spread of a fire within an apartment and from that apartment to any other.

Fire Prevention Works Ltd
3A East Craigie Farm Steading
Dalmeny Estate
Edinburgh
Lothian & Borders EH30 9TQ

Tel: 0131 467 4107
Fax: 0131 777 2600
Email: info@firepreventionuk.com; victoria@firepreventionuk.com
Web: www.firepreventionuk.com

Membership category: Installer level 1

Accreditation: FIRAS; SMAS Worksafe Contractor

Contact: Gary Bennett, Director

Fire Prevention aims to provide specialist, impartial advice and support in relation to developing cost-effective fire safety solutions through design and consultation. The company provides a fully hydraulically designed sprinkler system appropriate to your premises.

Fire Protection Centre Limited
15 Atkinson's Way
Foxhills Industrial Estate
Scunthorpe DN15 8QJ

Tel: 01724 854199
Fax: 01724 854213
Email: sales@fireprotectioncentre.com
Web: www.fpcdatacentre.co.uk

Membership category: Manufacturer/Supplier

Accreditation: ISO 9001: 2008

Contact: Tim Lincoln, Commercial Director

Fire Protection Centre is an established, independent supplier of quality, approved fire sprinklers, fire sprinkler valves, flow control valves, fire ring main and ancillary products. With our unrivalled customer service and industry expertise we offer customised solutions and personal service to help you satisfy project, contract and budget demands.

Fire Protection Services Ltd
Unit 16, Oxwich Court
Enterprise Park
Valley Way
Swansea
SA6 8RA

Tel: 01792 774085
Fax: 01792 344401
Email: simon@fpsfire.co.uk
Web: www.fpsfire.co.uk

Membership category: Associate installer

Contact: Simon Gwinnett, Managing Director

Fire Rail Consultants Ltd
43 Leadale Avenue
Chingford
London
E4 8AX

Tel: 07772 802991
Email: fire.rail@yahoo.co.uk

Membership category: Associate individual

Contact: Peter Haines, Director

Fire Sprinkler Systems (UK) Ltd
11 Westfield Gardens
Inverurie
Aberdeenshire AB51 4QL

Tel: 01467 530383
Email: info@firesprinklers.uk.com
Web: http://www.firesprinklers.uk.com

Membership category: Installer level 1

Accreditation: FIRAS (domestic and residential)

Contact: Terry Wallace, Managing Director

Fire Sprinkler Systems (UK) Ltd are leading residential fire sprinkler installers and system designers in north east Scotland. The company's work is carried out in compliance with BS 9251: 2005 and BAFSA Technical Guidance Note No 1. We use fully approved system components, all our installations are fully tested and certified, and our designers and installers are fully trained. We also hold FIRAS Third Party Certification.

FireFighter 247 LLP (trading as Fire Sprinkler Systems)
Unit 4
Old Sawmills Estate
Broughton Gifford
Melksham
Wilts SN12 8PY

Tel: 0800 808 7228
Fax: 01225 783711
Email: dean@firesprinklersystemsuk.com; sarah@firesprinklersystemsuk.com
Web: www.firesprinklersystemsuk.com

Membership category: Installer level 2

Accreditation: FIRAS

Contact: Dean Price, Operations Partner

Firemain Engineering Ltd
Unit 6, Harrier Court
Eurolink Business Park
Lea Green
St Helens
Merseyside WA9 4YR

Tel: 01744 850063
Fax: 01744 812014
Email: sean@firemain.com
Web: www.firemain.com

Membership category: Installer trade

Contact: Sean McCool, Internal Sales Engineer

Firemain specialises in providing the fire trade with foam system equipment for all types of foam applications. We offer a complete service including design advice, site surveys, equipment supply, commissioning, discharge testing and maintenance. Foam concentrates of all types, with quality brands and UL/FM approvals, are available. Foam enhancement of your sprinkler system, either new build or retrofit, is a speciality. Proportioning and discharging foam is the major part of our portfolio. We are pleased to work in close cooperation with design and sales teams and pride ourselves on our reputation for friendly advice. Quality products range includes: Ansul, Skum, FireDos, Cla-Val and Williaks Fire & Hazard Control.

Firetech Pump Services Ltd
Unit 35, Albion Mills
Miry lane
Thongsbridge
Holmfirth
West Yorkshire HD9 7LS

Tel: 01484 680666
Fax: 01484 680665
Email: harry@firetechpumpservices.com
Web: www.firetechpumpservices.com

Membership category: Associate trade

Contact: Harry Murray, Director

We are an independent diesel engine repairer and supplier of associated equipment to the diesel power generation, industrial, firefighting and marine sectors. Our engineers are factory trained to LPCB and NFPA standards, and we are competent suppliers and installers of approved control panels, fire pumps and associated equipment to the fire protection industry. We specialise in fire pump service and maintenance and the overhaul of all rotating and reciprocating equipment. We offer a comprehensive set of related services, including 4-hour 7-days a week emergency call-out.

Fireworks Fire Protection Ltd
Amber House
Station Road
Attleborough
Norfolk NR17 2AT

Tel: 01953 458420
Fax: 01953 452723
Email: sarah@fireworks-ltd.com
Web: www.fireworks-ltd.com

Membership category: Installer level 1

Accreditation: FIRAS, Watermist installations

Contact: Derek Killaspy, Managing Director

First Fire Protection Ltd
Unit 3, Network 4
Lincoln Road
Cressex Business Park
High Wycombe
Buckinghamshire HP12 3RH

Tel: 01494 522031
Fax: 01494 452752
Email: enquiries@firstfireprotection.co.uk
Web: www.firstfireprotection.co.uk

Membership category: Installer level 2

Accreditation: LPS 1048 Level 2 Approved Sprinkler Contractor; LPCB ISO 9001: 2008; SafeContractor

Contact: Robert Tickner, Director

We are an LPCB registered company specialising in the design, installation and servicing of water spray equipment, designing systems for all types and makes of sprinkler installations. From consultancy to contract handover and planned maintenance, we are able to provide a concise, competitive and professional service.

Our Services Department operates the servicing, maintenance and repair of: standard wet and alternate dry pipe sprinkler installations in all commercial premises, including pre-action and deluge sprinkler installations, diesel and electric fire pumps, dry riser installations, fire hydrants, hose reels, fire alarm installations and Hazard reviews. We also offer Sprinkler Service Agreements.

First Insurance Solutions Ltd
Unit 6, The Oaks Business Village
Revenge Road
Lordswood
Chatham
Kent ME5 8LF

Tel: 01634 661404
Fax: 01634 862425
Email: achibeba@firstins.co.uk
Web: www.firstins.co.uk

Membership category: Associate trade

Contact: Andy Chibeba, Sales and Marketing Manager

We are a specialist commercial insurance broker which specialises in providing cover for sprinkler installation contractors/fire protection contractors and fire protection consultants. Our expertise in commercial insurance and the markets available, combined with our understanding of the sprinkler industry and the work undertaken, as well as the main risk exposures, makes us ideally positioned to help contractors obtain the right cover at the best available price. Please contact us for independent and industry specific advice as well as any quotations.

Flamefast (UK) Ltd
9 Brunel Close
Park Farm North
Wellingborough
Northants NN8 6QX

Tel: 01933 420733
Fax: 01933 400540
Email: nigel.roddie@flamefast.co.uk; salesouth@flamefast.co.uk
Web: www.flamefast-fire-suppression.co.uk

Membership category: Associate installer

Contact: Nigel Roddie, Director

FM Global

1 Windsor Dials
Windsor
Berks SL4 1RS

Tel: +33 1 46 93 24 22
Fax: +33 1 46 93 97 09
Email: allan.macpherson@fmglobal.com; bruce.bromage@fmglobal.com
Web: www.fmglobal.com

Membership category: Associate organisation

Contact: Allan Macpherson/Bruce Bromage

FM Global believes its understanding of property loss prevention is unmatched. Its scientists and engineers work to advance loss prevention practices and establish new industry standards through state-of-the-art research and testing. Automatic fire sprinkler systems and their components are among the subjects of such research. FM's client servicing teams share this knowledge with clients to help them make confident, well-informed decisions about how to reduce risk and exposure and prevent potential business interruption.

Franklin Hodge Industries Limited

Jubilee Building
Westfield Trading Estate
Faraday Road
Hereford
Hereford and Worcs HR4 9NS

Tel: 01432 269605
Fax: 01432 277454
Email: sales@franklinhodge.com
Web: www.franklinhodge.com

Membership category: Manufacturer/Supplier

Accreditation: FM approval of broad range of tanks. LPCB approval, ISO 9001: 2008.

Contact: Nigel Snee, Director and General Manager

Franklin Hodge design, manufacture and install a comprehensive range of site-bolted liquid storage tanks, which are used for the storage of all types of water. Cylindrical and rectangular tanks can be offered in various sizes to suit customers' individual site requirements. Benefits offered by Franklin Hodge tanks include flexibility in design, rapid installation and long life.

FSE Sprinklers & Risers Ltd
Unit 8
Wilford Industrial Estate
Ruddington Lane
Nottingham
Notts NG11 7EP

Tel: 01159 812624
Email: stuart@fsesprinklersandrisers.co.uk
Web: www.fsesprinklersandrisers.co.uk

Membership category: Associate installer

Contact: Stuart Rye, Managing Director

FVS Limited
Broom Street
off Huddersfield Road
Newhey
Rochdale
Lancashire OL16 3RY

Tel: 01706 848599
Fax: 01706 843474
Email: fvs@fvslimited.co.uk
Web: www.fvslimited.co.uk

Membership category: Installer level 3

Accreditation: LPS 1048 approved sprinkler contractor; ISO 9001: 2000.

Contact: Gareth Fitton, Director

FVS Limited is an LPCB approved fire sprinkler installation and servicing company with over 30 years' experience. It aims to provide the best service available from a sprinkler company and it seeks to deliver the highest level of professionalism in the design, installation, commissioning and servicing of fire protection sprinkler systems, meeting the requirements of national, international and insurance specifications. Quotations are produced free of charge and the company aims to put forward the best engineered solution in accordance with the statutory standards and the customer's requirements, with the objective of completing automatic sprinkler systems in the most cost effective and efficient manner possible.

Greater Manchester Fire & Rescue Service
Fire Service Headquarters
146 Bolton Road
Swinton
Manchester
Greater Manchester M27 8US

Tel: 0161 608 4221
Fax: 0161 608 4197
Email: greenhai@manchesterfire.gov.uk
Web: www.manchesterfire.cov.uk

Membership category: Associate organisation

Contact: Ian Greenhalgh, Fire Safety Admin Officer

Grundfos Pumps Limited
Grovebury Road
Leighton Buzzard
Beds. LU7 4TL

Tel: 01525 850 000
Fax: 01525 853 981
Email: rcrighton@grundfos.com
Web: www.grundfos.com

Membership category: Manufacturer/Supplier

Accreditation: Pumps approved to LPS 1131.

Contact: Ross Crighton

Grundfos Fire Systems manufacture a comprehensive range of pumps to meet the requirements of the fire sprinkler market. The fire business is based in the Grundfos UK head office in Leighton Buzzard, with on-site assembly and testing of a full range of diesel and electrically driven pumps, which can be offered individually or as packaged hydrant/sprinkler sets or even as complete drop in place packaged plant rooms.

Grundfos fire pumps have approvals from all leading accreditation bodies including LPCB, FM and VdS. Diesel and electrical control panels are built in-house, with 24/7 servicing call-out available via our service division, EuroPumps. The Grundfos Group, founded in 1945, is now the largest producer of pumps globally, employing some 14,000 people in 58 countries; the group's annual turmover is £1.4 billion.

Hall & Kay Fire Engineering
Sterling Park
Clapgate Lane
Woodgate Valley
West Midlands B32 3BU

Tel: 0121 421 3311
Fax: 0121 422 7312
Email: david.dunnagan@chubb.co.uk; Matt.Nock@hkfire.co.uk; Russell.dixon@hkfire.co.uk
Web: www.hkfire.co.uk

Membership category: Installer level 4

Accreditation: LPS 1048 certificated sprinkler installer and supervising body. Fire alarm and detection systems certified to LPS 1014. LPS 1204 certificated to design/install/commission fixed systems. LPCB ISO 9001: 2000.

Contact: David Dunnagan, Commercial Director-Fire

Principal trading in the UK extends to all market sectors in any location serviced from any one of our four office locations, Ashford, Birmingham, Manchester, and Portsmouth, or from project teams established on-site for larger projects. Hall & Kay Fire Engineering are consultants, designers, installers and project managers of all forms of fixed fire protection systems. The company philosophy is to utilise high quality components in designs tailored to a client's specific requirements with access to the latest developments in fire engineering technology.

Hall Fire Protection Ltd
Holloway Drive
Wardley Business Park
Worsley
Manchester
Greater Manchester M28 2LA

Tel: 0161 793 4822
Fax: 0161 794 4950
Email: mike.green@hallfire.co.uk; info@hallfire.co.uk
Web: www.hallfire.co.uk

Membership category: Installer level 4

Accreditation: LPS 1048 certificated sprinkler installer; LPS 1050 certificated sprinkler servicing and maintenance company; LPCB ISO 9001: 2008.

Contact: Mike Green, Managing Director

As an LPS 1048 certificated contractor, Hall Fire design, supply, fabricate, install and maintain sprinkler, foam/water deluge, inert gas and water mist systems. With a 40 year pedigree as an independent company and founding member of BAFSA, we have a long-term commitment to the fire protection industry. Our project portfolio covers all major market sectors with an emphasis on retail, distribution, industrial, hotel, school, petrochemical and heritage applications. Partnering principles underpin our approach with approximately 70% of orders being on a repeat basis. In-house project engineering and management ensures full control from order placement through to handover, working within ISO 9001: 2008. Good health and safety practice is given priority, with CSCS accreditation for 100% of our engineers and fitters. Don't take our word for it. In 2005, 2007 and 2009 Hall Fire were voted installer of the year, an award sponsored by the FIA.

Hampshire Fire & Rescue Service
Headquarters
Leigh Rd
Eastleigh
Hants SO50 9SJ

Tel: 023 8064 4000
Email: reception@hantsfire.gov.uk; charles.forster@hanstfire.gov.uk
Web: www.hantsfire.gov.uk/

Membership category: Associate organisation

Contact: Bart Forster, Senior Tech Fire Safety

To make Hampshire "SAFER" by recommending the use of systems for certain catogories of fire risk as required by Building Regulations and the Regulatory Reform (Fire Safety) Order 2005 and other legislation.

Harris Pipework Fabrication Ltd
Planetary Road
Wednesfield
Wolverhampton
West Midlands WV13 3SS

Tel: 01902 305830
Fax: 01902 304001
Email: enquiries@harrispipework.co.uk
Web: www.harrispipework.co.uk

Membership category: Associate trade

Contact: S. Harris, A. Hartup

This long-established company is a fabricator of steel pipework for a very wide variety of applications. The company provides quality powder-coated fabricated pipe sections to many industry sectors.

HDI-Gerling Industrial Insurance Co.

10 Fenchurch Street
London
EC3M 3BE

Tel: 020 7696 8099
Email: alan.king@hdi-gerling.co.uk; chris.tomkins@hdi-gerling.co.uk
Web: www.hdi-gerling.co.uk

Regional offices:
Manchester; tel as above
Birmingham; tel as above

Membership category: Associate organisation

Contact: Alan King, Risk Engineering Specialist

As an expert in industrial, commercial and construction insurance we endeavour to differentiate ourselves through our approach to underwriting, claims and risk management. HDI-Gerling has a network of some 170 risk engineers worldwide. The UK Risk Engineering team is made up of six engineers specialising in chemicals, fire engineering, machinery & boiler, civil engineering and health & safety. We pride ourselves in adopting a pragmatic approach towards client risk management issues; we work flexibly within the framework of recognised international standards and local codes employing a mutually beneficial strategy to solve potentially complex problems in a practical manner.

Henderson Insurance Group

Trueman House
Capitol Park
Tingley
Leeds
West Yorkshire LS27 0TS

Tel: 0113 393 6329
Email: neil.beck@HIBL.co.uk
Web: www.hibl.co.uk

Membership category: Associate trade

Contact: Neil Beck, Director

Hertfordshire Fire & Rescue Service

Fire Protection Department
Hertfordshire Fire & Rescue Service
Mundells - MU103
Welwyn Garden City
Hertfordshire AL7 1FT

Tel: 01707 292310
Fax: 01707 292588
Email: administration.cfs@hertfordshire.gov.uk
Web: www.hertsdirect.org/fire

Membership category: Associate organisation

Contact: Fire Protection Manager (Business)

In addition to its traditional role of compliance, audit and enforcement, HF&RS actively provides recommendations and advice on fire suppression systems to developers, architects, insurers, premises' occupiers etc in relation to buildings which require or would benefit from the fitting of sprinklers. HF&RS supports formal technical training of specialist fire officers in sprinkler systems and their design principles. HF&RS works in partnership with developers, licensing bodies etc successfully to install sprinklers in county built schools, residential developments, private dwellings and bespoke systems for vulnerable persons. The Service is proud to be a member of BAFSA and is actively involved in various technical committees, groups and other sprinkler networks.

Humberside Fire & Rescue Service

Service Headquarters
Summergroves Way
Hull
Humberside HU4 7BB

Tel: 01482 567472
Email: jwallis@humbersidefire.gov.uk
Web: www.humbersidefire.gov.uk

Membership category: Associate organisation

Contact: John Wallis, Fire Safety Manager

Humberside Fire & Rescue Service is actively engaging with stakeholders to improve the safety of all dwellings and business premises within its service area. It employs personnel who are tasked with reducing risks in those buildings by the most appropriate and cost-effective method. This often means the recommendation of fitting a building with a sprinkler system. The installation of sprinklers is recommended on our corporate website and is included on our statutory consultations where relevant.

IFC Certification Ltd

IFC Group Ltd
20 Park Street
Princes Risborough
Bucks HP27 9AH

Tel: 01844 275500
Fax: 01844 274002
Email: ian.woodhouse@ifcgroup.com
Web: www.ifccertification.com

Membership category: Associate organisation

Contact: Ian Woodhouse, Associate Director Certification

IFC Certification Ltd is a UKAS accredited and internationally recognised provider of high quality and customer focused independent third-party certification. IFC Certification Ltd is also a Notified Certification Body for certificating products for CE Marking under the Construction Products Regulation. The company is a member of the IFC Group of companies including International Fire Consultants Ltd, which has established an enviable independent position offering clients across the world impartial, expert advice.

Indigo Fire Systems Ltd

Unit 7
Cooperage Green
Weevil Lane
Gosport
Hampshire PO12 1FY

Tel: 02392 602944
Fax: 02392 526960
Email: simon@indigofiresystems.com; jon@indigofiresystems.com
Web: www.indigofiresystems.com

Membership category: Installer level 1

Accreditation: FIRAS Commercial & Industrial Sprinkler Installer; FIRAS Residential & Domestic Sprinkler Installer

Contact: Simon Shoesmith, Managing Director

Design, installation & maintenance of commercial, residential and domestic fire sprinkler installations; wet/dry risers; and water supplies.

Influx Measurements Limited
1A Bennett House
The Dean
Alresford
Hampshire SO24 9BQ

Tel: 01962 736736
Fax: 01962 736737
Email: sales@influxmeasurements.com
Web: www.influxmeasurements.com

Membership category: Associate trade

Accreditation: LPCB; ISO 9001: 2008; FM Approval

Contact: Mark Towner, Managing Director

Manufacturer of FM- and LPCB-approved flowmeters for sprinkler system testing, LPCB approved 'SprinklerSense' intelligent flow switch and test system for sprinkler water flow detection.

Integrated MEP
Technologies House
Crown Industrial Estate
Timperley
Cheshire WA14 1TF

Tel: 0161 976 7308
Fax: 0845 659 5921
Email: david.rowland@integratedmep.com
Web: www.integratedmep.com

Membership category: Associate Installer

Contact: Dave Rowland, Operations Director

International Tube & Fittings

Leabrook Road
Wednesbury
West Midlands

Tel: 0121 505 9940
Fax: 0121 556 1110
Email: sales@itf.uk.com
Web: www.itf.uk.com

Membership category: Associate trade

Contact: Julian Jenkins / Steve Hytch

Stockists of EN10255/10217-1 tube in red, self colour, or galvanized with plain, grooved or threaded ends, and API up to 12". On site machine shop for cutting and machining approved to British Standard. Comprehensive stock of all associated fittings including malleable iron, Victaulic grooved, valves and devices, flanges, bracketry and consumables.

IPS Flowsystems

Seaham Grange Industrial Estate
Seaham
Co Durham SR7 0PT

Tel: 0191 521 3111
Fax: 0191 521 3222
Email: lwalker@ipsflowsystems.com
Web: www.ips-blazemaster.com

Membership category: Supplier

Accreditation: BS ISO 9001; BS ISO 14001; Investors In People

Contact: Les Walker

IPS Flowsystems are UK and European Master distributors of CPVC fire sprinkler systems. The company operates a third-party approved training programme for contractors installing CPVC systems (per ISO 9001 and ISO 14001). The CPVC materials supplied by IPS are tested and approved to the LPCB's LPS 1260 fire test. IPS Flowsystems are distributors of Victaulic residential sprinkler heads and of FM-Global-approved PE piping system for buried fire mains.

JEM Fire Pumps Ltd
JEM House
4 Rochdale Industrial Centre
Albion Road
Rochdale
Lancs OL11 4HN

Tel: 01706 860534
Fax: 01706 712970
Email: admin@jempumps.com; aleech@jempumps.com
Web: www.jempumps.co.uk

Membership category: Manufacturer/Supplier

Accreditation: BS EN ISO 9001: 2008; Investors in People.

Contact: Andrew Leech, Director

Jem Fire Pumps Ltd is an independent company providing service and support to the fire protection industry, a market leader in the provision of service and maintenance to all types of fire pumping equipment. We offer national, international and offshore coverage; with the back-up of our service centre we can provide a quick turnround on major repairs and overhauls for new and obsolete equipment. Pumps, engines, motors, control equipment or foam systems – whatever your problem our experienced team will handle it.

Job GmbH
Kurt-Fischer Strasse 30
22926 Ahrensburg
Germany

Tel: +49 (0)4102-2114-21
Fax: +49 (0)4102-2114-70
Email: juergen.teschner@job-bulbs.com
Web: www.job-bulbs.com

Membership category: Manufacturer/Supplier

Accreditation: Approved to ISO 9001: 2008 by VdS; Sprinkler bulbs approved against requirements of LPS 1039, UL and VdS.

Contact: Juergen Teschner

Job's THERMO BULBs are heat responsive glass bulbs which are widely used in sprinkler heads. More than 800 million THERMO BULBS have been installed worldwide and they are the choice of most major sprinkler manufacturers, a tribute to their high quality and reliability. Not only are the components highly functional but they are also aesthetically pleasing, enabling the sprinkler industry to offer sprinkler designs which meet decorative requirements as well as ensuring efficiency in operation.

K Hewitt & Co Ltd
Clyde House
Gibbon Street
Bishop Auckland
Durham DL14 7DL

Tel: 01388 663109
Fax: 01388 607709
Email: craig.hewitt@hewittplumbing.co.uk; dave.wade@hewittplumbing.co.uk
Web: www.hewittplumbing.co.uk

Membership category: Associate installer

Contact: Craig Hewitt

Kent Fire & Rescue Service
The Godlands
Strawmill Mill
Tovil
Maidstone
Kent ME15 6XB

Tel: 01622 692121
Email: robert.lawson@kent.fire-uk.org
Web: www.kent.fire-uk.org

Membership category: Associate organisation

Contact: Group Manager Robert Lawson, Technical Fire Safety

Kent Fire & Rescue Service is responsible for delivering fire safety and fire prevention guidance to more than 1.5 million people in Kent and Medway. Our professional fire safety inspectors provide advice and guidance to assist business achieve compliance with regulations. We support sprinklers as a method of reducing the impact of fires on our communities.

KIA Fire Safety Ltd
236 Wharf Road
Ealand
North Lincs DN17 4JN

Tel: 01724 711280
Email: khall@kiafiresafety.com
Web: www.kiafiresafety.com

Membership category: Associate installer

Contact: Keith Hall, Managing Director

KIA Fire Safety Ltd are a residential fire sprinkler designer and installer throughout the UK. The company's work is carried out and commissioned to BS 9251: 2005 and BAFSA Technical Guidance Note No 1. Our designers and installation engineers are fully trained and certificated. Each installation is fully project managed to completion.

Lancashire Fire & Rescue Service
Garstang Road
Fullwood
Preston
Lancashire PR2 3LH

Tel: 01772 862545
Email: listerhaworth@lancsfireandrescue.org.uk;
jimfowler@lancsfireandrescue.org.uk
Web: www.lancsfireandrescue.org.uk

Membership category: Associate organisation

Contact: Lister Haworth/Jim Fowler

Lenpart Group
Unit 14-15 Ramac Industrial Estate
Ramac Way
Charlton
London
SE7 7AX

Tel: 0208 853 5005
Fax: 0208 858 9824
Email: sean@lenpart.co.uk
Web: www.lenpart.co.uk

Membership category: Associate supplier

Contact: Sean Siddons, Managing Director

Lenpart was established nearly 30 years ago and supplies hydraulic and industrial hose/tube and fittings to all industries, including supplies for sprinkler installations and other fire protection applications. There are plans to open new depots in the Midlands and South of England.

Liberty Mutual Insurance
5th Floor
2 Bond Court
Leeds
West Yorkshire
LS1 2JZ

Tel: 01535 647723
Email: kevin.helme@libertyiu.com
Web: www.libertyspecialtymarkets.com

Membership category: Associate organisation

Contact: Kevin Helme, Risk Engineer – Property

Liquitech Ltd
The Old Post Office
East Street
Pembridge
Herefordshire HR6 9HA

Tel: 01544 388 883
Fax: 01544 387 977
Email: andrew@liquitech.co.uk
Web: www.liquitech.co.uk

Membership category: Associate trade

Contact: Andrew Searles, Director

Liquitech Ltd was formed in 1996 and has since carried out inspection or maintenance work on more than 700 sprinkler tanks. Tanks are inspected internally with the use of an ROV submersible camera, or by gaining access. Inspections include readings of material thickness using highly accurate ultrasonic test equipment to determine levels of corrosion in tank walls. Typical tank maintenance includes small works such as replacement ball valves, immersion heaters and contents gauges, through to cleaning and painting, lining and re-roofing etc. We also inspect sprinkler pipework using ultrasonic equipment, avoiding the need to remove sections of pipe for testing purposes.

London Fire & Emergency Planning Authority
Fire Safety Regulation
LFB HQ
169 Union Street
London
SE1 0LL

Tel: 0208 587 8555 ext 30707
Email: mark.andrews@london-fire.gov.uk
Web: www.london-fire.gov.uk

Membership category: Associate organisation

Contact: Mark Andrews, DACO

Responsible for enforcement of fire safety legislation in London and promotion of fire safety measures, including sprinklers. Details of our fire stations and local offices are on our website.

Lubrizol Advanced Materials UK Ltd
Albion Road
Carlton Industrial Estate
Barnsley
South Yorkshire S713HW

Tel: 01280 815 503
Email: Alexander.crisp@lubrizol.com
Web: www.blazemaster.com

Membership category: Manufacturer/Supplier

Accreditation: BlazeMaster® is approved by UL, FM, LPCB, and CNPP, and also has NSF and WRAS potable water approvals.

Contact: Alexander Crisp, Business Development Executive

Lubrizol manufactures the CPVC compound and owns the BlazeMaster® trademark. BlazeMaster® CPVC was the first plastic to be approved worldwide for use in fire sprinkler systems and has proven its performance in the marketplace since 1984. Manufacturers of BlazeMaster® pipes and fittings follow the Lubrizol quality programme and, in parallel with their distributors, offer the BlazeMaster® training programme for sprinkler installers.

MagiCAD
Progman Oy
Nortamonkatu 1
26100 Rauma
Finland

Tel: +358 2 8387 6089
Fax: +358 2 8387 6050
Email: gavin.doherty@magicad.com
Web: www.magicad.com

Membership category: Associate supplier

Contact: Gavin Doherty, Area Sales Manager, UK and Ireland

MagiCAD Sprinkler Designer software for AutoCAD and Revit combines world-leading MEP BIM and 3D drawing capabilities with a built-in sprinkler calculation engine, enabling comprehensive, standards-compliant sprinkler design and calculations.

- Fully integrates with AutoCAD and Revit software
- Design sprinkler systems in wire-frame, 2D and 3D
- Work simultaneously in 2D plan mode and 3D isometric mode using split screen
- Calculation of required system pressure based on the hydraulically most remote area
- Calculation of actual flow density for each sprinkler head
- Weakest sprinkler head identified
- The operating point on the pump curve is identified
- Easy and fast bills of materials, collision control and section tools
- Support for BS EN 12845:2009, NFPA 13, BS 9251:2014 and CEA 4001 standards
- Equivalent length tables for CPVC, copper and steel in accordance with BS 9251:2014
- Data for calculations, quality control and design approvals

Marioff Ltd
Badentoy Crescent
Badentoy Place
Portlethen
Aberdeen
Aberdeenshire AB12 4YD

Tel: 01224 784844
Fax: 01224 784885
Email: michael.faers@marioff.co.uk
Web: www.marioff.com

Membership category: Installer level 3

Accreditation: Hi-Fog approvals: ANSI/FM 5560 (water mist systems), Ordinary Hazard 1; VdS 54050001, LH/OH to VdS 2562 (07/96) draft, ANSI/FM 5560 (water mist), Light Hazard Occupancies, ANSI/UL (water mist systems), OHI VdS LH/OH1, OH2 + OH3 Occupancies.

Contact: Michael Faers, National Sales Manager

Marioff manufacture, design and install a range of HI-FOG high pressure water mist fire suppression systems for the building and construction industry and for the protection of machinery space applications.

Mark Bedford
Cedar Cottage
Church Street
Occold
Eye
Suffolk IP23 7PS

Tel: 01379 672 942
Email: bmsealtd@aol.com

Membership category: Associate individual

Contact: Mark Bedford

Sprinkler designer with 14 years' experience. Trained by the RSA in Canute, ICIOB

Marsh Risk Consulting
Merlin House, Commerce Park
Brunel Road
Theale
Reading
Berkshire RG7 4BY

Tel: 0118 965 4227
Fax: 0118 958 5572
Email: richard.w.morgan@marsh.com

Membership category: Associate organisation

Contact: Richard Morgan, Managing Consultant

Marsh Risk Consulting is a global leader in helping clients to protect their assets and operations and secure the optimum insurance coverage for their businesses. We can assist clients in determining the appropriate specification of sprinkler protection for a given risk and in providing a technical specification that would enable 'like for like' tenders to be obtained. We can review specifications and designs to ensure that the most effective protection is provided. We can also negotiate and discuss with insurers to assist in the approval process.

Mercury Engineering
Mercury House
Sandyford Industrial Estate
Foxrock
Dublin 18

Tel: 00 353 1 216 3000
Fax: 00 353 1 216 3006
Email: fireprotection@mercury.ie
Web: www.mercury.ie

Membership category: Installer level 4

Accreditation: LPS 1048 certificated sprinkler installer; ISO 9001: 2008.

Contact: Frank Robinson

Mercury Engineering is a multi-service engineering company. Our Fire Protection Division is LPS 1048 certificated, level 4, authorised to self-certificate sprinkler installations for all hazard classifications to LPC, FM, NFPA and VdS standards. Mercury Engineering is also LPS 1014 certificated, authorised to issue LPCB Certificates of Conformity for fire detection and alarm installations and LPS 1204 certificated, authorised to design, install and commission gas suppression systems. Mercury's head office is in Dublin, Ireland and we have offices in the UK and Europe, including Poland, Moscow.

Merseyside Fire & Rescue Service
Service Headquarters
Bridle Road
Bootle
Liverpool
Merseyside L30 4YD

Tel: 0151 296 6574
Email: GlenThomas@merseyfire.gov.uk
Web: www.merseyfire.gov.uk

Membership category: Associate organisation

Contact: Glen Thomas, Fire Protection Management Team

Merseyside F&RS fully endorses the utilisation of automatic water suppression systems as a means of enhancing community and firefighter safety. The Service actively promotes suppression as a viable fire safety solution for the most vulnerable members of society by engaging with relevant stakeholders. It will aim to strengthen the profile and benefits of such systems by offering match funding incentives, education and publicity.

Michael Slattery Associates
MSA Leeds
Calls Wharf
2 The Calls
Leeds
West Yorkshire LS2 7JU

Tel: 0113 237 2838
Fax: 0113 237 2701
Email: MSalisbury@msa.ie;leeds@msa.ie
Web: msa-fire.co.uk

Membership category: Associate organisation

Contact: Matthew Salisbury, Associate

Mid and West Wales Fire & Rescue Services
Fire Service Headquarters
Lime Grove Avenue
Carmarthen
SA31 1SP

Tel: 0370 60 60 699
Fax: 01267 220562
Email: s.bryant@mawwfire.gov.uk; r.martin@mawwfire.gov.uk
Web: www.mawwfire.gov.uk

Membership category: Associate organisation

Contact: Rob Martin, Temp Legislative FS Technical Officer

The Service is committed to enhancing the safety of its communities and is proactive in both preventative and protective fields of activity. It has introduced a risk based audit regime for the enforcement of the Regulatory Reform (Fire Safety) Order in commercial premises while becoming increasingly involved in safety work to reduce risk in the community as a whole. The Service recognises the important role sprinklers can play in protecting communities and actively promotes their installation, particularly in schools and premises that house the more vulnerable members of society.

Nationwide Fire Sprinklers Ltd
Grinnell House
Private Road No 7
Colwick Industrial Estate
Nottingham
Notts NG4 2JW

Tel: 0115 940 8220
Email: keith.rhodes@nationwide-fire.co.uk; sales@nationwide-fire.co.uk
Web: www.nationwidefiresprinklers.co.uk

Membership category: Installer level 4

Accreditation: FIRAS

Contact: Keith Rhodes, Senior Engineer

A pre-eminent contractor in the domestic and residential sector, Nationwide Fire offer exclusive, industry-leading innovations including world-beating remote monitoring and reporting control systems.

Norfolk Fire & Rescue Service
Whitegates
Hetherset
Norwich
NR9 3DN

Tel: 01603 810351
Email: richard.herrell@fire.norfolk.gov.uk
Web: www.norfolkfireservice.gov.uk

Membership category: Associate organisation

Contact: Richard Herrell, Head of Fire Safety

Norfolk Fire Service strives to improve fire safety in the commercial and industrial premises in the county by a coordinated approach to providing fire safety and fire prevention advice to employers, including guidance about the advantages of sprinkler protection where appropriate.

North Wales Fire & Rescue Service
Fire Service Headquarters
Ffordd Salesbury
St Asaph Business Park
St Asaph
Denbighshire LL17 0JJ

Tel: 01743 535259
Fax: 01743 535296
Email: gary.brandrick@nwales-fireservice.org.uk
Web: www.nwales-fireservice.org.uk

Membership category: Associate organisation

Contact: Gary Brandrick, Senior Fire Safety Manager

Nottinghamshire Fire & Rescue Service
Fire Brigade Headquarters
Bestwood Lodge
Arnold
Nottingham
Notts NG5 8PD

Tel: 0115 957 5200
Fax: 0115 926 1081
Email: john.mills@notts-fire.gov.uk
Web: www.notts-fire.gov.uk

Membership category: Associate organisation

Contact: John Mills, Head of Fire Protection

The Fire & Rescue Service aims to reduce the incidence of fires and their effects by providing services which inform, encourage and support people, organisations and communities to take actions themselves to reduce the risk of fire. Sprinkler systems are an important weapon in the fight against fire and the Service maintains formal liaison with building control bodies and environmental health departments to promote the benefits of sprinklers. The Service is a member of the National Fire Sprinkler Network, seeking support for greater inclusion of sprinklers within the Building Regulations and the sharing of initiatives to promote wider provision of sprinklers in buildings.

NPTC Group, School of Building Engineering Services
Afan Campus
College Green
Margam
Port Talbot
Neath SA13 2AL

Tel: 0800 612 5949
Fax: 01639 648209
Email: energycentre@nptcgroup.ac.uk
Web: www.nptc.ac.uk

Membership category: Associate organisation

Accreditation: Welsh Government Recognised Training Centre for Mechanical and Electrical Services Training; City and Guilds Approved Training Centre; EAL Approved Training Centre; ABBE Approved Training Centre; CITB (C/Skills) Approved Training Centre; Agored Cymru Appr

Contact: Peter Snowball, Head of School - Building Engineering Services; Helen Williams, Energy Centre (NSA) Administrator

Member of the Skills and Development Committee and a training centre for the installation and maintenance of domestic and residential sprinkler systems. Also trainers in the inspection of domestic and residential sprinkler systems.

Pegler Yorkshire Group Limited
Haigh Park Road
Stourton
Leeds
West Yorkshire LS10 1RT

Pegler Yorkshire
CONNECT CONTROL

Tel: 01302 560560
Fax: 0844 243 9870
Email: uk.sales@pegleryorkshire.co.uk
Web: www.pegleryorkshire.co.uk

Membership category: Manufacturer/Supplier

Accreditation: LPCB, VdS and FM

Contact: Darren Woodward/Michael Link

Supplier/manufacturer of Xpress carbon galvanised and stainless steel sprinkler tube and fittings.

PEL Services Limited
Units 1, 2 & 7 Belvue Business Centre
Belvue Road
Northolt
Middlesex UB5 5QQ

Tel: 020 8839 2100
Fax: 020 8841 1948
Email: pel@pel.co.uk
Web: www.pel.co.uk

Membership category: Associate installer

Contact: David Jarman, Director

From critical life safety systems to essential property protection, PEL Fire & Security systems safeguard premises and their occupants throughout the UK and the Republic of Ireland, applying the benefits of appropriate technology and guaranteeing compliance with governing standards.

Phoenix Fire Services Ltd
Interserve Sprinkler Division
Unit 9 Mercia Business Village
Torwood Close
Westwood Business Park
Coventry
Warwickshire CV4 8HX

Telephone: 07525 277019
Email: ken.mears@interserve.com; colin.packer@rentokil-initial.com
Web: www.interserve.com/how-we-help/fire-safety

Membership category: Installer level 1

Accreditation: LPCB - Level 1

Contact: Ken Mears, Bid Manager

Potter Electric Signal Company
5757 Phantom Drive
Suite 125
St Louis
Missouri 63042

Tel: 00 1 800 325 3936
Fax: 00 1 800 768 8377
Email: sales@pottersignal.com
Web: www.pottersignal.com

Membership category: Manufacturer/Supplier

Accreditation: UL, VDS, ISO, CE, and LPCB

Contact: Bruce LaRue

Established in 1898, Potter Electric Signal Company produces a wide array of products including fire sprinkler monitoring systems, corrosion monitoring, MIC testing, and corrosion mitigation. At Potter, we supply our customers with products that provide real world solutions and unequalled service and technical support. Our employees are committed to providing the very best product and service available for the protection of life and property.

Powerpro UK Limited
Powerpro Fire Pump Services
Middlemore Lane West
Alridge
Walsall
WS9 8BG

Tel: 01922 454585
Fax: 01922 454586
Email: jason@powerprouk.com
Web: www.powerprouk.com

Membership category: Associate trade

Contact: Jason Cooper, Chief Engineer

Our engineers are fully conversant with all types of fire pumps and design specifications including high pressure water mist. This enables us to offer our customers a comprehensive maintenance facility which includes - but is not limited to - routine servicing, and major and minor overhauls on engines, pumps and control panels.

We believe that our service – established over 24 years - is effective, efficient and available on demand, supported as it is by our experienced team of engineers 24 hours a day, 365 days a year.

Powertec Pumps Ltd
Unit 48, Youngs Industrial Estate
Paices Hill
Aldermaston
Reading
Berkshire RG7 4PW

Tel: 0118 940 9970
Fax: 0118 981 4893
Email: davidnewman@powertecpumps.co; rossnewman@powertecpumps.com
Web: www.powertecpumps.com

Membership category: Associate trade

Contact: David Newman, Managing Director

Project Fire Products Ltd
Pasturefields Industrial Estate
Pasturefields Lane
Hixon
Stafford
Staffordshire ST18 0PH

Tel: 01889 270999
Fax: 01880 270974
Email: sales@projectfire.co.uk
Web: www.projectfire.co.uk

Membership category: Manufacturer/Supplier

Accreditation: LPS 1048 Level 4; FIRAS Certification (domestic & residential); ISO 9001: 2008; FPA membership; National Fire Sprinkler Network – Certification; Product Approvals for Zonecheck, Zonecheck Residential, Bellcheck, Livetap and Gemini - LPCB Red Book listed

Contact: Bernard Cain, Director

Project Fire are recognised worldwide as leading innovators in the field of fire protection. With over 30 years of experience, Project Fire have successfully developed a portfolio of products designed to improve or simplify the installation, testing and use of sprinkler systems. All products are fully tested and approved to meet international safety standards and codes.

Pyro Protection Limited
Saddleworth Business Centre
Huddersfield Road
Delph
Oldham
Lancashire OL3 5DF

Tel: 01457 879222
Fax: 01457 879888
Email: jsmith@pyroprotection.co.uk
Web: www.pyroprotection.co.uk

Membership category: Installer level 4

Accreditation: FIRAS (both commercial & industrial and residential & domestic); QM approved to BS EN ISO 9001: 2008; Safecontractor accreditation scheme; CHAS scheme; Construction Line member; all our office staff, engineers and installers carry Construction Scheme Certification Cards (CSCS)

Contact: John Smith, Company Secretary

Pyro Protection Limited are independent specialists in the provision of fire sprinkler protection and allied fire suppression fields. We provide consultation, proposals, design, project management, commissioning, training and ongoing service and maintenance. Our area of expertise encompasses not only sprinkler systems but also deluge systems, foam enhancement, low/medium/high expansion foam systems, wet/dry risers, fire hydrants and hosereels. We are engineers and although we often produce innovative solutions to fire protection problems we also ensure that all our system designs are compliant with recognised international standards, including BS EN 12845, NFPA and FM Global, and we only install approved equipment.

RAD Fire Sprinkler Co UK
58A St John's Road
Tunbridge Wells
Kent TN4 9Y

Tel: 01892 680090
Email: paul@radfiresprinklers.com
Web: www.radfiresprinklers.com

Membership category: Installer level 1

Accreditation: FIRAS certified (residential and domestic)

Contact: Paul Hummerstone, Director

Covering south-east England, we specialise in the design, installation and maintenance of domestic and residential fire sprinkler systems. We work closely with architects, developers and local authority building control departments and provide advice on mains water provision issues. We are registered in the FIRAS third-party certification scheme.

Rapidrop Global Limited
Rutland Business Park
Newark Road
Peterborough
Cambs PE1 5WA

Tel: 01733 847 510
Fax: 01733 553 958
Email: rapidrop@rapidrop.com; martyn.willimer@rapidrop.com; fol.a@rapidrop.com
Web: www.rapidrop.com

Membership category: Sprinkler head manufacturer

Accreditation: LPCB approved to ISO 9001.

Contact: Martyn Willimer, Sales Director; Afolabi Akinsanya, Sales Manager

Rapidrop Global, a UK-based manufacturer of fire sprinkler products with international sales and distribution serving the needs of the fire detection and suppression industry. Our dedicated, skilled supply and engineering teams pride themselves with providing extensive experience and knowledge in assisting clients with the selection and supply of accredited, competitive, value-for-money solutions. Since year 2000, we have developed our core product range that now includes sprinkler heads, flexible sprinkler connections, alarm and control valves, pump house equipment, pipe jointing and support products plus special risk products.

Reliable Fire Sprinkler (UK) Ltd
Unit 25
Birches Industrial Estate
East Grinstead
Surrey RH19 1YX

Tel: 01342 316800
Fax: 01342 314679
Email: rsandalls@reliablesprinkler.com; gleonard@reliablesprinkler.com
Web: www.reliablesprinkler.com

Membership category: Sprinkler head manufacturer

Accreditation: LPCB approved to ISO 9001.

Contact: Roy Sandalls, Sales Manager

Reliable Automatic Sprinkler Company is one of the world's largest producers of automatic fire sprinklers and sprinkler control equipment and a major distributor of sprinkler system components. Founded in 1981 by Frank J Fee, Reliable today, three generations on, is still under the leadership of the Fee family. Reliable is a manufacturer of devices designed to protect life and property from the effects of fire. Three goals are at the heart of Reliable: first, to be the leading worldwide manufacturer of innovative, quality oriented fire sprinklers and system devices; second, to be a leading supplier of the fire sprinkler system components; and third, to be the leader in providing the highest level of operational excellence in customer service. Reliable's international office is based in the UK with sales and distribution centres dealing with more than 50 countries worldwide.

Residential Sprinklers Ltd
16 Engleton Lane
Brewood
Staffordshire ST19 9DZ

Tel: 07855 807945
Email: mat@residentialsprinklersltd.co.uk
Web: www.residentialsprinklersltd.co.uk

Membership category: Associate installer

Accreditation: XACT BS9251 Sprinkler Design Course and XACT BS9251 Sprinkler Installation, Commission and Maintenance Course completed

Contact: Mat Rushton, Director

Design, install, commission, service and maintain domestic and residential sprinkler systems to BS 9251:2005.

Residential Sprinkler Protection Ltd
64 William Street
Trethomas
Caerphilly
CF83 8FX

Tel: 02921 432048
Email: info@rsprotection.co.uk; john@rsprotection.co.uk
Web: www.sprinklerswales.co.uk

Membership category: Installer level 1

Accreditation: FIRAS (Residential & Domestic); Constructionline; Capita Acclaim SSIP

Contact: John Newman, Business & Technical Development

Design and installation of automatic sprinkler systems to domestic & residential occupancies. We also have particular expertise in 'one stop shop' retrofit installations to fully occupied high rise blocks of flats and extra care apartments.

Residential Sprinkler Solutions Ltd
Unit 6A, Copthall Farm
Breakspear Road South
Ickenham
Middlesex UB10 8HB

Tel: 0208 864 3914
Email: info@residentialsprinklers.co.uk
Web: www.residentialsprinklers.co.uk

Membership category: Installer level 1

Accreditation: FIRAS (domestic and residential)

Contact: Paul Moody, Director

Domestic/residential sprinkler system installation throughout the UK.

Risk Consulting (davidrsmith) Ltd
7 Rectory Close
Barby
Warwicks CV23 8TY

Tel: 078720 12720
Email: david@riskconsultingltd.co.uk
Web: www.riskconsultingltd.co.uk

Membership category: Associate individual

Contact: David Smith, Managing Director

Project management of sprinkler installations including conceptual drawings/ calculations, site inspections and commissioning. Also independent evaluation of existing systems, as well as general fire risk reviews including fire risk assessments.

RMD Fire Control Ltd
The Coach House
22 Lower Stone Street
Maidstone
Kent ME15 6LX

Tel: 01622 682522
Fax: 01622 692675
Email: sprinklers@rmdfire.co.uk
Web: www.rmdfire.co.uk

Membership category: Installer level 3

Accreditation: LPS 1048 level 3 approved sprinkler contractor.

Contact: Dave Verga

RMD Fire Control Ltd was founded in 1976 by time served engineers skilled in the design and installation of automatic fire sprinkler systems and it has grown steadily over the years into one of the most successful companies in the industry. It carries out works across the whole of the UK and Ireland. Dedicated to providing quality throughout its organisation, the company operates the ISO 9001:2008 certificated by the Loss Prevention Certification Board.

Royal Berkshire Fire & Rescue Service
103 Dee Road
Tilehurst
Reading
Berks RG19 4FQ

Tel: 0118 932 2772
Email: hughesd@RBFRS.co.uk
Web: www.RBFRS.co.uk

Membership category: Associate organisation

Contact: David Hughes, ADO Community Safety

RBFRS plays a key role in promoting a better understanding of the benefits of sprinklers and will work to encourage building owners and developers to install systems where there is a case for doing so. While the installation of sprinklers is beneficial in any building, we believe our focus should be directed at those premises where the most significant impact can be achieved, such as schools, residential care homes, domestic housing and higher risk commercial premises. We believe more should be done to promote the wider use of sprinklers in these premises and are actively working to support this aim.

Sale Engineering Products Ltd
Unit 4
Brookfield Business Park
Brookfield Road
Cheadle
Cheshire SK8 2PN

Tel: 0161 428 1180
Fax: 0161 491 2434
Email: stephen.burr@saleengineering.co.uk
Web: www.firesprinker.co.uk

Membership category: Manufacturer/Supplier

Contact: Stephen Burr, Manager

The company manufactures a very wide range of specialist products for the fire sprinkler industry. Visit the website to browse the breadth of sprinkler products available.

Scottish Fire & Rescue Service
5 Whitefriars Crescent
Perth
Perthshire PH2 0PA

Tel: 01738 475260
Email: ross.haggart@firescotland.gov.uk
Web: www.firescotland.gov.uk

Membership category: Associate organisation

Contact: A/M Ross Haggart, Head of Prevention & Protection

Shawston (International) Ltd
Shawston Manchester
Great Norbury Street
Hyde
Cheshire SK14 1BW

Tel: 0161 368 4545
Fax: 0161 367 8114
Email: sales@shawston.co.uk; paul@shawston.co.uk
Web: www.shawston.co.uk

Regional offices:
London; tel: 01494 460910
Glasgow; tel: 0141 778 6975
Birmingham; tel: 0121 556 3400

Membership category: Manufacturer/Supplier

Contact: Paul Beardow

Shawston designs, manufactures and distributes support systems for fire sprinkler, mechanical and electrical engineers. All brackets are either stocked or manufactured on our sites in Manchester, London and Glasgow. Shawston also carry in-depth stock of steel tube, malleable iron fittings, Victaulic grooved fittings, sprinkler heads and devices, as well as Rapidrop flexibles.

Solent Fire Protection Services Limited
12 Heritage Business Park
Heritage Way
Gosport
Hampshire PO12 4BG

Tel: 023 9251 0230
Fax: 023 9251 1510
Email: info@solentfire.co.uk
Web: www.solentfire.co.uk

Membership category: Installer level 3

Accreditation: LPS 1048 registered supervised sprinkler installer.

Contact: Simon Tooth, Managing Director

Solent Fire specialises in the installation and maintenance of automatic sprinkler systems. It is an LPS 1048 registered sprinkler installer, recognised to design and install sprinkler systems in compliance with the LPC Sprinkler Rules.

South Wales Fire & Rescue Service
Headquarters
Forest View Business Park
Llantrisant
Pontyclun
South Wales CF72 8LX

Tel: 01443 232700
Fax: 01443 232180
Email: sa-rossiter@southwales-fire.gov.uk
Web: www.southwales-fire.gov.uk

Membership category: Associate organisation

Contact: Ritchie O'Connell, Group Manager, Business Fire Safety

South Wales Fire & Rescue Service is the regulatory body responsible for fire safety enforcement and fire safety advice across the ten unitary authorities of: Rhondda Cynon Taf; Merthyr Tydfil; Blaenau Gwent; Caerphilly; Monmouth; Torfaen; Newport; Cardiff; the Vale of Glamorgan; and Bridgend. SWF&RS actively promotes and endorses the widespread adoption of automatic water suppression systems as an integral part of wider fire safety solutions.

South Yorkshire Fire & Rescue Service
Command Headquarters
Sheffield
South Yorkshire S13 9QA

Tel: 0114 253 2941
Fax: 0114 269 1899
Email: rbrason@syfire.org.uk
Web: www.syfire.org.uk

Membership category: Associate organisation

Contact: Roger Brason

Among the statutory duties of South Yorkshire Fire &Civil Defence Authority is its duty to provide an efficient and effective Fire & Rescue Service to its population. The Service is responsible for delivering fire protection advice to the domestic and commercial sectors, including advice about fire detection, alarm and suppression systems, including the provision of guidance concerning the suitability of automatic sprinkler systems to protect particular premises and risks.

SPP Pumps Limited
1420 Lakeview
Arlington Business Park
Theale
Reading
Berkshire RG7 4SA

Tel: 0118 932 3123
Fax: 0118 932 3302
Email: alex_playfair@spppumps.com
Web: www.spppumps.com

Membership category: Manufacturer/Supplier

Accreditation: Pumps approved to LPS 1131.

Contact: Alex Playfair

SPP has been manufacturing and supplying pumps and associated equipment for well over 100 years. Focused on market requirements, it has grown to become a recognised world leader in the design and production of centrifugal pumps and fluid handling systems for a variety of applications across a wide range of industries. The fire protection and firefighting applications include pumps suitable for automatic sprinkler systems, and SPP manufactures pumps that have been approved to LPS 1131. Thus the company has control of and responsibility for the design, construction, testing and performance of fire pump sets incorporating its LPCB approved fire pumps.

Staffordshire Fire & Rescue Service
Central Risk Reduction
Headquarters
Pirehill
Stone
Staffs ST15 0BS

Tel: 01785 898767
Fax: 01785 898395
Email: andrew.brown@staffordshirefire.gov.uk
Web: www.staffordshirefire.gov.uk

Membership category: Associate organisation

Contact: Andrew Brown, Central Risk Reduction

Staffordshire Fire & Rescue Service is committed to improving fire safety in commercial and residential premises within the county. The Service strives to deliver effective advice on all fire safety matters such as fire detection, alarm and suppression systems, including guidance on the suitability of automatic sprinkler systems to protect life and property.

Steve Leigh & Associates
(trading as Firebreaker)
13 Farriers Road
Stowmarket
Suffolk IP14 2NS

Tel: 01449 673451
Fax: 01449 673470
Email: steveleigh@groundbreaker.co.uk; sales@groundbreaker.co.uk
Web: www.groundbreaker.co.uk

Membership category: Associate trade

Contact: Steve Leigh, Managing Director

Firebreaker is the only surface mounted sprinkler management system allowing external control. It is a passive, mains fed and boosted (as required) system providing external access to control valves etc.

Compliant with Water Regulations and BS 9251, Firebreaker avoids the use of storage at any given site, and eliminates the need for duplication of water supply and fire service pipes to a property. Ideal for use on any new property or as a retrospective installation on an existing one.

Suffolk Fire & Rescue Service
Endeavour House
8 Russell Road
Ipswich
Suffolk IP1 2BX

Tel: 01502 524106
Fax: 01502 586426
Email: andy.english@suffolk.gov.uk
Web: www.suffolk.gov.uk/PolicingAndPublicSafety/FireAndRescueServices/

Membership category: Associate organisation

Contact: Andy English

Thameside Fire Protection Co Ltd
Unit 4 Sovereign Park
Cranes Farm Road
Basildon
Essex SS14 3JD

Tel: 01268 597999
Fax: 01268 597998
Email: andy.belsey@thamesidefire.co.uk; johnallen@thamesidefire.co.uk
Web: www.thamesidefire.co.uk

Membership category: Installer level 3

Accreditation: LPS 1048 approved sprinkler contractor. LPCB 9001: 2000.

Contact: John Allen, Managing Director

Design, fabrication, installation and maintenance of all sprinkler systems. All related fire protection work undertaken: fire alarms, extinguishers and dry risers etc. Established 1985.

- System designed to BS 5306, BS EN 12845, BS 9251, and NFPA and FM standards.
- Fabrication facilities
- National coverage; including service contracts and 24-hour breakdowns
- Directly employed installation and service staff
- Special risk work and confined space operations
- Health and safety paramount
- Environmental accreditation to BS 14001
- Emphasis on client satisfaction, which brings 85% repeat business
- All market sectors covered, from high street retail to petrochemical.

Thermocable Flexible Elements Ltd
Pasture Lane
Clayton
Bradford
West Yorkshire BD14 6LU

Tel: 01274 882359
Fax: 01274 882229
Email: philipwilkie@thermocable.com; info@thermocable.com
Web: www.thermocable.com

Membership category: Manufacturer/Supplier

Contact: Philip Wilkie, Technical Director

Thermotech Fire Protection
Presbury House
Bamford Business Park
Stockport
Greater Manchester SK4 1PL

Tel: 0161 476 5551
Fax: 0161 476 2998
Email: fire.info@thermotechsolutions.co.uk
Web: www.thermotechsolutions.co.uk

Membership category: Installer level 3

Accreditation: LPCB level 3

Contact: Gemma Watson, Sales and Marketing

Thermotech Fire Protection Limited was formed in 2000 to offer retail companies a reliable cost effective planned and reactive maintenance service covering the whole of the UK. Our engineers all have a minimum of 10 years experience within the fire protection industry and are fully conversant with all fixed firefighting systems. The management have all worked through the ranks and can offer a technical back up second to none.

Tokio Marine Europe Insurance Ltd
60 Gracechurch Street
London
EC3V 0HR

Tel: 0207 283 8844
Fax: 0207 398 7355
Email: pwall@tokiomarine.co.uk
Web: www.tokiomarine.eu

Membership category: Associate organisation

Contact: Phil Wall

Founded in 1879, Tokio Marine is recognised as Japan's oldest insurer. Tokio Marine Europe Insurance Ltd is the European arm of the group and is rated AA for financial strength by Standard and Poor's. Tokio Marine Europe provides tailored commercial property, casualty, marine and personal accident/travel insurance solutions for a wide range of business sectors across Europe. Risk management and claims handling are at the core of our operations, and automatic fire protection in the form of sprinklers is regarded by Tokio Marine Europe as an important feature of property loss control, by virtue of the effectiveness and reliability of the systems.

Triangle Fire Systems Ltd
Unit 9, North Ridge Industrial Park
Haywood Way
Hastings
East Sussex TN35 4PP

Tel: 01424 812557
Fax: 01424 812557
Email: colin@trianglefiresystems.co.uk; jenna@trianglefiresystems.co.uk
Web: www.trianglefiresystems.co.uk

Membership category: Installer level 1

Accreditation: FIRAS (residential & domestic); CHAS; Construction Line

Contact: Colin Chantler, Managing Director; Jenna Gibson, Sales & Marketing Manager

Triangle Fire Systems are one of the UK's leading specialists in residential & domestic fire sprinkler systems. Our technical expertise, the support we offer, the quality of our workmanship and site supervision, has seen us establish a reputation second to none in the industry and become the preferred specialist contractor for a number of clients. We have a strong track record of successful installations for a wide range of clients including: Barratt Homes, Telford Homes, Ardmore Construction, Willmott Dixon, Gracewell Healthcare, Care UK, Hill Partnerships, Imtech Meica and Galliford Try. We are also installers of dry and wet rising mains.

Triple P Projects Ltd
Old County Police Station
15 Neath Road
Resolven
Neath
West Glamorgan SA11 4AW

Tel: 01639 711744; 07774 935222
Email: hdavies@triplepprojects.com; sarah@triplepprojects.com
Web: www.triplepprojects.com

Membership category: Manufacturer/Supplier

Contact: Huw Davies, Director

Triple P Projects Ltd supply a range of intelligent fire pumps for connection directly onto the town's main negating the need for a tank. Our SD range covers sprinkler systems from OH3 through to residential and domestic applications, utilising fully tested and approved fire pumps and equipment. Our units are installed throughout the UK and Ireland. We have over 30 years' experience in the fire industry and offer our clients an engineered solution to water supplies.

Tubetrade plc
Ten Acres
Berry Hill Industrial Estate
Droitwich
Worcs. WR9 9AQ

Tel: 01905 791000
Fax: 01905 827715
Email: david@tubetrade.com
Web: www.tubetrade.com

Membership category: Manufacturer/Supplier

Contact: David Howells, Director

Stockists of EN10255 red, self colour and galvanised tubes in plain, grooved or threaded ends. Full cutting service available. Standard stock lengths 6.5m to 8.0m.

Tyco Fire & Integrated Solutions (UK) Ltd

Tyco Park
Grimshaw Lane
Newton Heath
Manchester
Greater Manchester M40 2WL

Tel: 0161 455 4567
Fax: 0161 455 4448
Email: BWhiteley@tycoint.com
Web: www.tycofis.com

Membership category: Installer level 4

Accreditation: LPCB certificated installer. LPCB: manufacturer of approved complete range of sprinklers, installation valves, alarm motors and gongs, sprayers and associated equipment.

Contact: Bob Whiteley

Approved component manufacture, system design and installation, inspection, service and maintenance of the whole range of sprinkler systems in accordance with national, European, overseas and international standards to meet all approval requirements. Specialist departments deal with the range of requirements, from small extensions to large multi-installation systems, including special hazard installations employing high velocity, medium velocity water spray and mist systems. Multi-product systems to protect a wide range of hazards is a further specialist activity.

Tyco Fire Protection Products Ltd
Tyco Park
Grimshaw lane
Newton Heath
Manchester
Greater Manchester M40 2WL

Tel: 0161 259 4000
Fax: 0161 875 0491
Email: Ksc@tyco-bspd.com
Web: www.tfppemea.com

Membership category: Sprinkler head manufacturer

Contact: Kate Scourfield, Key Account Manager Fire Protection

Tyco Fire Protection Products is a strategically aligned business unit of Tyco International with globally recognised products sold under leading brands, including ANSUL, CHEMGUARD, DBE, EZCare, FLAMEVision, GRINNELL, HYGOOD, NEURUPPIN, PYRO-CHEM, RAPID RESPONSE, SIMPLEX, SKUM, SPRINKCAD, THORN SECURITY, VIGILANT, Williams Fire & Hazard Control, and ZETTLER. Tyco Fire Protection Products produces fire protection, detection and mechanical building construction solutions for commercial, industrial, institutional, governmental and residential customers. Heavy emphasis is placed on research and development, resulting in innovations and global approvals. Key products include manual firefighting equipment, detection/suppression systems, extinguishing agents, sprinkler systems, valves, piping products and fittings.

Ultra Surefire Ltd
Unit 4
Barnes Wallis Court
Wellington Road
High Wycombe
Bucks HP12 3PR

Tel: 01494 444123
Fax: 01494 444345
Email: info@ultrasurefire.co.uk
Web: www.ultrasurefire.co.uk

Membership category: Installer level 3

Accreditation: Wide variety of product/system approvals, including LPS 1048 and FIRAS.

Contact: Peter Kemp, Managing Director

Ultra is a specialist suppression provider, being an experienced installer of high and low pressure water mist, gaseous (including FM200 and inert) and sprinkler systems. Its project management team provides comprehensive design and system support to suit clients' requirements.

United Kingdom Warehousing Association
11 Gower Street
London
WC1E 6HB

Tel: 0207 636 8856
Fax: 0207 636 7865
Email: dg@ukwa.org.uk
Web: www.ukwa.org.uk

Membership category: Associate organisation

Contact: Roger Williams, Director General

A trade association for the third-party logistics sector.

Universal Fixings Ltd
New John Street
Halesowen
B62 8HT

Tel: 01384 422284
Fax: 01384 897446
Email: sales@universalfixings.co.uk
Web: www.pipeworkengineering.co.uk

Membership category: Associate trade

Accreditation: NQA certificated to BS EN ISO 9001: 2000

Contact: Peter Cutler

Manufacturers and suppliers of pipe supports and channel bracketry including non-standard fabrications and presswork. Universal Fixings provides a complete service to sprinkler installers. Its situation in the heart of the West Midlands and at the centre of the national motorway network permits fast and efficient delivery countrywide.

Victaulic
Units B1 & B2
SG1 Industrial Park
Cockerell Close, Gunnels Wood Road
Stevenage
Herts SG1 2NB

Tel: 01438 310690
Fax: 01438 310699
Email: nick.scull@victaulic.com
Web: www.victaulic.com

Membership category: Sprinkler head manufacturer

Accreditation: LPCB, UL/FM, VdS, CNBOP

Contact: Nick Scull, Sales Engineer

Victaulic® innovation began in 1925 with the first grooved-end mechanical pipe joining technology. In 1952, Victaulic released the first approved coupling for fire protection services. Today, Victaulic technology includes a complete offering of sprinklers, couplings, fittings, valves including wet, dry, deluge and pre-action alarm valves, accessories and tools to meet the needs of any fire protection application.

Viking SupplyNet Ltd
Unit 2
Byram House
Chapel Street
Epworth
Lincs DN15 1HQ

Tel: 01427 871000
Fax: 01427 873917
Email: epearson@vikingcorp.com
Web: www.vikinggroupinc.com

Membership category: Sprinkler head manufacturer

Accreditation: A variety of approvals/certifications from FM, UL, LPCB and VdS.

Contact: Eddie Pearson

For over 80 years the name Viking has represented global leadership in fire protection. Today, the Viking Group provides the independent fire sprinkler contractor with integrated solutions to any fire protection challenge. The core of Viking's strength is the dedication and commitment of our people. We're passionate about what we do, because fire protection is all we do. We believe that protecting people and property from fire is a purposeful commitment that transcends the bottom line. Our singular, undivided focus gives us a 'professional edge' that continues to set the Viking Group apart in a very competitive industry.

Warrington Certification Ltd
Holmesfield Road
Warrington
Cheshire WA1 2DS

Tel: 01925 646666
Email: ian.donlon@exova.com
Web: www.warringtoncertification.com

Membership category: Associate organisation

Contact: Ian Donlon, Sprinkler Certification Engineer

Warrington Certification Ltd offers a comprehensive range of certification schemes for fire protection systems including CERTIFIRE for products, FIRAS for installers and certification to ISO 9001: 2001. Warrington Certification Ltd is part of the Exova Warringtonfire Group, the UK's largest independent fire testing, consultancy, research and certification organisation.

Warwickshire Fire & Rescue Service
Fire Service Headquarters
Warwick Street
Leamington Spa
Warwickshire CV32 5LH

Tel: 01926 423231
Email: firesafety@warwickshire.gov.uk; davefinnerty@warwickshire.gov.uk
Web: www.warwickshire.gov.uk/fireandrescue

Membership category: Associate organisation

Contact: Dave Finnerty, Fire Protection Manager

Warwickshire has close contacts with industry experts who can provide technical specifications and costs. We will consider ways in which we can keep development costs low or cost neutral by seeking reductions in other ways e.g. extending the distances between fire hydrants where sprinklers have been fitted to housing sites. We will encourage the use of sprinklers in all residential properties but especially social housing, houses in multiple occupation and large residential developments of more than 500 homes.

West Midlands Fire Service
Fire Service Headquarters
99 Vauxhall Road
Birmingham
West Midlands B7 4HW

Tel: 0121 380 7500; 07973 810 064
Email: tim.ford@wmfs.net
Web: www.wmfs.net

Membership category: Associate organisation

Contact: Tim Ford, Fire Safety Officer, Applications Team

West Midlands Fire Service is responsible for delivering fire safety enforcement and fire prevention guidance within the metropolitan West Midlands, with its fire safety centre personnel serving the seven constituent boroughs of Birmingham, Coventry, Sandwell, Wolverhampton, Solihull, Dudley and Walsall. The importance of fire suppression is emphasised and promoted by its officers in their regular roles in planning and enforcement, and they offer advice wherever needed. West Midlands Fire Service promotes the wider use of automatic sprinklers in commercial, educational, heritage and residential premises through legislation, partnership, working and lobbying. It has a policy of fitting sprinklers in fire service property when building new or refurbishing existing premises.

West Sussex Fire & Rescue Service
Business Fire Safety
Centenary House
1st Floor, West Wing, Room 236 & 245
Durrington Lane
Worthing
West Sussex BN13 2QB

Tel: 01243 772864
Email: Mark.Hayter@westsussex.gov.uk; Richard.bradley@westsussex.gov.uk; debi.booker@westsussex.gov.uk
Web: www.westsussex.gov.uk/fire

Membership category: Associate organisation

Contact: Mark Hayter, Group Manager; Debi Booker, Support Officer; Richard Bradley, Business Partnership

West Yorkshire Fire Service
Fire Service Headquarters
Oakroyd Hall
Bradford Road
Birkinshaw
West Yorkshire BD11 2DY

Tel: 0113 387 4397
Fax: 0113 387 5777
Email: nigel.charlston@westyorksfire.gov.uk
Web: www.westyorksfire.gov.uk

Membership category: Associate organisation

Contact: Nigel T Charlston - Head of Fire Engineering, Planning & Licensing

West Yorkshire Fire Service works to provide an efficient and effective emergency service to its population. It is responsible for delivering fire protection advice to the domestic and commercial sectors, including advice about fire detection, alarm and suppression systems, including the provision of guidance concerning the suitability of automatic sprinkler systems.

Wiltshire Fire & Rescue Service
Manor House
Potterne
Devizes
Wiltshire SN10 5PP

Tel: 01380 731167
Fax: 01380 727000
Email: iain.hunter@wiltsfire.gov.uk
Web: www.wiltsfire.gov.uk

Membership category: Associate organisation

Contact: Iain Hunter

It is Wiltshire Fire & Rescue's policy to encourage and promote the installation of sprinklers in education, commercial, residential and domestic premises or as part of an engineered fire protection solution for a particular premises. The F&RS's sprinkler team, under the direction of the Group Manager Service Delivery (Protection), will deliver the Service's key policy objectives with respect to sprinkler protection.

Writech Industrial Services Ltd
Newbrook Business Park
Mullingar
Co Westmeath

Tel: 00 35344 934 9857
Fax: 00 35344 934 9858
Email: tedwright@writechltd.com
Web: www.writechltd.com

Membership category: Installer level 3

Contact: Ted Wright, Joint Managing Director

Xact Consultancy and Training Limited

3 Abbey Lane Court
Evesham
Worcestershire WR11 4BY

Tel: 01386 277980
Fax: 0845 0941 887
Email: trevor.norwood@xact.org.uk
Web: www.xact.org.uk

Membership category: Associate organisation

Accreditation: Approved Assessment Centre for Awarding Body Industry Qualifications for National and Specialised qualification, Centre Certificate No. 1205035.

Contact: Trevor Norwood, Director

Xact offers both open and in-house courses in: BS 9251: 2005, residential and domestic sprinkers for designers and installers; checking sprinkler systems for building control, fire service and fire risk assessors; Canute FHC design software for sprinkler and watermist systems; BS EN 12845 commercial sprinklers for designers. Courses are approved by BAFSA, FIRAS third-party accreditation scheme and awarding bodies for national and specialised qualifications. Open courses take place at hotel and conference facilities offering good communication links around the UK.

Xylem Water Solutions UK Ltd

(Formerly Lowara UK Limited)
Millwey Rise Industrial Estate
Axminster
Devon EX13 5HU

Tel: 07776 193129
Fax: 01287 630270
Email: paul.winnett@xyleminc.com
Web: www.lowara.co.uk

Membership category: Associate trade

Accreditation: Residential set certification to EN 12259-12 and BS 9251; commercial set certification to EN 12845

Contact: Paul Winnett, General Sales Manager – Speciality Industries

We work with a number of fire OEMs and installers to deliver a high quality, reliable fire sprinkler pump system offering. We have residential and commercial fire packages compliant with the European standards.

Zeffire Limited
Broom Street
Newhey
Rochdale
Lancashire OL16 3RY

Tel: 01706 848 480
Fax: 01706 848 490
Email: jerry.owen@zeffire.com
Web: www.zeffire.com

Membership category: Associate trade

Contact: Jerry Owen

Zeffire Limited supplies quality fire protection equipment to the fire sprinkler industry.

Zurich Risk Engineering UK
126 Hagley Road
Edgbaston
Birmingham
West Midlands B16 9PF

Tel: 0161 683 5214
Email: stuart.1.lloyd@uk.zurich.com
Web: www.zurich.co.uk/business

Membership category: Associate organisation

Contact: Stuart Lloyd, Principal Fire Protection Engineer

Zurich Risk Engineering, part of the Zurich Insurance Group Ltd, is a leading provider of risk management solutions. It enables its customers to operate safer, more effective workplaces and, ultimately, reduce the total cost of risk. Its technical and operational risk management products and services sit in a range of risk areas, including property protection. Zurich Risk Engineering combines over 80 years' experience in the safety inspection industry with 30 years' expertise in risk management. It employs over 1,000 customer facing field staff, offering specialist support in all aspects of risk management to our customers across more than 170 countries.

15 Sprinklers at work

The recording of sprinkler-related incidents has historically been carried by those within the sprinkler industry, primarily through the offices of the Sprinkler Engineers Society. In recent years, BAFSA has worked alongside other organisations such as the National Fire Sprinkler Network (NFSN), Chief Fire Officers Association (CFOA) and the insurance industry in order to broaden the information and databases of such incidents.

As part of BAFSA's commitment, Steve Mills was appointed as a fire service liaison person with part of his remit to be the collation, from as many sources as possible, of information about incidents featuring sprinkler systems.

Since 2011, when there were 30 notifications, the number of incidents reported is as follows: 2012 (58), 2013 (63) and so far in 2014 there have been 53 sprinkler-related incidents reported.

Reported Sprinkler Saves 2011-2014

Occupancy	2011	2012	2013	2014 (to date)
Domestic	3	3	3	14 (includes PPS)
Factory	10	20	23	14
Hotel	-	2	2	-
Office	1	-	-	-
Recycling	2	1	4	2
Residential	2	6	11	5
Retail	11	18	12	7
School	-	2	6	6
Theatre	-	1		1
Warehouse	1	5	2	4
Total	**30**	**58**	**63**	**53**

Publicising sprinkler 'saves' continues to be a powerful tool when advocating the use of sprinklers to industry, politicians, fire safety experts, designers, planners and those responsible for building management. This chapter contains reports of sprinkler activations notified during 2013 and 2014. Because of space constraints, sprinkler saves which took place between July and December 2012 (the period since the last BAFSA Yearbook) have been omitted. However, these are recorded in the Sprinler Saves section of the BAFSA website at: http://www.bafsa.org.uk/news-events/sprinkler-stops.php.

Steve is always ready to receive information about sprinkler incidents and takes the utmost care not to compromise confidentiality. If you are able to share such information he can be contacted at stevemills@bafsa.org.uk or nfsn@btconnect.com

15.1 Sprinkler saves

Warehouse, Bermondsey, London,
On 3 September 2014 at 13:37hrs, London Fire Brigade was called to a fire that had started in a refuse container in the yard of a home and leisure warehouse. The blaze spread to a small part of the warehouse but thankfully the warehouse was fitted with sprinklers. Station Manager Clive Priestley said: "Crews worked incredibly hard to bring this fire under control. There's no doubt that their efforts, and the fact that sprinklers were fitted, combined to stop the fire from spreading further and effectively saved the building and thousands of pounds worth of stock inside."

Factory, Banbury, Oxfordshire
On Friday 29 August 2014 at 05:00hrs, Oxfordshire F&RS was called to a fire on the Beaumont Industrial Estate. On arrival they were confronted with heavy smoke emerging from the open roller shutter door of a warehouse. The factory sprinkler system activated and suppressed the fire. The fire was quickly extinguished by firefighters using a high pressure hose reel jet and wearing breathing apparatus to protect themselves from the smoke. The company was soon back to full operation.

Technology factory, Towcester, Northamptonshire
Just before 12:00hrs on Wednesday 20 August 2014, a fire occurred at a company manufacturing high technology printed circuit boards on the Caswell Science and Technology Park. The accidental fire, involving a combustible surface, caused one sprinkler head on the wet pipe system to operate in the affected area. Fire damage was restricted to one specialist machine worth £10k and none of the 30 staff were injured. Fire service action was confined to clean up operations as the fire was reported to have been 'out on arrival'. The cost of losing the factory to fire could have been as high as £1.5 billion.

Sheltered housing, Lincoln
On Tuesday 19 August 2014, Lincolnshire F&RS reported a successful activation of a Personal Protection System (PPS) installed to protect a vulnerable person in a sheltered housing scheme. The fire started in a waste bin located in the bedroom, which if allowed to develop, would have had serious implications for the occupier. This was the second activation at this address and no fire-fighting action was required by attending crews.

Solent Flour Mills building, Southampton
Just before 10:00hrs on 8 August 2014 fire crews were called to the iconic Solent Flour Mills building at Western Docks after a fire started in a second floor milling machine. Firefighters in breathing apparatus found and put out the fire on the heavily smoke-logged second floor. The built-in sprinkler system restricted damage to the affected machine and saved one of Southampton most historic buildings. All staff had been evacuated from the building.

Warehouse, Olympic Business Park, Ayrshire
At 06:42hrs on the 28 July 2014, Scottish F&RS was notified about a fire in clothing on high racks in a single storey distribution warehouse. One upright sprinkler head on the tank-fed wet pipe system activated to extinguish the fire. Three pumping appliances and an MIU were mobilised but firefighting time was limited to just 20 minutes with about 60m^2 of the premises being affected. There were no reports of injury or structural damage to the 4,700m^2 warehouse. The total value of the stock within the warehouse was £10 million. The value of the damaged stock was £48,000.

Engineering garage, Leicester
At 12:56hrs on Saturday 26 July 2014, a call was received by Leicestershire F&RS to a fire involving cutting/welding equipment at a garage in Britannia Street. It is reported that two sprinkler heads operated, raised the alarm and controlled and contained the blaze until firefighters were able to use a high pressure hose-reel to extinguish the fire. Damage was restricted to 20m^2 of the premises.

Pirelli factory, Burton on Trent
On Saturday 12 July 2014 at 14:29hrs Staffordshire F&RS was called after an industrial hopper caught fire in the middle of the tyre factory. About 20 firefighters wearing breathing gear used a thermal imaging camera to pinpoint fire 'hotspots' within the building. Sprinklers within the factory had been crucial in keeping the fire contained so it did not spread to other parts of the site. The fire was restricted to the hopper, which contained rubber products. No other damage was caused.

Barnsley College, South Yorkshire
On 23 June 2014 South Yorkshire F&RS was called to a fire in the reception area at the Old Mill Lane site. An electrical short circuit caused the fire which then actuated one sprinkler head in the immediate area. Fire crews attending reported that the fire was out on arrival. The successful single sprinkler operation ensured there was no disruption to the student's work programmes for the day.

Fashion warehouse, Barnsley
On 20/21 June 2014, a serious fire started on the second level of on-line fashion retailer ASOS's large warehouse and some vertical spread occurred as the initial sprinkler heads opened. The sprinklers made a major contribution in controlling the fire spread so that conditions were still tenable for the first responding crews. South Yorkshire F&RS Head of Prevention and Protection, Phil Shillito, said: "The fire suppression systems installed by ASOS were sophisticated, worked effectively and played a significant role in reducing the spread of the fire. This was still a major fire and our firefighters did a tremendous job in tackling the blaze and bringing it under control so quickly. There is no doubt that the sprinkler system in place greatly limited the damage, and probably saved the warehouse from being destroyed." While losses of around £20m may have occurred it has to be remembered that the building was back in operation just three days later and all the racking, conveyors and other infrastructure were operational.

Factory, Corby
On Friday 6 June 2014 at 23:24hrs there was a successful sprinkler activation following a fire at a bio-refining factory which transforms corn, wheat, potatoes and peas into ingredients for a wide range of food and non-food products. The fire began when gluten ignited following a system blockage on the production line. One sprinkler head activated, preventing the fire from taking hold. Damage is reported to have been limited to a drive belt and motor. Two pumping appliances were mobilised to the incident and one hose reel jet was used by fire crews.

Laundry, Watford,
At about 03:24hrs on Friday 30 May 2014, a fire started in a large wheeled cage containing laundry in the ground floor drying machine area of a large laundry. Heat from the fire caused the operation of a single sprinkler head which quickly controlled and suppressed the fire, stopping it spreading to other combustible materials in the area. This is the second successful sprinkler activation at these premises in 2014 and once again it ensured business continuity at the site. Following a 'clean up' of the affected area, the business was able to operate effectively the next day. Hertfordshire F&RS crews reported that the fire was out on arrival with only one jet being used to ensure the fire was fully extinguished.

Poultry processing plant, Holton, Suffolk
In May 2014, Suffolk F&RS reported a successful sprinkler activation following a fire in a motor unit, located in the boiler room of a poultry processing plant in Holton. Two sprinkler heads extinguished the fire.

Housing association, Essex
On 12 May 2014 a fire started in a bunk bed in a home. Attempts were made to extinguish the fire with saucepans of water before the heat actuated a single sprinkler head in the room. On arrival the fire and rescue service did not need to undertake any fire suppression activity as the fire had been extinguished.

Shopping centre, Glasgow,
On 7 May 2014 a fire occurred in a mobile phone shop within a shopping centre on the outskirts of Glasgow. The alarm was raised very early in the morning when the shop was closed and unoccupied. The fire started in a first floor toilet, as a result of a wall notice falling on to an electric heater (which had been left switched on). A single sprinkler head in the toilet operated and the fire was extinguished by the time the Fire Service gained access. The fire was prevented from spreading and damage was limited to a very small area around the heater. The shop was closed for a short period but the rest of the shopping centre was open and trading as normal without interruption.

Primary school, West Midlands
West Midlands F&RS reported that a fire started in an IT room fan at about 16:00hrs on 1 May 2014. Staff fought the fire initially and then a single sprinkler head operated to extinguish the fire before the arrival of the fire service. The fire was successfully restricted to the room of origin.

Automotive components factory, Warwickshire
Warwickshire F&RS reported a sprinkler save at 22:45hrs on 30 April 2014 in a factory manufacturing moulded electrical components. Two pumps were dispatched and found that the works fire team had responded to the fire in a 60m x 20m single storey industrial unit, used for the processing and moulding of electrical components. No firefighting action was required by the crews as one head on the mains-fed sprinkler system had operated and extinguished the fire. This prevented fire spread to the rest of the building and damage was limited to an area of about 3m x 2m. Some disruption to operations at the facility was caused due to the need for a thorough clean.

Distribution centre, St Helens
Merseyside F&RS reported that at 23:34hrs on Friday 25 April 2014 a serious fire occurred at a large (50,000m²) distribution warehouse. The fire broke out in a 26 tonne refrigerated LGV which was parked under a covered loading bay. Merseyside F&RS mobilised two appliances with nine crew members to deal with the incident. The fire caused 50% damage to the vehicle and 5% damage to the canopy, but the situation would have been much worse had it not been for the sprinkler system, which covered the main building as well as the loading bay. The system suppressed the fire to such an extent that crews were able to bring the incident under control and the warehouse was fully operational within 2 hours. 21 heads needed replacement on the Ordinary Hazard, tank-fed sprinkler installation. None of the 50 occupants were hurt as a result of the fire.

Office block, New Oxford Street, London
At 13:19hrs on Easter Sunday, 20 April 2014, a fire started in an electrical transformer in the basement of a 10 storey office block. The building's sprinkler system was activated and two heads operated to extinguish the fire. London Fire Brigade dispatched two pumping appliances to the incident but the fire was reported as 'Out on Arrival'. No further appliances were deployed and the 'stop' message was sent after 42 minutes in attendance.

Factory, Warwickshire
Warwickshire F&RS reported that a fire broke out at 18:37hrs on 16 April 2014 in the empty part of a plastic moulding factory. A heat gun was believed to be the source. A single sprinkler head operating on a mains-fed system, activated to control the fire and it was extinguished by workers using portable dry powder units. While production was affected the total fire area of 2m x 2m was much less than might have been expected had the sprinkler not operated.

Supermarket, London
A blaze at a supermarket in North London on 31 March 2014 was controlled by a sprinkler system. London Fire Brigade was alerted to the fire in a loading area at the supermarket at 01:56hrs. Four engines and 20 plus firefighters from Hornsey, Kentish Town and Stoke Newington attended and the blaze was under control at 03:11hrs. Damage was confined to packaging and waste that was kept outside at the back of the premises.

Office car park, London
Just after 13:30hrs on Saturday 29 March 2014 a fire occurred in a motor vehicle in the basement car park of a ten storey office block in Kingsway. Firefighters encountered difficult conditions and four pumping appliances were dispatched to the incident. Thankfully the building was fitted with a sprinkler system and one head operated to control the fire while firefighters used one main jet to ensure it was extinguished. The 'stop' message was sent after 1h 21mins.

Primary school, London
Two appliances attended a fire in a newly constructed three-floor school in Tulse Hill, at 06:50hrs on 27 March 2014. The fire involved a gas boiler within a ground floor plant room. A sprinkler head within the plant room controlled the fire which was then confirmed extinguished by a BA crew using a main jet. Damage was restricted to the boiler involved. A second similar boiler nearby and all other equipment within the plant room was undamaged. Four cleaners evacuated the building without injury.

Flat, Surrey
At about 21:00hrs on Wednesday 26 March 2014, a fire occurred in a cooking appliance in a ground floor flat of a two-storey residential block of 33 maisonettes in Redhill. The fire started while the occupier was melting wax in a saucepan to recycle candles. One VK457 concealed sprinkler head, fed by mains water supply, operated to control the fire, which was extinguished within an estimated 3 minutes. About 8m² of the property was affected by the fire but neither of the two occupants were hurt in the incident. Surrey F&RS attended with one pumping appliance but no firefighting action was required.

Old County Hall, London
At 03:25hrs on 21 March 2014, a fire occurred in a cafe bar/restaurant situated on the ground floor of the eight-storey Old County Hall Building in Lambeth. One sprinkler head activated to control the fire. Four LFB appliances were mobilised to the incident and one main jet and hose-reel were used in follow-up firefighting operations.

Waste recycling plant, Westbury
Wiltshire F&RS attended a fire at the new multi-million pound waste recycling plant at the Northacre Industrial Estate on 18 March 2014. Sprinklers installed in the building contained the blaze to one area, limiting the damage to the building and the surrounding environment. Six firefighters in breathing apparatus used water jets to surround and extinguish the fire. Firefighters then worked with the on-site team and their machinery to dig out and dampen down around 150 tonnes of household waste. Station Manager Richard Humphrey said "The sprinkler system saved the day - a number of sprinkler heads were operating, containing the fire to one area and the building was heavily smoke logged."

Laundry, Watford
At about 21:30hrs on Saturday 15 March 2014, a fire started in some freshly laundered 'health spa' towels which were stored in a large wheeled cage within a lorry parked in a delivery bay. The bay was below office accommodation and home to several similar vehicles. Sprinkler heads operated once the fire had broken out of the lorry and quickly controlled and suppressed the fire, stopping it from spreading to other commercial vehicles. Hertfordshire F&RS used one firefighting jet to ensure the fire was fully extinguished.

Secondary school, Leicestershire
At 14:45hrs on 12 March 2014, Leicestershire F&RS was called to a fire at Wigston secondary school. Full details are awaited but it appears that the school's sprinkler system extinguished the fire which caused only minor damage.

Shopping centre, Hertfordshire
At about 20:00hrs on Friday 28 February 2014, a fire started in a small office at the back of the 'Wonderbra Shop' at the Galleria Shopping Complex in Hatfield. The fire was caused by an extension lead overheating and igniting adjacent combustible materials. A single sprinkler head operated, suppressing the fire until the arrival of the F&RS. A single hose reel jet was used to ensure the fire was fully extinguished. A smoke extraction system directed products of combustion out of the shop to the rear of the complex. The mall – which houses 80 designer outlet shops on 20,500m^2 of retail space, in addition to a multiplex cinema and many well-known chain food outlets – was unaffected by the incident.

House, Humberside
A Personal Protection System activated in a house on the 21 February 2014, saving the occupier; an 82 year old lady who smoked and lived alone. She was a hoarder who lived in one room of her property. Due to the nature of her condition she kept everything including cigarette butts in a bag, which was the cause of the fire and PPS activation. Without doubt the PPS activation saved her life, and even though there was a little water damage, she was very grateful.

Flat, Kent
On the 8 February 2014, a fire occurred in the kitchen of a single bedroom flat in Ramsgate. The occupant was in the premises at the time but unaware of the fire, which was caused by the misuse or malfunctioning of a toaster. The flat had been fitted with a water mist system funded by Kent F&RS and East Kent Housing. The water mist system operated and brought the fire under control and then fully extinguished it. No additional firefighting action was required. Fire damage was limited to scorching of an over-worktop cupboard and a small area of painted surfaces in the immediate vicinity. There was virtually no smoke damage at all.

Shopping Centre, Basildon
A sprinkler system prevented a major blaze in the Eastgate Shopping Centre on Wednesday 5 February 2014. Essex F&RS was called to the shopping centre at 23:35hrs after a fire broke out in a unit used by a local radio station. On arrival, firefighters found that the sprinkler system had activated and contained the fire and partially extinguished it.

Hospital accommodation, London
Just before 19:45hrs on the evening of 3 February 2014, a pan containing cooking oil caught fire in a kitchen at a medium to high rise accommodation block for nurses and doctors in Wandsworth. A single head from the town mains fed residential sprinkler system actuated in the kitchen, controlling the fire. Two fire crews attended but were not required to take any further fire-fighting action. Fire damage was recorded as less than $5m^2$. The occupier, who contrary to all safety advice, threw water on the blazing pan, suffered steam burns.

Plastics factory, Lancashire
A fire in a plastic production building in Earby, Lancashire early on 29 January 2014 was controlled by sprinklers, according to Lancashire F&RS. Eight firefighters wearing breathing apparatus used two jets and hose reel to extinguish the fire by 09:00hrs. The fire, which started in the calendar department, caused damage to a large quantity of recycled plastic, an electrical control panel and 10m of electrical cable. The building was heavily smoke logged, and two ventilation units had to be used to help clear smoke from the structure. The fire service spokesman said: "Because the building was fitted with sprinklers, the fire was able to be put out quicker. This allowed the firefighters to deal with it before it spread."

Fashion store, Ipswich
Sprinklers controlled a fire in a store in Carr Street shortly after 10:00hrs on 22 January 2014. The fire was caused by an electrical fault which then spread to in-rack clothing in the 7,000m² store. Two sprinkler heads operated and extinguished the fire in an estimated 5 minutes. Fire damage was limited to about 9m², though smoke affected the stock within the store which had an estimated value of £100,000.

Bluewater shopping complex, Greenhithe, Kent
At about 05:00hrs on Saturday 18 January 2014, a fire started in the electrical cupboard of a restaurant at the shopping centre. Smoke from the fire alerted security staff but the operation of a single sprinkler head, located inside the cupboard, suppressed the fire until the arrival of the fire and rescue service. This successful activation goes some way to dispel the notion that sprinklers are not effective or appropriate for use on electrical fires.

Flat, London
At about 14:40hrs on the afternoon of Sunday 12 January 2014 a cooking oil fire was reported in a flat of a medium/high rise block in Wandsworth. One head is reported to have controlled the fire with no firefighting action recorded for the two crews who attended this incident.

Primary school, Northampton
A fire which broke out at a primary academy in Northampton on 9 January 2014 was successfully extinguished by one sprinkler head. Northamptonshire F&RS said the fire occurred because a plastic storage crate had been inadvertently placed too close to a cooker hob, which was then accidentally switched on, setting the crate alight.

Flat, London
Just before 23:00hrs on Thursday 9 January 2014, a fire occurred in a flat in a 10+ storey residential block in Camden, North London. One sprinkler head on the residential system activated to control the fire. Two pumping appliances were dispatched to the incident but no firefighting action was recorded as taking place.

Student accommodation, London
At 20:37hrs on Monday 30 December 2013, firefighters were called to a fire in a kitchen at a student hall of residence in Tottenham. Two appliances were sent to the incident, and when crews investigated they found there had been a cooker fire in one of the accommodation units. The fire had been extinguished by one head of the sprinkler system, and no firefighting action was required. All occupants safely vacated the building when the alarm was raised.

Shop, Stockport
At about 12:15hrs on Monday 16 December 2013, a fire occurred in the 'Card Factory' shop at the Mersey Way shopping centre in Stockport. The fire, involving a quantity of paper at the shop, was controlled by the sprinkler system. Crews from Greater Manchester F&RS attended the incident and extinguished the fire using hose-reels and breathing apparatus.The shopping centre was evacuated with no reported injuries.

School, Halifax
A report has been received of a successful sprinkler activation after a fire occurred in a first floor classroom at about 15:00hrs on 15th December 2013. The fire started when a heat lamp, placed to provide warmth for a terrapin, ignited the wooden box surround. One sprinkler head activated and the fire was 'Out on Arrival' of the fire service.

Academy, Liverpool
At 16:33hrs on the 11 December 2013 a fire occurred in the ground floor kitchens at Hope Academy in Liverpool. There were about 120 people in the £33million, 4 storey building at the time of the fire, which was controlled by one sprinkler head and staff using a CO_2 extinguisher. Damage was limited to 1m² of work top and wall panelling.

Supermarket, Sutton, Surrey
At 19:13hrs on Friday 6 December 2013 London Fire Brigade received a call to a large supermarket in Sutton. A fire, involving combustible material in a toilet, had been started by unknown persons. The fire safety devices at the store actuated, including one head on the sprinkler system which extinguished the fire. Two pumping appliances attended the incident, which was confined to the room of origin of the fire.

Retail premises, London
At 11:11hrs on 23 November 2013, a fire occurred in a small shop in an arcade above South Kensington tube station. Two 68ºC heads activated, and contained the fire, which had begun in an electrical distribution board in the basement of the two-storey, ground and basement shop.

Food outlet, London
Five sprinkler heads activated when fire broke out in a London food outlet at 18:57hrs on 22 November 2013. The fire ignited in an area between a pizza oven and a barbeque and spread to the ducting, activating one sprinkler head in the area beside the ducting, and four in the roof void. The first head to operate was adjacent to the point of ignition and the ducting, and was rated at 68ºC, while the others in the roof void were rated at 93ºC.

Shopping centre, London
2,500 people were evacuated from a food service area in the Southside Shopping Centre, Wandsworth, at lunchtime on 21 November 2013, when a fire occurred in a first floor restaurant. The fire involved a cooking appliance and the ducting/fume extraction system. A single sprinkler head, sited adjacent to the ducting in the false ceiling, activated. This suppressed the fire while firefighters took further action to extinguish the fire in the ducting.

Retail/superstore, Dorset
Shortly after midnight on 31 October 2013, Dorset F&RS were called to a property fire in a large superstore at Cabot Lane, Poole. Three fire crews from Poole and one from Hamworthy attended the incident, and quickly located the fire above the office area within the shop. The fire had been detected and controlled by the automatic fire sprinkler system installed within the building. Minimal damage was caused, due to the quick activation of the system. Firefighters fully extinguished the fire and store staff were able to start clearing the damaged area before reopening.

Academy school, Surrey
In October 2013, the Academy School in Carshalton, Surrey, suffered a small fire caused by an overheating laser cutter. It was reported that the door to the room was closed, and the F&RS ran a charged hose up the central staircase. However, by the time they opened the door, the fire had been fully extinguished by the sprinklers. There was no spread of fire or smoke damage beyond the room involved, which was soon back in use following remedial work. This was the second time that the sprinkler system has extinguished a fire at the school – the first being in June 2013 when four appliances from London Fire Brigade attended an incident related to an electrical fault in a photocopier. On that occasion, some 1,100 pupils were safely evacuated before the fire brigade arrived, by which time the fire had been mostly extinguished by the sprinkler system.

Homeless hostel, Cardiff
On the evening of 15 October 2013, a single head on a mains-supplied BS 9251 sprinkler system operated to protect the occupant of a room at the Huggard Hostel. The man had reportedly locked himself in the room before starting a fire. No injury was reported, and fire damage was less than 5m², with minor smoke damage to the ceiling and some water damage to electrical outlets. The fire was out on the arrival of the F&RS. The sprinkler system had also operated the building's AFD, and an evacuation was carried out. The sprinkler system was immediately reinstated. It was clear that the room was occupied when the fire started, refuting suggestions from some parties that sprinklers are unlikely to be effective in preventing loss of life when the compartment of origin is occupied when a fire starts.

Warehouse, Milton Keynes
At 06.37hrs on 12 October 2013, a fire occurred in a ceiling-mounted heater at a warehouse in Milton Keynes. The building was evacuated. Fire crews from Bletchley and Broughton attended but found that the sprinkler system had activated and the fire was out on arrival.

Student accommodation, Liverpool
Two appliances from Merseyside F&RS responded to a fire in a kitchen on the 5th floor of student accommodation in Lime Street, Liverpool, at 05:31hrs on Friday 11 October, 2013. The sprinkler system in the building activated and prevented the fire from spreading. Smoke alarms also activated and alerted other people in the building. Firefighters wearing breathing apparatus used a CO_2 extinguisher to extinguish the remaining flames in the cooker hood, and a woman was led to safety from the area affected by the fire. Only the cooker top extractor hood and a pan of food were damaged by the fire, which was extinguished by 05:53hrs.

Care home, Kent
A sprinkler system in a care home in Dartford, Kent, successfully extinguished a fire in a room equipped with a washing machine/tumble dryer on 23 September 2013. The fire was out when the F&RS arrived, and there was little damage. This was the second time fire had occurred in the room; the first having been reported as more serious.

Retailer, Aberdeen
Sprinklers extinguished a fire in a storage area of the Primark fashion chain in Union Street, Aberdeen, at 09.40hrs on Thursday 12 September 2013, shortly after the store had opened. The fire was reported as having been extinguished when two fire crews from the Scottish F&RS arrived.

School, Tyne and Wear
A sprinkler system at a school in Gateshead successfully extinguished a fire which broke out in an IT server cupboard on the third floor of the building at 17.25hrs on 22 August 2013. Two fire appliances attended the incident and, after firefighters forced an entry, the fire was found to have been extinguished by one sprinkler head. The fire caused significant damage to equipment in the cupboard, but no other damage to the building.

Factory, Renfrewshire
At about 20.42hrs on Wednesday 14 August 2013 a fire was reported at the premises of a specialist fitting-out contractor on the Inchannan industrial estate, Renfrewshire. The seat of the fire was in racking within the 600m² factory and 20 firefighters attended the incident. Two breathing apparatus wearers with a main jet were committed to tackle the fire, which was being contained by one sprinkler head to the immediate area of burning. The incident lasted for 75 minutes, and damage was reported to be less than 1% of the building's contents.

Former packaging plant, West Midlands
At 22.45hrs on Sunday 4 August 2013, arsonists struck at a recently vacated packaging plant in Wolverhampton. When West Midlands F&RS attended, they found five separate seats of fire within the factory. The sprinkler system had been maintained in an operational state, and 10 heads had activated, containing any potential spread of fire.

Paper recycling facility, Deeside
Fire broke out at 11.25hrs on 13 July 2013 in a 11,250m² single storey building of steel frame construction, with metal clad roof, and 2m high brick base walls with steel cladding. It is estimated that about 10 tonnes of waste material was involved in the incident, which was initially controlled by one sprinkler head from the tank and pump supply. The F&RS fought the spread of the fire with two ground monitors and main jets. A mechanical digger was used to separate the material so it could be damped down before removal. The extent of fire damage was reported as being 10% of the building's contents, and the impact on the business was said to be minimal.

Paper mill, North Wales
Ten sprinkler heads operated after fire broke out at 13.11 hrs on 21 July 2013 in a 20m x 10m tissue-making machine at a 3,000m² paper mill factory in Flint. Paper inside the machine had been ignited by friction, and the fire was contained by the sprinklers on the tank and pump-fed system. It was reported that 3% of the machinery was damaged, with smoke affecting 30% of the building. None of the 10 occupants was reported as being hurt. Due to the complexity of the machinery, firefighting lasted 4.5 hours but production at the building was back to normal after 10 hours.

Secondary school, Surrey
London Fire Brigade was called at 09.55 hrs on 24 June 2013 to reports of smoke coming from a small part of a room on the second floor of the Stanley Park High School, Carshalton. Four appliances attended the fire, which is understood to have begun with an electrical fault in a photocopier. About 1,100 pupils were safely evacuated before the fire brigade arrived, by which time the fire had been mostly extinguished by the school's sprinkler system. Part of the room was damaged but there were no injuries.

Recycling centre, Greater Manchester
Crews from Hyde, Offerton, Stockport and Ashton fire stations were called to a recycling plant on Ashton Road, Bredbury, at 15.25hrs on Wednesday 19 June 2013. Firefighters arrived on the scene to find a fire involving a building of 30m x 100m. Incident manager Chris Mycock said: "The sprinkler system saved the day. A number of sprinkler heads were operating, containing the fire in one area, and the building was heavily smoke logged. Four firefighters in breathing apparatus went in, jets were used and the building was ventilated and the fire surrounded. We then worked with the on-site team and their machinery to dig out around 80 tonnes of waste. Had it not been for the sprinkler system limiting the fire, there would have been much more material involved in the fire and we would have been here for many more hours."

Factory, Tyne & Wear
At about 12.30hrs on the 6 May 2013, fire crews were called to a fire in a factory in Sunderland where a sprinkler system had activated. On arrival, the F&RS were informed that a printing press unit was on fire, but an integrated sprinkler suppression system had been manually activated to successfully suppress the fire, stopping it from developing and potentially spreading to other units, flammable material and racked storage in the factory. Approximately 50 employees evacuated the premises, and due to the internal complexity of the equipment, trained staff used two CO_2 extinguishers to ensure the fire was fully suppressed before the arrival of the fire service. Minimal water damage was soon cleaned up with very little disruption to the business.

Underground car park, London
Two appliances from London Fire Brigade attended a fire in an underground NCP car park of two floors and a basement in Portman Square, at 07.12hrs on Monday 27 May 2013. The car park is situated underneath an 8-storey hotel, and smoke from the fire activated a nearby hotel smoke detector. The concierge investigated and raised the alarm. Three sprinkler heads activated and contained the fire damage to the immediate area of origin. The fire was caused by the accidental ignition of a bicycle (taxi) rickshaws' lithium ion battery on charge from a 240V supply. Approximately 200 rickshaws are stored in the car park.

Mill building, Stockport
Greater Manchester F&RS praised a sprinkler system which protected a number of businesses when a fire involving three delivery vehicles spread to an adjacent old mill building in Hallam Street, Stockport, at 02.00hrs on 1 June 2013. The building is home to around 20 different businesses, and contains significant quantities of stored fabrics, timber and foam. The sprinkler system stopped the fire taking hold, and limited the damage to the furniture businesses located on the ground floor.

Hotel, West Yorkshire
Shortly before 02.00hrs on Thursday 23 May 2013 firefighters from West Yorkshire F&RS were called to the historic Hollins Hall Hotel in Baildon, near Shipley, when a fire occurred in the kitchen of the 4-star hotel's leisure complex. Fire crews from Shipley fire station said a sprinkler had activated, helping to extinguish the flames. The cause of the fire was believed to be a frying range which had been left on.

Supermarket, Swansea
Mid & West Wales F&RS attended an automatic fire alarm at the 'home shopping pod' in the 5,500m² Asda Store at Morriston, Swansea, on 19 May 2013. The alarm was raised by the monitoring centre following the operation of the fire and sprinkler alarm as a result of an arson attack on the store. One sprinkler head operated and effectively controlled the fire until the first fire crew arrived. The incident was dealt with in less than 45 minutes from first call to completion. Fire damage was confined to a worktop, chair, and a small amount of paperwork, with an estimated loss of about £500.

Biscuit factory, Merseyside
At 03:18 hours on Thursday 9 May 2013 a fire occurred in machinery at the Jacob's biscuit factory in Aintree, Merseyside, where biscuits including the famous 'Cream Cracker' have been manufactured since 1910. The sprinkler system in the single storey factory controlled the fire, and staff assisted with portable extinguishers. The fire was 'Out on Arrival' when fire crews arrived. Fire damage was reported as being limited to the machinery in question, 4m² of roofing and some adjacent cabling. There was also some smoke damage to stored raw materials in the vicinity. The company suggested that the total cost of loss in this case could have been as much as £335 million had suppression not been fitted and the process machinery and premises were lost.

Wood plant, Bridgend
The sprinkler system at a wood pellet manufacturing plant in Brynmenyn, Bridgend, South Wales, successfully extinguished a fire in a wood chip dryer containing 12 tonnes of wood chip.The incident occurred on 7 May 2013, and damage was limited to the machine. Fire crews were on site for 90 minutes, and without the sprinkler system, a fire involving 12 tonnes of wood pellets would have taken a significant time to fully extinguish.

Shopping centre, Merseyside
A fire at the St Chad's Parade Shopping Centre, Liverpool, was successfully extinguished by the operation of a single sprinkler head on 6 May 2013. The fire started as a result of the deliberate ignition of furniture that had been delivered to an external delivery/unloading area at the rear of the premises. One head on the OH3 system operated in the internal shared access delivery storage area due to the heat of the external fire, and there was no fire spread into the storage area or other parts of the centre.

PFI school, Merseyside
At 15.09hrs on Friday 19 April 2013, Merseyside F&RS was called to a fire at Kirkby Sports College, a PFI-funded school, which was occupied by 1,500 people at the time of the fire. The cause was determined to have been deliberately ignited paper in one of the toilet areas. Two fire appliances with 8 firefighters responded, and the building was evacuated while staff made an initial attack using CO_2 fire extinguishers. One sprinkler head activated and the fire was suppressed until the F&RS arrived. The school has an OH1 sprinkler system with a tank supply for water and it is estimated that the fire was controlled in less than 5 minutes with less than 5% damage to the room of origin. The school was back in full use the following day.

Large dwelling, London
A BS 9251 sprinkler system installed and commissioned during the previous week activated on 26 April 2013 in a converted Mill Building in Islington, London. The fire was a result of building operations in which a tray of acetone with rags ignited. A single sprinkler head reacted to the heat and extinguished the fire. There was no fire or water damage to the property and the fire brigade was not called.

Textile manufacturer, Ashton Under Lyme
A minor fire broke out in the early hours of Monday 11 March 2013 at the premises of a textile manufacturer in Ashton-Under-Lyme, near Manchester. The incident occurred in a radio frequency drier, which overheated and caught fire. One sprinkler head directly over the drier activated, confining the fire to the machine. This ensured that no damage was caused to the building, and that production was able to continue as normal. The sprinkler head was replaced and the system reinstated, becoming operational again within 4 hours of the fire.

Leather works, Northants
Northamptonshire F&RS reported a successful sprinkler activation at a Rushden leather treatments works at about 11:15hrs on Friday 15 February 2013. One head on the predominately tank-fed system operated when a fire occurred in filters in a part of the factory which treats leather materials. The fire was controlled within 5 minutes. Eleven fire service personnel attended to carry out final extinguishment of the filters and to check for fire spread in the area. None of the 35 staff at the factory was injured.

Paper mill, Kent
Kent F&RS reported that at about 01:15hrs on Tuesday 12 February 2013, a fire occurred in a paper-making machine at a 2,500m², steel-framed, paper mill building in Sittingbourne. A mixture of dust and oil at the machine had ignited and two heads on the drencher system operated. This helped to control the fire while the in-house firefighting team went into action, assisted by one pumping appliance with an incident commander from Kent F&RS. The fire was extinguished within 1 hour, and business interruption was put at 6.5 hours. Damage was limited to the machine, and none of the 17 workers in the factory was injured.

Sheltered housing complex, Kirklees
A fire occurred just after 07:45hrs on Saturday 12 January 2013 at a sheltered housing complex in Elmley, West Yorkshire. At the time of the fire there were about 40 residents in the 1,500m^2 complex, in which a full sprinkler system had been fitted by the provider, Kirklees Council. The fire was caused by a cigarette in a bin in the bathroom of a flat. The fire actuated one head and extinguished the fire prior to the arrival of West Yorkshire F&RS. No-one needed to be re-housed following the fire.

Packaging plant, Cheshire
A potentially serious fire was averted at a Winsford business because it was effectively controlled and extinguished by a sprinkler system. Firefighters from Winsford were called to the incident just before 03:00hrs on Friday 18 January 2013, following an automatic fire alarm alert at Jiffy Packaging on the Winsford Industrial Estate.

Factory, Staffordshire
Sprinklers saved a large factory from a potentially devastating fire on 1 January 2013. A security guard at Autoneum on Stanley Matthews Way, Trentham, spotted smoke on CCTV cameras at around 10:48hrs and went to investigate. Shortly afterwards the fire alarm and sprinkler systems operated and the security guard called 999. Five F&RS crews from Longton, Hanley and Newcastle attended the incident and on arrival were met with a heavily smoke logged factory. Firefighters wearing breathing apparatus entered the building with a hose reel jet and extinguished the remains of a small fire involving a fibreglass mould unit. The fire had been contained by the sprinklers.

16 Formulae, SI units and conversion factors

This part of the Yearbook is a developing section in which will be included various technical formulae and related information of value to a wide audience in the sprinkler industry. Suggestions for additional items will be gratefully received by the editor.

16.1 Formulae

Bernoulli's theorem

Bernoulli's principle states that, in the flow of a fluid (a liquid or gas), an increase in velocity occurs simultaneously with a decrease in pressure. That statement is a simplification of Bernoulli's equation (below) which plots the situation at any point on a streamline of the fluid flow and applies the law of conservation of energy to the flow. Put another way, the total energy of the flow at any point along a horizontal pipe is equal to the sum of the pressure head, the velocity head, and the elevation head in the absence of friction. This is a principle of considerable importance to those concerned with flow in sprinkler pipework.

$$z + \frac{p}{dg} + \frac{v^2}{2g} = h$$

z = potential head or elevation
p = pressure
v = velocity
g = acceleration of gravity
d = density of fluid
h = total head

If friction losses are ignored and no energy is added or removed from the pipe the total head h in the above equation will be constant for any point in the fluid. However, in practice, energy will increase and decrease with the effect of pumps and friction loss and this must be included in Bernoulli's equation. All practical formulae for the flow of fluids are derived from Bernoulli's theorem with modifications to account for losses due to friction.

Hazen-Williams formula for calculating the friction loss in pipework

The Hazen-Williams formula is an empirical equation and has long been used for calculating the friction loss in pipework for fire sprinkler systems. This equation uses the coefficient C to specify a pipe's roughness, which is not based on a function of the Reynolds number, as in other pressure loss equations. This, however, has the disadvantage that the equation can only be used for water within certain temperature limits and velocities. (If the

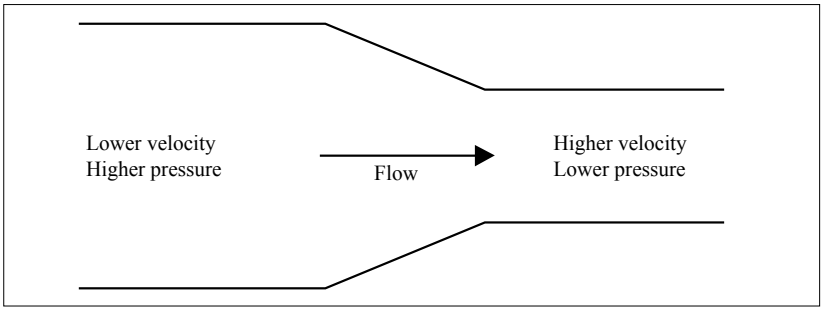

Fig. 16.1. If fluid flows at constant volume along a pipe which has a constriction, then it flows at greater velocity in the narrower pipe, where its pressure will be less.

sprinkler system is to use additives or will be subject to unusual temperature conditions then the Darcy-Weisbach equation may be more appropriate.)

$$p = 6.05 \left(\frac{Q^{1.85}}{C^{1.85} \times d^{4.87}} \right) 10^5$$

p = pressure loss in bar/m
Q = flow through the pipe in L/min
C = friction loss coefficient
d = internal diameter of pipe in mm

Value of C for use in the Hazen-Williams formula

Listed in the table below are values for the coefficient *C*, which can be used in the Hazen-Williams formula for different design standards. The value of *C* represents a pipe's roughness, with higher values of *C* giving lower friction losses. The values given in the design standards allow for degradation of the pipe; for instance, new cast-iron pipe has a *C* coefficient of 130 and EN 12845 gives the value of 100, which is equivalent to a pipe which is about 20 years old.

Type of pipe	**C***	**C** (EN 12845)	**C** (BS 9251)	**C** (NFPA 13)
Cast-iron	64-130	100	-	-
Cement-lined cast-iron		130	-	140
Copper	130-140	140	140	150
Ductile iron	120	110	-	100
Galvanised steel	120	120	-	120
Mild steel	120-150	120	120	120
Mild steel (dry and pre-action systems)		-	-	100

Plastic (CPVC, MDPE)	140-150	-	150	150
Spun cement		130	-	-
Stainless steel		140	-	150

* Typical range of values for C for use with the Hazen-Williams formula based on common hydraulic engineering practice. This data has been compiled from several sources.

A simplified method for approximating pressure loss in pipework using the Hazen-Williams formula is to use the formula $p = kq^{1.85}$ in conjunction with the table below.

	EN 10255 Series M		**EN 10255 Series H**		**CPVC**	
Nominal diameter mm	**ID mm**	**C = 120 value of k**	**ID mm**	**C = 120 value of k**	**ID mm**	**C = 150 value of k**
20	21.70	2.67×10^{-5}	20.5	3.52×10^{-5}	22.20	1.58×10^{-5}
25	27.30	8.73×10^{-6}	25.7	1.17×10^{-5}	27.97	5.14×10^{-6}
32	36.00	2.27×10^{-6}	34.4	2.83×10^{-6}	35.41	1.63×10^{-6}
40	41.90	1.08×10^{-6}	40.3	1.31×10^{-6}	40.59	8.37×10^{-7}
50	53.10	3.42×10^{-7}	51.3	4.05×10^{-7}	50.88	2.79×10^{-7}
65	68.90	9.62×10^{-8}	67.1	1.09×10^{-7}	61.54	1.10×10^{-7}
80	80.90	4.40×10^{-8}	78.9	4.97×10^{-8}	74.93	4.23×10^{-8}
100	105.30	1.22×10^{-8}	103.5	1.33×10^{-8}		
150	155.10	1.85×10^{-9}	154.3	1.90×10^{-9}		

Example: to find the pressure loss in 25m of 50mm EN 10255 Series M pipe at a flow rate of 500 L/min.

Look up the value of k for 50mm pipe in the table. In this example it would be 3.42×10^{-7}.

Multiply this value by the flow rate 500. $3.42 \times 10^{-7} \times 500 = 1.71 \times 10^{-4}$ pressure loss, bar/m.

Multiply the value by the pipe length, $1.71 \times 10^{-4} \times 25 = 0.004275$ (pressure loss in the pipe in bar) or 4.275mbar.

Velocity in pipe

Some design authorities limit the velocity through pipes and valves in sprinkler systems; this is the case with EN 12845, although NFPA and FM

do not have any restriction. The case for limiting velocity is that the Hazen-Williams formula is less accurate outside its normal range and equivalent pipe lengths for fittings, which are generally used, start to lose their validity. Some authorities believe that velocity is self-limiting since pressure losses increase exponentially as velocities increase, so pipe size must be increased to make use of available water supply pressure.

$$v = 21.22 \times \frac{Q}{d^2}$$

v = velocity m/s
Q = flow of water in L/min
d = internal diameter of pipe in mm

EN 12845 limits velocity as follows: 6m/s through valves and flow switches; 10m/s at any other point in the system.

The following table lists the maximum flows in litres per minute which can be obtained through steel pipework to EN 10255 specification for both 6m/s and 10m/s velocities.

Nominal diameter mm	EN 10255 Series M 6m/s	EN 10255 Series M 10m/s	EN 10255 Series H 6m/s	EN 10255 Series H 10m/s
20	133	222	119	198
25	211	351	187	311
32	366	611	335	558
40	496	827	459	765
50	797	1329	744	1240
65	1342	2237	1273	2122
80	1851	3084	1760	2934
100	3135	5225	3029	5048
150	6802	11336	6732	11220

Flow from sprinkler head or nozzle

The discharge from a sprinkler head can be calculated from the formula below.

$$Q = K \times \sqrt{P}$$

Q = flow in L/min
K = k-factor for head/nozzle
P = pressure in bar

For standard type sprinkler heads many design standards specify the *k*-factors and minimum pressures which can be used for different Hazard classifications and design densities. For all other types of sprinkler heads the

manufacturers' data sheets should be referred to for the k-factor and minimum head pressure.

EN 12845 specifies the following k-factors for sprinkler heads

Hazard class	**Design density mm/min**	**k-factor L/min/bar$^{0.5}$**	**Minimum pressure bar**
Light Hazard	2.25	57	0.70
Ordinary Hazard	5.00	80	0.35
High Hazard Process	10	80 or 115	0.50
High Hazard Storage Ceiling or roof sprinklers	> 10	115	0.50
High Hazard Storage In-rack sprinklers	> 10	80 or 115	2.00

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16.2 SI units and conversion tables

SI units

The International System of Units (SI units) is founded on seven base units representing physical entities which are mutually independent (see Table 16.1).

Table 16.1. SI base units.

Base quantity	Name	Symbol
length	metre	m
mass	kilogram	kg
time	second	s
electric current	ampere	A
thermodynamic temperature	kelvin	K
luminous intensity	candela	cd
amount of substance	mole	mol

Derived units are SI units formed by combining base units according to the rules or formulae linking the corresponding physical quantities (see Table 16.2).

Table 16.2. SI derived units.

Derived quantity	Name	Symbol
area	square metre	m^2
volume	cubic metre	m^3
speed, velocity	metre per second	m/s
acceleration	metre per second per second	m/s^2
mass	kilogram	kg
density	kilogram per cubic metre	kg/m^3

Engineers and scientists are accustomed to working with calculations involving very small or very large quantities and use prefixes as shorthand for such quantities. Table 16.3 gives examples of such prefixes.

Table 16.3. Internationally defined prefixes.

Meaning	Name	Symbol	Power of ten	Factor as decimal number
Trillion	exa	E	10^{18}	1 000 000 000 000 000 000
Thousand billion	peta	P	10^{15}	1 000 000 000 000 000
Billion	tera	T	10^{12}	1 000 000 000 000
Thousand million	giga	G	10^{9}	1 000 000 000
Million	mega	M	10^{6}	1 000 000
Thousand	kilo	k	10^{3}	1 000
Hundred	hecto	h	10^{2}	100
Ten	deca	da	10^{1}	10
Tenth	deci	d	10^{-1}	0.1
Hundredth	centi	c	10^{-2}	0.01
Thousandth	milli	m	10^{-3}	0.001
Millionth	micro	m	10^{-6}	0.000 001
Thousand millionth	nano	n	10^{-9}	0.000 000 001
Billionth	pico	p	10^{-12}	0.000 000 000 001
Thousand billionth	femto	f	10^{-15}	0.000 000 000 000 001
Trillionth	atto	a	10^{-18}	0.000 000 000 000 000 001

Conversion tables

Length (SI and British Imperial units)

mm	cm	m	in	ft	yd
1	0.1	0.001	0.0394	0.0033	0.0011
10	1	0.01	0.3937	0.0328	0.0109
1000	100	1	39.3701	3.2808	1.0936
25.4	2.54	0.0254	1	0.0833	0.0278
304.8	30.48	0.3048	12	1	0.3333
914.4	91.44	0.9144	36	3	1

Area (SI and British Imperial units)

mm^2	cm^2	m^2	in^2	ft^2	yd^2
1	0.01	10^{-6}	1.55×10^{-3}	1.076×10^{-5}	1.196×10^{-6}
100	1	10^{-4}	0.155	1.076×10^{-3}	1.196×10^{-4}
106	10 000	1	1550	10.764	1.196
645.16	6.4516	6.452×10^{-4}	1	6.944×10^{-3}	7.716×10^{-4}
92 903	929.03	0.093	144	1	0.111
836 127	8361.27	0.836	1296	9	1

Volume (SI and British Imperial units)

mm^3	cm^3	m^3	in^3	ft^3	yd^3
1	0.001	10^{-9}	6.1×10^{-5}	3.531×10^{-8}	1.308×10^{-9}
1000	1	10^{-6}	0.061	3.531×10^{-5}	1.308×10^{-6}
10^9	10^6	1	61 024	35.31	1.308
16 387	16.39	1.639×10^{-5}	1	5.787×10^{-4}	2.143×10^{-5}
2.832×10^7	2.832×10^4	0.0283	1728	1	0.0370
7.646×10^8	7.646×10^5	0.7646	46 656	27	1

Liquid measure (SI, British Imperial and US units)

m^3	l (or L*)	ml	UK gallon	US gallon	ft^3
1	1000	106	220	264.2	35.3147
0.001	1	1000	0.22	0.2642	0.0353
10^{-6}	0.001	1	2.2×10^{-4}	2.642×10^{-4}	3.53×10^{-5}
0.00455	4.546	4546	1	1.201	0.1605
0.00378	3.785	3785	0.8327	1	0.1337
0.0283	28.317	28 317	6.2288	7.4805	1

* The lower case letter l is frequently seen as the abbreviation for litre but confusion can arise in calculations because ‘l’ resembles the number 1, so the upper case letter L is often used in technical publications to avoid confusion.

Velocity (SI and British Imperial units)

m/s	ft/s	m/min	ft/min	km/h	mile/h
1	3.281	60	196.85	3.6	2.2369
0.305	1	18.288	60	1.0973	0.6818
0.017	0.055	1	3.281	0.06	0.0373
0.005	0.017	0.305	1	0.0183	0.01136
0.278	0.911	16.667	54.68	1	0.6214
0.447	1.467	26.822	88	1.6093	1

Delivery volumes (SI, British Imperial and US units)

l/s	l/min	m^3/h	ft^3/h	UK gal/min	US gal/min
1	60	3.6	127.133	13.2	15.85
0.017	1	0.06	2.1189	0.22	0.264
0.278	16.667	1	35.3147	3.666	4.403
0.008	0.472	0.0283	1	0.104	0.125
0.076	4.546	0.2728	9.6326	1	1.201
0.063	3.785	0.2271	8.0209	0.833	1

Pressure and pressure head (mixed units)

Pa*	mbar	bar†	lbf/in^2	ft H_2O	m H_2O
1	0.01	10^{-5}	1.45×10^{-4}	3.3×10^{-4}	1.02×10^{-4}
100	1	0.001	0.0145	0.033	0.0102
105	1000	1	14.5	33.455	10.2
6895	68.95	0.069	1	2.307	0.703
2989	29.89	0.03	0.433	1	0.305
9807	98.07	0.098	1.42	3.28	1

* The name 'pascal' (Pa) has been given to the unit N/m^2 (newtons per square metre).

† International standard atmosphere: 1atm = 101325Pa or 1.01325bar.
Technical atmosphere: 1at = 0.98066bar.

17 BAFSA publications

BAFSA provides a wide range of information both for its members and for a wider audience in support of its mission to promote more effective and efficient use of fire suppression systems.

This role, of providing authoritative information on the benefits of sprinkler systems and how sprinklers can play a significant role in protecting people, property and the environment from the devastating effects of fire, is key to BAFSA's successes.

This wealth of information is available to view and download free of charge on the BAFSA website www.bafsa.org.uk

Sprinkler News is a continuously updated in the News & Events section of the BAFSA website. Here it is possible to keep abreast of developments on a full range of sprinkler-related topics, covering matters such as legislation, fire industry news, sprinkler saves, technical reports and much more.

More in depth information and documents are available to download free of charge from the 'Publications' area of the website, which is arranged in five main categories:

- BAFSA Information Files
- Guidelines & Codes of Practice
- General BAFSA Publications
- General Third Party Publications
- DVD Presentations

17.1 BAFSA Information Files (BIFs)

BIFs are concisely written A4 documents which cover a range of sprinkler-related topics, some premises-related and others on technical subjects. All are written in plain English, presented and illustrated appropriately, to inform the non-expert audience. A complete list of titles follows (see Table 17.1), and all BIFs can be downloaded from www.bafsa.org.uk/publications.

Free single copies of any BIF will be provided on request. Multiple copies for use at conferences and seminars will also be provided to members free of charge, subject to availability. BAFSA also has available a looseleaf binder in which BIFs can be filed. Contact info@bafsa.org.uk for further information.

Table 17.1. List of BAFSA Information Files*

BIF No.	Title	Issue date
1	Schools (issue 3)	Jan 2010
2	Dwellings (issue 2)	May 2004
3	Heritage buildings and sprinklers (issue 2)	April 2013
4	Retail premises	June 2003
5	Warehouses	June 2003
6	Frequently asked sprinkler questions (issue 4)	May 2013
7	Hotels	July 2008
8A	Flexible connections	April 2013
8B	Pumps and pumphouses	Nov 2008
8C	Sprinkler heads	May 2010
8D	Use of CPVC pipe	Nov 2007
8E	Steel tube and fittings for sprinklers	May 2010
8F	Water storage tanks	Mar 2010
9	Water mist (issue 2)	Nov 2011
10	Retrofitting sprinklers	April 2013
10A	Sprinklers in car parks	Nov 2010
11	Sprinklers and the Fire & Rescue Service	Nov 2014
12	BAFSA and its members	Sept 2012
13	Sprinklers and water supplies	Nov 2008
14	Residential care homes	Oct 2007
15	Types of sprinkler systems	Nov 2008
16B	Sprinkler system maintenance to BS EN 12845	Nov 2008
17	Hospitals and health care premises	Nov 2008
18	Fire sprinkler systems in timber framed buildings	Aug 2014
19	Sprinkler reliability	Sept 2012
20	Third Party Certification	Nov 2010
21	Wet and dry risers	Sept 2011
22	Biodiesel fuel and sprinkler pumps	Sept 2011
23	Sprinklers in student accommodation	Apr 2013
25	Fire suppression systems for the waste management industry	Oct 2014
26	Sprinklers and the Insurance Industry	Jan 2015

17.2 Guidelines & Codes of Practice

These are BAFSA and third party codes of practice, all of which are available, free of charge. These can be downloaded, printed and can be used as web references.

BAFSA's three Technical Guidance Notes (TGNs) are:

TGN1: The design and installation of residential and domestic sprinkler systems

TGN1 covers issues arising from installers' practical experience of designing and installing residential and domestic sprinkler systems using BS 9251: 2005. The 2nd edition was published in November 2012. This document will continue to be available until BS 9251: 2014 fully replaces the 2005 standard.

TGN2: Using sprinkler systems in buildings and structures. Compliance with current fire safety guidance

TGN2 provides 'one-stop' access to a range of information linked to compliance with current best practice. It will allow all those involved in the building process, such as property developers, authorities having jurisdiction, architects, designers and end users to determine which is the most advantageous approach to compliance with building regulations. Published in October 2011.

TGN3: Watermist systems: Compliance with current fire safety guidance

Published in March 2012, TGN3 provides an introduction to the principles and applications of watermist systems, as well as providing guidance to compliance with current fire safety requirements. This document is jointly published with the Fire Industry Association under the auspices of the UK Joint Watermist Group

17.3 General BAFSA Publications

BAFSA's full range of general publications is available to download from this section of the website. These include BAFSA reports, Yearbooks, newsletters and e-newsletters:

Sprinkler Focus

Issued up to three times a year, *Sprinkler Focus*, serves to keep BAFSA members abreast of a wide range of sprinkler-related topics. It reports on technical issues, including UK and international standards; current affairs, which have a sprinkler interest (such as legislation and government initiatives). It also contains summaries of sprinkler stops and cites major fires where sprinklers might have made a difference had they been present.

A 'Member News' section is devoted to association membership and includes a timetable of upcoming events.

The newsletter is printed and distributed to BAFSA members and can be accessed on the BAFSA website.

Fire Sprinkler e-News

Published bi-monthly, the Fire Sprinkler e-News provides a regular round-up of sprinkler information from the UK and beyond.

All BAFSA members receive the e-newsletter, which is also available to view on the BAFSA website. It can be made available to any interested party by application to info@bafsa.org.uk.

Sprinklers for Safety

The primary purpose of this book produced by international consultants Arup Fire, is to promote an informed decision-making process regarding the benefits of incorporating sprinklers in the design of buildings. It provides evidence to aid those professionals involved with decisions about the incorporation of sprinklers in different building types/designs.

In particular, the document reviews the application of sprinklers in the context of the Building Regulations and proposes examples of the use of sprinklers as a means of alternative compliance ('trade-offs') with Approved Document B (2006), which lists this book as a reference source.

Sprinklers for Safer Living

This 2010 report from BAFSA – another commissioned from Arup Fire – describes the unique fire safety challenges which are posed by residential care homes, particularly with respect to the elderly and infirm people who live in them. It shows why an automatic sprinkler installation is considered by the fire safety community to be the single most effective fire protection feature in such premises. This volume is required reference for those who have a stake in assessing fire risks and planning fire prevention in the design, construction or management of residential care homes.

Safer High-rise Living

Published in April 2012, this report documents the background to, and progress and successful conclusion of, the Sprinkler Coordination Group's project to demonstrate the cost-effectiveness and practicality of retrofitting sprinklers in an existing high-rise tower block at Callow Mount, Sheffield. The report has been very well received and is essential reading for those with responsibility for fire safety in high-rise social housing blocks.

17.4 General Third Party Publications

Third party reports on issues of interest to the sprinkler community and publications with which BAFSA has been involved in developing are available to download from this section of the website. This includes reports from the Business Sprinkler Alliance (see page 9), the UK Water Policy Statement and other research and guidance sponsored by third party organisations.

17.5 DVD Presentations

BAFSA offers a wide range of advice and information in its DVDs. A copy of each BAFSA DVD is supplied free of charge to each BAFSA member. Single copies of DVDs are usually supplied on request to info@bafsa.org.uk, although multiple copies may be charged.

Sections of the DVDs can be viewed or downloaded from the BAFSA website at http://www.bafsa.org.uk/publications/video-clips.php.

DVD 1: Sprinklers for Safety

Revised in 2012, this multifunctional DVD is designed to appeal to a range of audiences and for a variety of educational purposes. For the general audience the DVD describes the overall benefits of fire sprinkler protection, stressing its combined functions of detecting, alerting, suppressing, controlling and possibly extinguishing fires. For potential commercial/industrial end users it stresses the wider benefits of sprinklers in promoting the resilience of an organisation by protecting the business and its assets against fire. For specifiers, developers or planners, it will show the practicality of a sprinkler installation in protecting against the hazard levels determined by a pre-design risk assessment. Copies are available free of charge on request.

DVD 2: Sprinklers for Safer Living

Revised in 2013, this DVD promotes the suitability of sprinklers to cope with the types of fires which are likely to occur in places where people live. It emphasises the efficiency and success rate of sprinkler systems and demonstrates their application in a range of premises, including: dwellings; houses in multiple occupation; social housing; residential care homes; and heritage buildings. It will be of particular interest to designers who are new to the concept of using sprinklers in domestic or residential premises. The presentation also includes details of the major sprinkler retrofit project carried out by BAFSA at Callow Mount. Copes are available free of charge on request.

DVD 3: Fire Safety in Warehouses and Large Single Storey Buildings

New in 2014, this presentation focuses on fire safety challenges facing those who own, manage and occupy large single storey buildings. It uses data from the reports commissioned by the Business Sprinkler Alliance (BSA) from

BRE and CEBR to focus on the true cost and impact of fires in warehouses (see page 14).

The DVD also provides evidence on how sprinklers work, system design and how those responsible for design, management and occupation of these buildings can be encouraged to recognise the wider benefits of installing sprinklers. It includes interviews with an MP, Insurer and Loss Adjuster, together with fire officers and occupiers of warehouses which have experienced fires in sprinklered and unsprinklered premises. Copies are available free of charge on request.

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BAFSA Sprinkler Yearbook 2015/16

This sixth edition of BAFSA's Yearbook continues to play a key part in the Association's objectives in promoting the wider and more effective use of automatic fire suppression systems using water as the best way to protect people, property and the environment from the effects of fire.

The contents, as always, include a collection of current news, technical information, and updates on BAFSA activities and publications. This edition includes a report on the outcomes of important research on sprinklers in warehouses; and a look forward to the full introduction of legislation in Wales to make the installation of automatic fire suppression compulsory in all new and converted residential properties in Wales.
As always, a key section of the Yearbook is the comprehensive list of BAFSA member organisations and affiliates, the bodies which, together, offer a unique range of services and activities in the field of fire protection.

For its mixed audience of industry experts and potential users it is an invaluable resource, to be retained for future reference.

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Tel: 01353 659187 Fax: 01353 666619
Email: info@bafsa.org.uk Web: www.bafsa.org.uk