

Automatic Fire Suppression Systems (AFSS) for all

Someone once said that there were three main causes of fire: men, women and children.

Fire is no respecter of persons. It can happen to anyone and can strike anywhere. We know statistically that some people are more vulnerable than others but no one is totally immune.

The best way to protect against fire is to prevent it starting in the first place. We need to understand the causes of fire and practise good fire prevention.

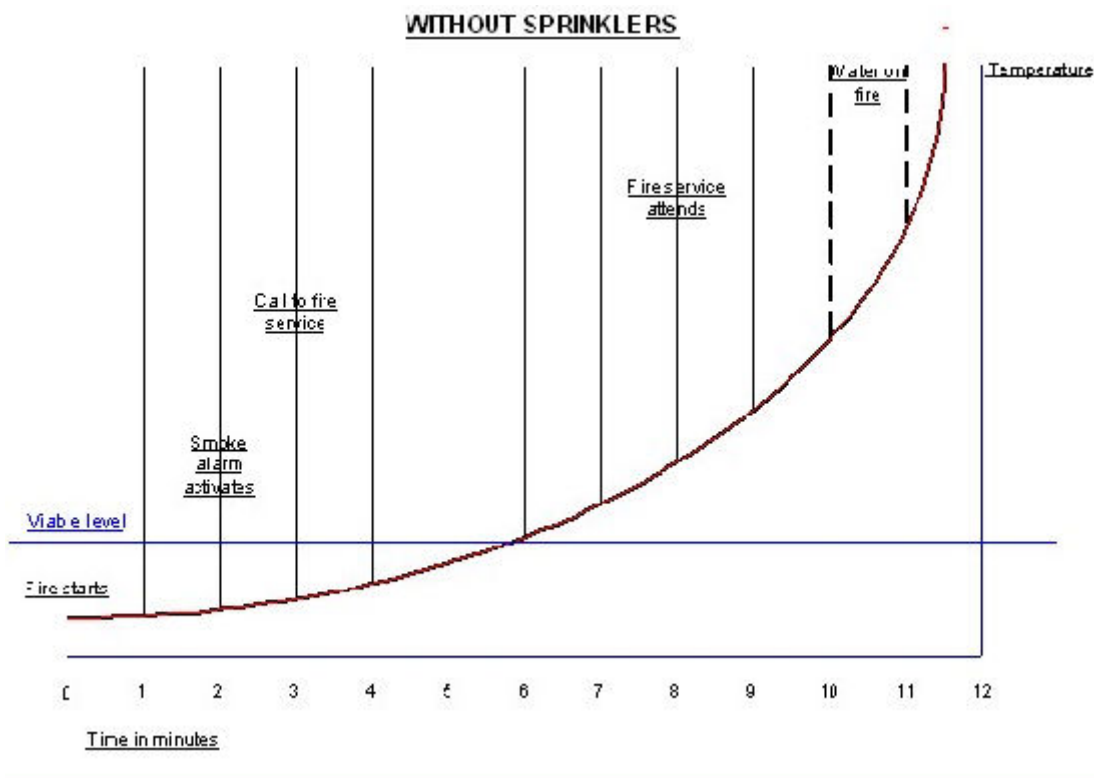
If we are unfortunate and fire strikes, we need to know about it in good time so that we can escape from it. This is where early detection and escape plans come in, both in the home and in the work place.

We also know that if we let a fire get out of control, the potential for damage and personal distress is magnified. In these circumstances our aim must be to control the fire as soon as possible and this is exactly what suppression systems (sprinklers) do. They automatically tackle a fire: which is like having a fire-fighter in your room, 24/7, 365 days of the year.

Look at the graphs below

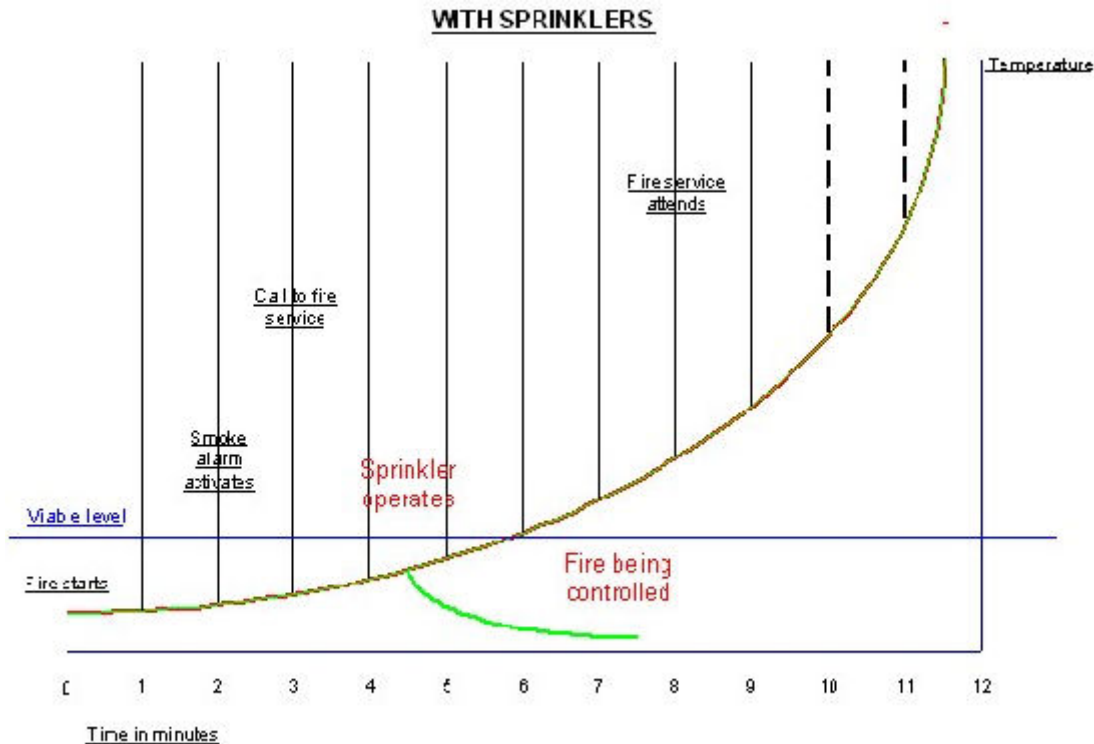
Graph #1

In the first one we see that, without sprinklers, a fire has the potential to reach unbearable limits within as little as five minutes. Even the quick arrival of the Fire Service may not save the occupants of a room that was ablaze.



Graph # 2

In this graph notice how the fire is dramatically reduced when a sprinkler system automatically puts water onto a fire. Even persons in the fire room have a chance to survive!



Not only does the sprinkler system make it safer for those in a building, but it also makes it much safer for firefighters who have to tackle potentially hazardous conditions.

Smaller fires mean less damage, and less potential to cause harm.

A recent UK Government report said that, if a simplified sprinkler system could be fitted in 70% of UK dwellings, over 200 lives could be saved every year, and injuries could be reduced by 4000 a year.

There is plenty of real evidence from other countries to show that sprinklers have the potential to give greater benefits than suggested. Indeed, statistics have shown that sprinklers can give over a 50% reduction in fire deaths and injuries and a 90% reduction in property damage!

So, if sprinkler systems are so good, where can we put them to best use

In Dwellings

1. Protection for the Vulnerable

Most fatalities and injuries occur in the home, just where people feel safest!

Community Fire Safety education and protection programmes have, in recent years, played a significant part in helping to reduce the numbers of persons killed or injured in dwelling fires in the United Kingdom.

The country-wide Home Fire safety Check (HFSC) initiatives have played a big part in reaching into the community with fire safety messages.

Sadly, despite these successes, there are those within our communities who remain vulnerable from fire. They may be hard to reach, difficult to influence or resistant to safety messages. Yet others may be impaired or unable to react effectively to the danger from fire. It is estimated that these groups account for 30% of society, living in environments that are among the least prepared for, or protected from, fire.

These factors place these people at greater risk to succumbing to fire and, statistically, this is borne out in fire casualty reports year on year.

One way of reducing these tragic losses is to provide a safer environment or engineered solutions for these vulnerable groups.

The West Midlands Fire Service (WMFS) considers that the installation of residential fire suppression systems may be the single most significant means to protect people from fire.

It is the sincere desire and aim of all associated with the West Midlands Fire Service to see a clear reduction in fire injuries and fatalities in our region and we believe that our commitment to the introduction of fire sprinklers will help to achieve this goal and reduce significantly the cost of fire to the community.

As part of the local HFSC initiative, West Midlands Fire Service has pioneered the provision of suppression systems in the homes of those identified as being at most risk from fire.

To date we have been pro-active in the fitting of suppression systems in 15 dwellings, ranging from single occupier homes to a 68 bed care facility for adults. Additionally we have at our disposal, portable suppression units which provide additional risk reduction ability on a short term basis for those who cannot be protected in other ways.

More projects are currently in the pipeline.

2. Single dwellings

The current Building Regulations do not require suppression systems to be fitted in dwellings, except high rise buildings over 30 metres tall. The UK is in need of social housing, especially in the south east and other conurbations.

In England and Wales most domestic and residential sprinkler installations result from a need to meet the requirements of the Building Regulations.

In cases where the full requirements cannot be met, suppression systems can be used to alleviate problems where, for instance, fire service access is restricted, the full provision of firefighting enclosures cannot be met or where they compensate for other features in the design of the premises, such as open plan living areas.

A few enlightened developers are insisting on suppression systems being fitted because they are convinced that they offer enhanced business continuity or provide a safer environment for those who live in the properties.

The Government is setting out a vision on affordable housing with a view to ensuring a sufficient supply of homes for those on lower incomes. These low cost homes will invariably be constructed using mass production techniques and utilise cost effective building materials, perhaps with a predominance of timber. (Currently timber products are not required to be treated with fire retardant materials)

There is also a shift to ensure that we produce sustainable buildings and communities. Measures of sustainability include many environmental factors such as heat loss and energy efficiency through to use of renewable materials and transport links. Very little has been directed to ensure that the buildings we produce are sustainable from fire!

As previously mentioned, recent research has indicated that a low cost suppression system which combines sprinklers and domestic water supply (now termed a combined domestic suppression system) could be hugely effective at reducing the annual losses from fire if it were to be adopted en masse.

It is the contention of West Midlands Fire Service that fire suppression systems should be fitted in all new dwellings for, amongst others, the following reasons:

- It WILL reduce fire deaths and injuries.
- It WILL reduce the social, economical and environmental impact of fires.
- The technology is proven to work and is simple to install, especially for new builds.
- If done on a widespread basis the unit costs per installation could work out quite economical.
- The homes will be protected from fire for up to 25 years.
- The use of combined sprinkler technology could reduce the likelihood of failure of the system.
- Use could be made of Grey water and other innovative technologies.

3. Residential Care type premises

Limited acknowledgement of the use of sprinklers in Residential Care premises is made in the latest edition of the Building Regulations through the acceptance of certain freedoms in design and management of such premises.

Such relaxations include:

- a) Fire doors to bedrooms need not be fitted with self closing devices.
- b) Protected areas may contain more than 10 beds.
- c) Bedrooms may contain more than one bed.

There are however no requirements for sprinklers to be fitted in such premises in England and Wales.

In Scotland there are requirements for certain types of premises, such as care establishments, to be fitted with sprinklers. This follows detailed research and, sadly, fire deaths and injuries in such properties.

Care establishments house some of the most aged and infirmed members of society whose ability to escape from a fire is often severely hampered.

The fitting of sprinklers in residential care premises has the potential to provide much safer accommodation for these persons and ease the burden on management through the simplification of fire procedures.

Some care providers are fitting sprinklers as standard in their care establishments and this is to be applauded.

In Schools

West Midlands Fire Service has actively campaigned and lobbied, at both local and national levels, for sprinklers to be routinely installed in all new schools and those undergoing major refurbishment.

Prior to the publication of the DCSF Risk Assessment Tool and Building Bulletin 100 we were instrumental in encouraging five of our Local Authorities to introduce policies to fit sprinklers in new build schools. All seven Local Authorities have now shown such a commitment.

Current information indicates the following level of new schools within the West Midlands projected to or having had sprinklers fitted at:

- Birmingham 14
- Coventry 14
- Sandwell 4
- Solihull 10
- Wolverhampton 3
- Walsall 2

West Midlands Fire Service is keen for planners, designers, architects, contractors and everyone involved in building new schools to maximise the use of sprinkler systems through the full employment of design freedoms that the installation of sprinklers allows.

These freedoms can lead to significant cost savings over the life of a school and could, dependent on which code or engineered solution used include, amongst others:

- increase in compartment sizes to make full use of open plan designs;
- relaxation in passive fire resistance measures;

- relaxation in fire alarm requirements;
- reduction in structural protection requirements;
- use of phased evacuation;
- relaxation in the number and width of required staircases;
- employment of lighter construction techniques.

The key to making the most of sprinklers is to use inclusive design techniques and factor in the sprinklers at the earliest stages of a project!

4. In Commercial and Industrial buildings

Many commercial and industrial premises are not required to have sprinklers fitted when they are built.

Recent events in Warwickshire highlight the dangers that fire in commercial premises present to those who use the building, including firefighters called to tackle potential fire.

The current Building Regulations limit compartment sizes but allows for an increase in such where sprinklers are fitted. This encourages the use of sprinklers as a compensatory feature and adds worth to the installation.

However, in single storey industrial buildings (manufacturing), compartment sizes can be unlimited which leads to the potential of a hugely catastrophic fire. Sprinklers are **not required** to be fitted to such premises when newly built.

This anomaly can lead to properties being designed and built under one purpose group which does not require the fitting of sprinklers, only for there to be a change of use, to one which require sprinklers to be installed, once the premises is occupied.

Clearly there is a potential for high risk buildings to have inadequate sprinkler protection or even none at all.

Current Fire Safety legislation does allow for the enforcing authority to insist on appropriate levels of fire protection to be retro-fitted in premises deemed to be insufficiently protected.

This anomaly in the regulations could be rationalised if the requirement for sprinklers was extended in the Building Regulations to

all purpose group buildings where the compartment size exceeds, for instance 2000m. This would also bring the UK into line with some other major European countries.

Heritage Buildings

Though not itself a heritage building, the National Motorcycle museum at Bickenhill suffered a disastrous fire in 2003 which destroyed valuable historic motorcycles and other exhibits. Happily the rebuilt buildings were fitted with a sprinkler system to preclude any such future losses by fire.

Currently the only known heritage building in the West Midlands known to be fitted with a fire suppression system is in Stourbridge. Here, a Grade I listed 17th Century Friends Meeting House has been fitted with residential type sprinklers.

West Midlands Fire Service actively seeks to promote the use of suppression systems in heritage property in order to preserve historic buildings and artefacts from the ravages of fire and has been working with Birmingham University to advise on the protection from fire of some of the listed buildings on their Edgbaston site.

There seems a reticence for those managing historic premises to consider the use of suppression systems in order to protect our heritage from fire for future generations to enjoy.

In Scotland, much good work has been achieved through the offices of Historic Scotland. Several important properties are now fitted with suppression systems and a wealth of expertise has been forged in this field so that installations can be done in a sympathetic and unobtrusive manner.

Conclusion

Automatic Fire Suppression systems have the potential to revolutionise the way we deal with all related issues regarding fires in the UK.

West Midlands Fire service will continue to promote the use of such systems in order to reduce fire losses within the United Kingdom.

For more information on sprinkler and AFSS use the following links.

- British Automatic Sprinkler Association www.basa.org.uk

- National Fire Sprinkler Network www.nfsn.co.uk
- European Fire Sprinkler Network www.eurosprinkler.org
- West Midlands Fire Service e mail: steve.mills@wmfs.net

Or contact your local Fire Service.