



Introduction

While sprinklers have been used for the protection of property such as mills, factories, warehouses and department stores for well over 130 years there is now a growing recognition of their effectiveness in improving levels of life safety in other types of buildings. The latest version of Approved Document B, in support of the Building Regulations, incorporates clear recognition of the value of sprinklers in enhancing levels of safety for occupants as well as in preventing the spread of fire. Other developments have demonstrated the value of sprinklers in reducing the risk to fire fighters in large, complex structures or in buildings where the fire load is excessive. With the incorporation of the latest fast-response sprinkler heads there is clear evidence that, even in the compartment of origin of a fire, occupants of sprinklered buildings enjoy a significant additional measure of protection.

Sprinklers for Life Safety

There also appears to be a growing consensus that sprinklers offer a highly cost-effective way of reducing the UK's appalling fire death toll. While it seems generally acknowledged that, smoke detectors probably save around 20-30 lives each year, this figure is unlikely to improve. It is also clear that when it is the most vulnerable members of our society who die, only sprinklers can actually *prevent* fire deaths.

In the case of social housing, care premises, homes in multiple occupation, hostels and similar properties there are now clear arguments that sprinklers offer the best chance of preventing fatalities should a fire occur.

Just What is the Extent of the Problem?

In the UK each year there are around 68,000 fires in dwellings and while many of these involve damage which is little more serious than the need to repaint a kitchen it must be remembered that more than 600 people have died in fires in the UK every year since 1945. Of these more than 500 die in the home.

No Place Like Home?

It is only when one examines the details of these tragic fires that one can begin to understand why it is that only active systems like sprinklers can prevent domestic tragedies. A disproportionate number of the very young, the very old, the disabled and - it has to be said, those affected by drugs and alcohol - are the people whose deaths feature in this grim annual tally.

FIRE FACTS

Home Fires account for 60% of all fires and 75% of casualties.

There are over 68,000 house fires a year, 500 Deaths and 14,200 injuries



Unfortunately the occupant in this living room paid with his life.

One other group also features in the list of the most vulnerable and that is those who live in shared accommodation - sometimes known as 'homes in multiple occupation' or HMOs. One calculation suggests that someone living in an HMO is eight times more likely to die in a fire than someone living in a single family dwelling.

So sprinklers, unlike smoke detectors which can only warn of the need for evacuation, can actually save those who cannot help themselves.

Benefits for Designers and Builders

One of the most often ignored benefits of sprinklers is the additional flexibility which a sprinkler system can provide to designers and developers. In unconventional or unusual buildings including sprinklers in a specification will often enable Building Regulations compliance to be achieved in a very cost-effective manner. Where changes of use are being contemplated, utilising sprinklers is often the only way in which means of escape requirements can be provided. In other situations, the freedom architects seek to

What Sprinklers can do:

- ◆ **detect a fire**
- ◆ **extinguish or control the fire**
- ◆ **raise the alarm & call the fire brigade**
- ◆ **IMMEDIATELY PROTECT LIFE & PROPERTY**

implement a stylish or unorthodox design can best be accomplished using sprinklers.

Sprinklers have also been used as a compensating feature in developments where the Building Regulations cannot be complied with in respect of means of escape or access for the fire brigade. Some projects have even reported that providing sprinklers has resulted in a cost saving where the building authority has permitted trade-offs in respect of means of escape facilities.

CASE STUDY— Friars Court, Glasgow

City councils are often faced with difficult situations. This was undoubtedly the case when a city council had a duty to house a person who was well known as a fire setter. The housing department found a suitable one bedroom flat. However, faced with the difficulty of knowing they were re housing an arsonist, they were of course concerned both for his own well being and for others in the complex. The answer was to install a domestic sprinkler installation.

A few days after being re-housed this known fire setter struck again. Fortunately, the residential sprinkler heads reacted immediately, extinguishing the fire and limiting the damage to one curtain and some superficial scorching of the ceiling. Undoubtedly, the sprinkler installation saved the flat from a total burn out and ensured the safety of nearby tenants. Proof indeed that sprinkler systems can protect both life and property!



Standards for Installation

Sprinklers can be installed using any one of a number of accepted standards. The longest established design and installation standard is BS 5306 Part 2: 1990 (*Fire extinguishing installations and equipment on premises Part 2 Specification for sprinkler systems*). While this standard can be used for any installation, there may be some benefits in terms of simplicity and cost in looking at another document, BS

DD 251:2000 (*Sprinkler systems for residential and domestic occupancies – Code of Practice*). This is a draft for development which will soon become a British Standard in its own right. It is the view of the members of the British Automatic Sprinkler Association that DD 251 is most appropriately called up for sprinkler installations in single family dwellings, small blocks of flats and residential buildings up to three storeys in height. Use can also be made of an insurance sponsored document, TB 14 (*Sprinkler systems for dwelling houses, flats and transportable buildings*) published by the Loss Prevention Council in their series of Technical Bulletins.

Types of Systems

While there are a range of different types of sprinkler systems used in different sorts of premises it is considered that only wet systems should be specified in domestic premises. These systems are the simplest, easiest to maintain and also the most cost effective. Pipework can be in copper, steel or CPVC (chlorinated polyvinyl chloride) which is approved for the purpose. If water pressure and flow are adequate then it is possible that the sprinkler system can be connected (subject the approval of the water authority) directly to the cold water main where it enters the dwelling. Where tanks and pumps are required because the flow or pressure are inadequate these can be sourced from BASA members who manufacture approved equipment.



CPVC pipework and fittings are durable and lightweight

System Design and Installation

While there is nothing mysterious about sprinkler systems their high reliability and effectiveness has come about over many years by strict adherence to the Sprinkler Rules and design standards. It would be wise to select a contractor who is not only capable and competent but has also an established track

Concealed sprinklers heads are almost invisible



record and can offer proof of compliance with an established quality assurance system.

For example, all installer and manufacturer members of the British Automatic Sprinkler Association can provide documentary proof of compliance with international quality assurance standards. These members also hold an approval (Registration or Certification) from a third party which itself is accredited by a Government-approved body, the United Kingdom Accreditation Service (UKAS).

Most BASA members have been in business for more than ten years and some for more than thirty - all can provide objective proof of their competence. BASA itself was founded in 1974.



You are 3 times more likely to die in a fire at home than anywhere else

SCOTTSDALE, ARIZONA, USA

In June 1985, the city of Scottsdale, introduced an ordinance requiring all new commercial, multi family and domestic premises to be sprinkler protected. To implement such a law was not taken lightly but in America as in the UK, it was recognised that the majority of fire deaths and injuries take place in the home.

The city had undertaken a series of nine real life fire tests in two new, single-family homes. These tests proved conclusively that the fire sprinklers worked and would indeed protect life and property. It was found that in 8 of the 9 fires, the actuation of two or fewer sprinklers were needed to control the fire and it was estimated that the property losses was reduced by 85%.

Since the ordinance was introduced, 40% of the city's housing stock has been sprinkler protected. In the 10 years to 1998 the fire service were called to 598 fires in residential properties, 44 of which were sprinklered. In 93% of these cases, only one or two sprinklers had activated and the average fire loss in a sprinklered building was only \$1,943.00 compared to a non sprinklered building loss of \$17,067.00. More notably, there had been no loss of life.

The city of Scottsdale has demonstrated there can be both economic and life safety benefits brought about by the introduction of sprinkler protection. Scottsdale is now acknowledged as being the most fire safe community in America.



One family had a lucky escape when a candle set light to a wicker shelf. One Sprinkler head activated and extinguished the fire, and the total fire damage was estimated to be no more than \$100. As can be seen in this photograph the damaged has been limited to a small area of the room.

Facts about Fire Sprinklers:

- No one in the UK has ever died as a result of a fire in a building with a working sprinkler system.
- US experience shows than 98% of all fires in sprinklered dwellings are extinguished with only one sprinkler head operating.
- Only the sprinkler heads in the immediate vicinity of the fire actually operate.
- Sprinkler heads can be completely concealed.
- Sprinkler systems do not need pumps or tanks if mains pressure is adequate
- Sprinklered buildings prevent fire fighter deaths.
- Sprinklers do not 'false alarm' they will only operate if there is an actual fire.
- For a small additional cost an alarm switch can be built-in to the system to call the fire brigade automatically should the sprinklers operate.
- Maintenance costs for sprinklers are very low - amounting at most to £150 a year
- Sprinklers save lives - and property - and are the only devices which can detect a fire, sound the alarm, call the fire brigade and extinguish or control the fire.
- Finally, despite preconceptions, sprinklers are not difficult, unsightly or expensive to install in homes. The cost of protection most homes is between 1% to 3% for a new build, with a system life expectance of more than 30 years this works out at about 70p a day. Amazingly cheap for a system which could save your family's lives.

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