



1882

Today

Rethinking Fire Sprinklers: Addressing the Gaps in Traditional Fire Safety

Since 1882, fire suppression technology has evolved, but challenges remain. Research over recent decades highlights the limitations of traditional sprinklers, particularly for slow-growing fires. Plumis is developing smarter solutions that respond effectively to modern fire risks.

2002

'The research showed that a more sensitive sprinkler was needed to respond faster to both smouldering and fast-developing residential fires for two reasons. First, fires had to be controlled quickly in order to prevent the development of lethal conditions in small residential compartments. Second, fires had to be attacked while still small if they were to be controlled with the water supplies typically available in residences, i.e., 20 to 30 gpm (76 to 114 L/min).'

Review of Residential Sprinkler Systems: Research and Standards by Madrzykowski and Fleming

2004

'The house fires used in these tests were all of a slow-growing type that produced a lot

of smoke but limited heat. Because sprinklers depend on heat to activate these fires posed a severe challenge to the sprinklers...' **An appraisal of the ODPM - BRE Report by the Fire Sprinkler Association**

2005

'Sprinkler protection was not found to be a complete panacea, slow-growing and shield fires can be a problem.'

Review of Residential Sprinkler Systems: Research and Standards by BRE

2006

'The reason that sprinklers are likely to be less effective in care homes for the elderly than elsewhere lies in the nature of the fatal fires. Many are caused by careless smokers, who set light to their clothes or bedding. We have assumed that it would not be likely for sprinklers to save lives in these cases. By the time the first sprinkler activated, the heat release rate of the fire would be approximately 500kW. In addition to the heat, the victim will be in the immediate vicinity of the undiluted toxic fire products.'

BRE - Sprinkler Effectiveness in Care Homes

2017

'We have an aging population with increased vulnerabilities...People will therefore need to be protected in increasingly more sophisticated ways than have been used to date for able-bodied people capable of responding to alarms – and acting appropriately to save their own lives...More needs to be done in terms of reliable early detection and suitable intervention, to either delay the development of the fire or to notify people – using technology – so they can take suitable action at the early stages of the fire.'

The causes of fire fatalities and serious fire injuries in Scotland by BRE

2018

'These obstacles to water supply for AFSS must be overcome. Water companies in London need to be more consistent in their approach to installation and more innovative in encouraging new technologies to make installing AFSS more feasible.'

Never again: Sprinklers as the next step towards safer homes by the London Assembly

'Neither room protection system tested (water sprinkler and mist) could provide suppression without producing some hazard to occupants. This is partly due to the slower activation times of the room protection systems, which resulted in a larger fire prior to activation.'

Investigation of Residential Cooking Fire Suppression Technologies by NIST

2019

'A study of these fatal dwelling fires, where sprinklers were present, found that the circumstances of the fire fell outside the life-saving operating parameters of the system's design. Typically, the casualty was directly involved in the fire with either their clothing or bedding ignited - often by smoking materials. More work is needed to design systems that are specifically required and installed to protect those who are both vulnerable and at greater risk than the general population.'

Incidence of Deaths and Injuries in Sprinklered Buildings by NFSN and NFCC

2020 Introducing Automist

Automist activates electronically overcoming the constraints of existing sprinkler systems by operating earlier and tackling fires before the temperature required to burst the glass bulb of a sprinkler is reached. It is proven to operate 2.0 to 13.7 times quicker than a concealed sprinkler for many scenarios. This reduces the chance of burns for someone very close to a fire and minimises the production of life-threatening toxic gases, which are still the most significant threat in domestic fires.



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