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Sprinklers could have Prevented this Fire

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British Automatic Sprinkler Association

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SPRINKLER SYSTEMS THE FACTS

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THE DAMAGE CAUSED BY THIS FIRE COULD HAVE BEEN PREVENTED IF A SPRINKLER SYSTEM HAD BEEN FITTED

Over 40 million sprinklers a year

Automatic sprinkler systems are used more than any other fixed fire protection system and over 40 million sprinklers are fitted world-wide each year.

Sprinkler systems have been proven in use for well over 100 years. Possibly the oldest in Britain was fitted in 1812 at the Theatre Royal Drury Lane and updated form is still in use today.

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SPRINKLER SYSTEMS EXPLAINED

All areas of the building to be protected are covered by a grid of pipes with sprinkler heads fitted into them at regular intervals. Water from a tank via pumps or from the town main (if it can give enough flow) fill the pipes.

Each sprinkler head will open when it reaches a specific temperature and spray water on to a fire. The hot gases from a fire are usually enough to make it operate. Only the sprinklers over the fire open. The others remain closed. This limits any damage to areas where there is no fire and reduces the amount of water needed.

The sprinkler heads are spaced, generally on the ceiling, so that if one or more operate there is always sufficient flow of water. The flow is calculated so that there is always enough to control a fire taking into account the size and construction of the building and the goods stored in it or its use.

Sprinkler heads can be placed in enclosed roof spaces and into floor ducts to protect areas where a fire can start without being noticed. In a large warehouse sprinklers may be placed in the storage racks as well as the roof.

At the point where the water enters the sprinkler system there is a valve. This can be used to shut off the system for maintenance. For safety reasons it is kept locked open and only authorised persons should be able to close it. If a sprinkler opens and water flows through the valve it lets water into another pipe that caused a bell to ring. In this way the sprinkler system both controls the fire and gives an alarm using water, not electricity.

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THERE ARE SPRINKLER SYSTEMS TO CATER FOR ALL TYPES OF BUILDINGS

WET PIPE

These are the most common systems and are used in buildings where there is no risk of freezing. They are fast to react because water is always in the pipes above the sprinkler heads.

Wet systems are required for multi-storey or high rise buildings and for life safety.

ALTERNATE

As the name suggest Alternate systems can have the pipes full of water for the summer and be drained down and filled with air (under pressure) for the winter. This is important for buildings that are not heated.

DRY PIPE

The pipes are filled with air under pressure at all times and the water is held back by the control valve. When a sprinkler head opens the drop in air pressure opens the valve and water flows into the pipework and on to the fire. Dry pipe systems are used where wet or alternate systems cannot be used.

PRE-ACTION

Like dry pipe systems the pipes are filled with air but water is only let into the pipes when the detector operates (e.g. smoke detectors etc). Pre-action systems are used where it is not acceptable to have the pipes full of water unless there is a fire.

DELUGE AND RE-CYCLING INSTALLATIONS

These are not strictly sprinkler systems and are only used in special cases for industrial risks.

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YOUR QUESTIONS ANSWERED

Why are sprinklers important for life safety?

In a large, fast moving fire people often do not know which way to go and may not be able to use hose reels or fire extinguishers.

Sprinklers are completely automatic. They work by themselves and can stop heat and smoke from trapping people.

How can we be sure sprinklers will work in a fire?

Most sprinkler systems are very simple. There are normally no moving parts to fail. The pipes are full of water, usually from the mains. The sprinklers over the fire burst open when they get hot and spray water on the fire. If you have water in your pipes the sprinklers will work.

What about water damage?

Reports of water damage from fires in buildings with sprinklers are often exaggerated. Only the sprinklers over a fire open. All the others stay shut. A sprinkler opening by accident is almost unheard of.

Firemen often use 10,000 times more water from hoses to do the same job as a sprinkler.

A valuable item sprayed with water from a sprinkler as it puts out a fire can usually be recovered or restored. One that is burnt to a cinder and flushed down the drain by a fire hose is another matter!

If there is a fire the water from one or two sprinklers is a small price to pay for saving a complete building, its contents or even a life.

What about smoke?

Smoke damage is a major cause of loss in fires. In serious cases smoke is the main cause of death. Sprinklers wash the larger particles out of smoke reducing its density and toxicity. In addition the water cools the smoke making it less harmful.

Quick response sprinklers are now available that will attack a fire even earlier in its growth. Fast attack dramatically reduces the amount of smoke that a fire can produce.

What is the life safety record for sprinklers?

Apart from explosions there have never been multiple fatalities in a fully sprinklered building in the United Kingdom.

The total number of deaths world-wide in sprinklered buildings is only 50 compared to thousands in unprotected buildings. This is a record no other fire system can match.

What do sprinklers cost?

The cost will vary depending on what your building is made of, what you store in it, what you use it for and how good your water supply is.

A useful comparison is that sprinklers cost less than carpet. But unlike carpet, which wears out, your sprinkler system will protect you for the life of the building.

Aren’t sprinklers unsightly?

Modern sprinkler are specially designed to meet the needs of architects in offices, hotels, shops, hospitals and prestige buildings. They are compact and elegant. In most buildings the public are usually unaware that sprinklers are fitted.

Miniature sprinklers are little bigger than a 50p piece and are neat and robust. They can be fitted with ceiling rosettes and painted to match any colour scheme.

Concealed sprinklers are recessed and covered by a flat plate flush with the ceiling. They are unobtrusive and almost invisible. Concealed sprinklers are ideal for clean areas, where there is restricted headroom or vandalism is a problem.

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WHAT STANDARDS ARE THERE FOR SPRINKLER SYSTEMS?

To make sure your system will work it must be properly designed and fitted. The independently accredited Loss Prevention Certification Board publishes standards for sprinkler systems based on British Standards. If your system is put in by a company approved by the LPCB it can be given a Certificate of Conformity to prove it is correctly installed.

BASA can provide a list of their members, all of whom are approved by the LPCB.

The Loss Prevention Certification Board issues Certificates of Conformity as proof that a system meets their professional standards of performance and quality. Only installers recognised by the LPCB can put in systems that carry their Certificate of Conformity.

The Certificate is proof to Fire Brigades, Local Authorities and Insurance Companies that the system meets the Sprinkler Rules. It is also third party verification for the owner that his system is to the correct standard.

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SPRINKLER SYSTEMS - THE FACTS

Fires

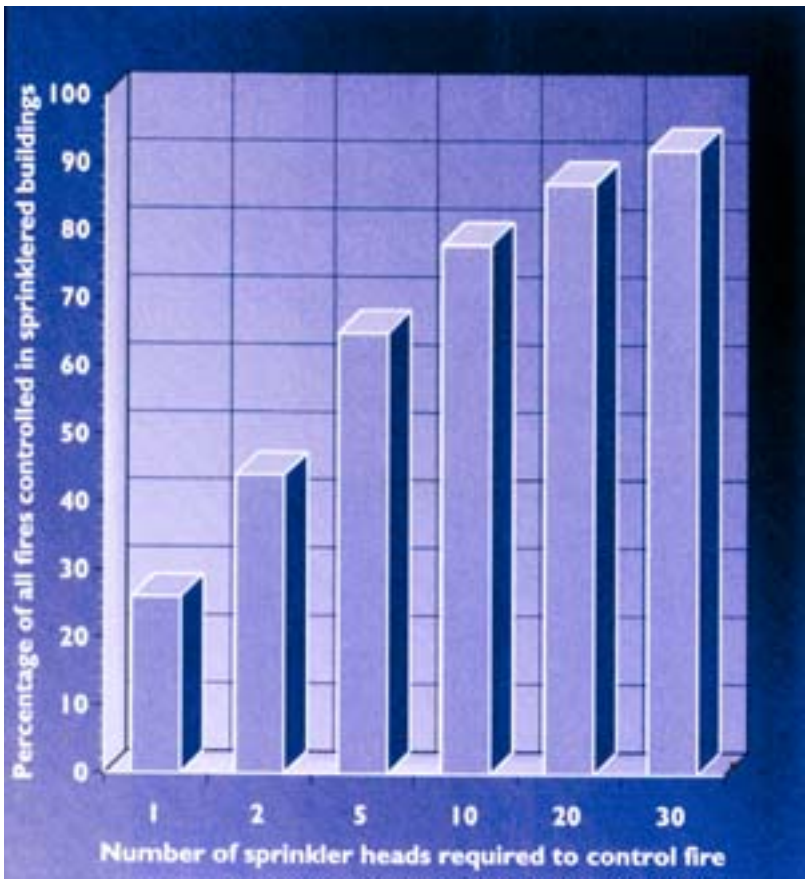
In buildings fully protected by sprinklers:
99% of fires were controlled by sprinklers alone
60% of fires were controlled by the spray from 4 sprinklers or fewer

Source: European statistics over 10 year period

Accidental Discharge

Accidental discharge of water - all causes
1 in 500,000 (per year of service)
Source: LPC

Accidental discharge of water due to manufacturing defects:
1 in 14,000,000 (per year of service)
Source: FM (USA) and LPC (UK) statistics



Number of Sprinklers Operating in a Fire

Source: UK statistics, 16,800 fires over 12 years

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LEGISLATION

Approved documents accompanying the Building Regulations in England and Wales make specific reference to the use of sprinklers (Regulations for Scotland and Northern Ireland differ slightly).

For life safety, multi-storey buildings over 30m high must be fitted with sprinklers to meet Approved Document B standards. Similarly an unpartitioned area in a shop of in commercial premises over 2000m^2 requires sprinkler protection. There are corresponding regulations applying to buildings for industrial or storage use.

The installation of sprinklers can allow buildings to be built closer (half the spacing is required) to adjoining premises. This is a major benefit where site space is limited.

In shops sprinklers can be taken into account when calculating fire growth and smoke volume. This is turn allows the approval of longer distances of travel to exits.

The guidance issued to interpret the Building Regulations now recognises the use of sprinklers for life safety and it is clear that future legislation will call for the increased use of sprinklers.

LOSSES FROM FIRES IN BUILDINGS PROTECTED WITH SPRINKLERS ARE ESTIMATED TO BE 1/10 OF THOSE IN UNPROTECTED BUILDINGS