

#7



Sprinklers in Hotels

The vulnerability of hotel premises to fires was very publicly demonstrated in England in a little over two weeks in 2019.

On 18 July a Premier Inn in Bristol was effectively totally destroyed in a few hours and on 2 August the Holiday Inn at Willenhall suffered a similar fate. Both of these properties were compliant with Building Regulations, but this did not prevent a fire from spreading. While thankfully no one was hurt in either of these fires, the businesses were wiped out and there was substantial local disruption and an impact on the economy of the area.

Data from the Fire Protection Association (FPA) suggest that direct losses from fires in hotels/boarding houses is in excess of £4 million which equated to 2.0% of the total cost of all UK fires. An FPA spokesperson said: "Sprinklers are even better than basic fire detection systems as they offer a simple, effective and relatively cheap method of detecting a fire, raising the alarm and starting to control it automatically. This allows hotel staff to concentrate on their primary task of ensuring that their guests are assisted to a place of safety without delay."

Automatic fire sprinkler systems have been used effectively for the protection of property such as mills, factories, warehouses and department stores for well over 130 years.



Premier Inn, Bristol, 18 July 2019

However, over recent years there has been a growing recognition of their effectiveness in improving levels of life safety in other types of buildings. While hotels are safer than they used to be, risks of multiple casualties remain.

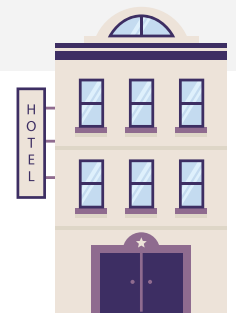
International hotel chains have long recognised the life safety and property protection benefits of comprehensive sprinkler protection. Larger hotel chains, notably Marriott, Hilton and Starwood, have long since been aware of the benefits of installing sprinkler systems in their hotels worldwide, mainly as a result of high profile fires.

According to the most recent NFPA report on the U.S. experience with automatic extinguishing systems, deaths per thousand reported fires were 100% lower when wet pipe sprinklers were present, compared to fires with no automatic extinguishing equipment. The report also found that:

- In 2007-2011, 52% of reported hotel or motel structure fires indicated some type of sprinkler was present (90% wet pipe, 7% dry pipe, 3% other).
- Wet pipe sprinklers operated in 91% of fires and operated effectively in 89% of fires.
- Only one sprinkler heads operated in 95% of reported fires when wet pipe sprinklers operated.

WHY THIS SUCCESS?

- The success in part is due to the simplicity of the sprinkler system: there are no electronics – so no false alarms.
- The cost of maintenance is extremely low – running to less than £500 per year for the average system.
- Sprinkler systems have a very long service life, 50 years is common, and many systems today were originally installed in the 1920's.



ONLY THE SPRINKLER HEADS CLOSEST TO THE FIRE WILL OPERATE



£500

OR LESS AVERAGE COST TO MAINTAIN SPRINKLER SYSTEMS



This is due to strict adherence to standards for components, design and installation. Systems in hotels in the UK are installed to BS EN 12845, an exacting standard which has evolved over many years and when installed by a BAFSA member company, the client will be provided with a Certificate of Conformity under the third party certification (TPC) scheme LPS 1048.

Due to the strict standards for fire sprinklers and TPC, the fire insurance industry will normally offer significant premium discounts and/or lower policy excesses for premises protected by automatic fire sprinklers.

RETROFITTING OF HOTEL SPRINKLER SYSTEMS

In developing a design for a hotel sprinkler systems, the designer will be required to undertake a comprehensive survey of the building, and determine the various risk area classifications and relating these to appropriate sprinkler head selection, head spacing, water flow rate and discharge density. It will also be necessary to investigate the available mains water supply to establish any need for sprinkler pumps and water storage culminating in a comprehensive set of design/installation drawings indicating pipework routing design, pipework sizing including pump and tank selection and associated electrical/alarm wiring and civil work detail.

An important feature of the survey is that the sprinkler specialist liaises with the client and other project team members, including the architect to develop the appropriate pipework routing, civil work details and plant/ housing location, together with programming the works to dovetail with the operation of the hotel and the time allocated for the works.

HOW DO THEY WORK?

It is essential that water supplies, the basis of automatic sprinkler systems, are reliable and guaranteed. This means that water should be supplied from the service main or other dedicated sources of water as specified in BS EN 12845.

An important consideration which should be investigated during the early design process is the space availability for pumps and tanks should they be required. The sprinkler heads will be strategically positioned in hotel bedrooms, corridors, back of house areas etc. These heads are connected to the water supply via a network of hydraulically balanced supply pipes which are distributed throughout the hotel utilising the most unobtrusive route possible. In virtually all cases pipework and sprinkler heads can be concealed.

Each sprinkler head is its own heat detector and operates at a predetermined temperature normally 68°C. Once this temperature has been reached, the sprinkler head operates, and a fine spray of water is discharged on to the fire.

A common myth about automatic sprinklers is that all the heads operate simultaneously; this is completely untrue. Only the sprinkler heads closest to the fire will operate, thus minimising the water damage. Once the sprinkler installation has been activated, the fire is almost immediately brought under control or extinguished. The system can also operate local alarms to aid evacuation and alert the fire brigade to the fact that there is a fire on the premises.



Modular GRP sprinkler water tank in listed hotel



Sidewall sprinkler head protecting a 4m x 4m hotel bedroom.



Two pendant concealed heads protect this large bedroom



Retrofitted sprinkler system in an Grade II* hotel in Bristol. Note that warning sign - garment bags and sprinklers are not friends!

If you have a question or seek advice regarding automatic water-based fire suppression systems, please email the team: Ritchie.oconnell@bafsa.org.uk or joe.mcafferty@bafsa.org.uk. If they do not have an answer for you, they will know someone who has! FAQs can be found at bafsa.org.uk/sprinkler-systems/faqs/