

British Automatic Fire Sprinkler Association

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UK experience with residential sprinklers

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Protecting people, property and the environment

Devolved administrations

In addition to the Parliament at Westminster there are three devolved administrations in the United Kingdom

- The Scottish Government.
- The Welsh Government.
- The Northern Ireland Executive

Each administration has its own legislation governing fire safety. Each administration and the UK Parliament have a different stance on Automatic water fire suppression systems(AFWSS)

There has previously been a perceived reluctance on behalf of the UK parliament to legislate for sprinklers, prior to the granting of devolved powers the other countries were bound by the regulations set by Parliament

Changing perspectives 1: Wales

- Building regulation powers were devolved to Wales on 31 December 2011. This provided a window of opportunity to develop legislation in Wales to mandate for sprinklers in dwellings.
- The *Domestic Fire Safety (Wales) Measure 2011* was introduced shortly afterwards
- This became The *Domestic Fire Safety (Wales) Regulations 2013* introduced in two phases

Phase 1

From 30 April 2014

- Care homes (As defined in the Care Standards Act 2000)
- Children's Homes
- Hospices
- Student accommodation
- Boarding Houses
- Hostels (other than those used for short stay leisure accommodation)

Phase 2

From 1 January 2016

All new dwellings including houses and flats now
require sprinklers

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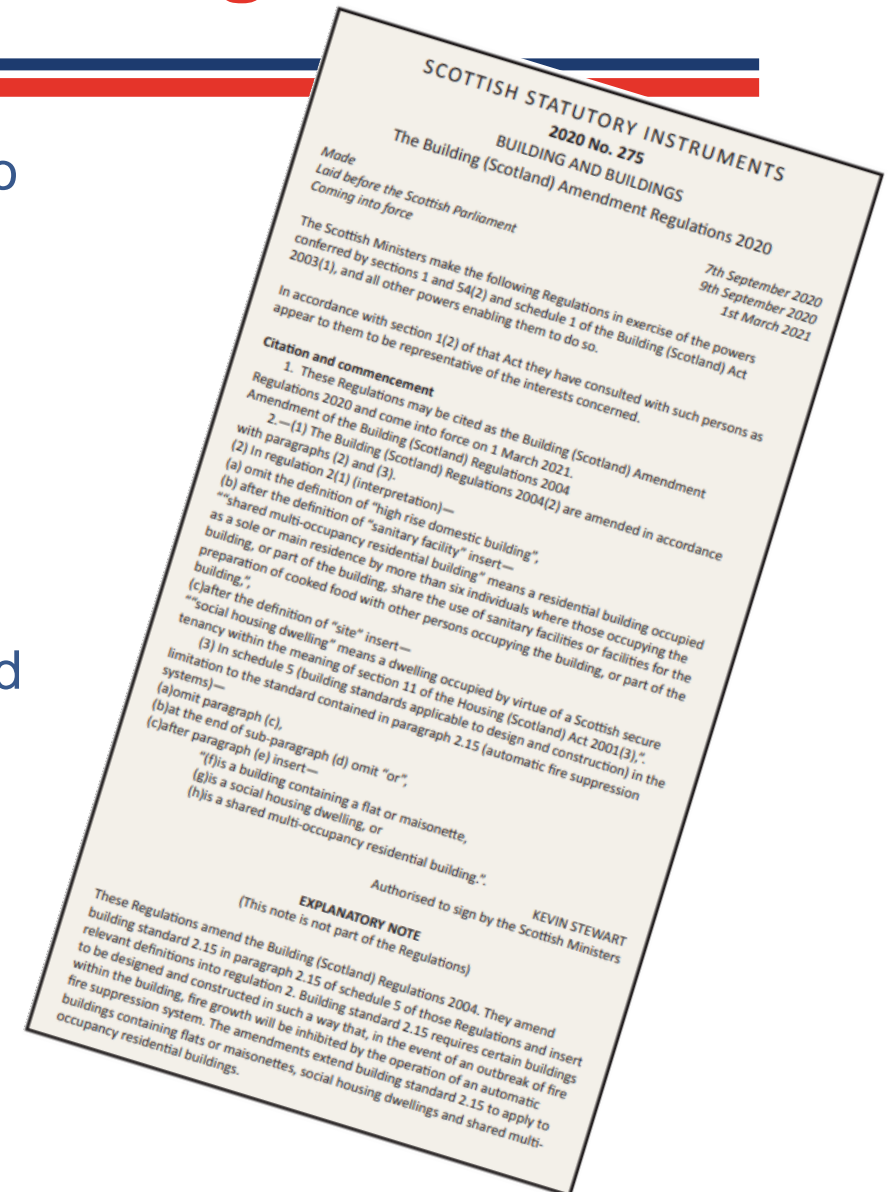
Changing Perspectives 2: Scotland

Following the fatal fire at the Rosepark Care home Scotland in May 2005, the Scottish Government introduced a requirement for new or altered residential care buildings to be provided with an automatic life safety fire suppression system to comply with Building Regulations.

In addition, Scottish technical standards since 2005 have required residential sprinkler systems to be installed in all sheltered housing and residential buildings with a floor height greater than 18 metres.

The Building (Scotland) Amendment Regulations 2020

- David Stewart MSP proposed a private members Bill to improve safety in new social housing following the Grenfell Tower fire in 2017.
- Ministerial Working Group on Building and Fire Safety took the private members bill within its remit
- From March 2021 all new-build social homes, flats, and shared multi-occupied residential buildings must be fitted with automatic fire suppression systems



Changing Perspectives 3: England

Historically the UK government has been reluctant to legislate for sprinklers in residential and domestic premises .

Reasons provided previously for this apparent disinclination to legislate for sprinklers have included

- Lack of evidence regarding their effectiveness?
- Lack of UK based evidence regarding their effectiveness
- Not cost effective

Progress!

- Approved Document B Volume 1: Dwellings *2019 edition incorporating 2020 and 2022 amendments – for use in England*
 - A reduction in the trigger height for fitting sprinklers in Blocks of flats from 30m to 11m
 - All other dwellings are not currently required to be fitted with sprinklers



Public Consultation : England

Proposals to amend Approved Document B to:

a. *Recommend Sprinklers in new Care Homes, regardless of building height;*

- *“There is evidence (Sprinkler effectiveness in care homes: final research report: BD 2546 (PDF, 1.55MB) that in most situations where a sprinkler operates, other occupants within a room should survive. “*

Summary of current requirements in UK

Wales (since 2016):

- Sprinklers in all new or converted dwellings
 - new homes
 - sheltered housing
 - residential care premises
 - hostels

Scotland (Since March 2021):

- Sprinklers in all new-build:
 - Social homes (incl. Res. Care)
 - Flats
 - Shared multi-occupied residential buildings

England: (Since January 2021)

- Blocks of flats with a top storey more than 11m above ground level

Challenges : Practical findings

Sprinkler contractors have become aware that pipe needs to be wrapped in metallic tape so it can be detected through the wall.

Site manager and other trades such as plasterers and air leakage testers need to be aware and take care of sprinkler heads in their vicinity.

Sprinkler installation treated by site managers/schedulers as an additional consideration they need to take this into account from an early stage of installation.

Issues encountered/ lessons learned

Rigorous opposition to the introduction of the sprinkler measure predominantly from major housebuilders

- Predictions of an end to housebuilding in some areas of Wales
- Emphasis on the effectiveness of passive fire safety measures rather than AWSS
- Smoke detection is sufficient “*higher risk properties, pre 1992 and those deemed to be lower risk properties, post 1992.*”

Lack of Clarity/ loopholes

There have been a number of (mis)interpretations of the regulations which in hindsight could have been avoided with greater clarity

- Holiday Lets
- Listed buildings/Ancient monuments/Buildings in a designated conservation area
- Extending a care home

Challenges: infrastructure



- There were initially not enough sprinkler companies operating in Wales to meet the new demand
- Existing companies upscaled to meet new demand
- New entrants, good and bad

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CSCS Cards

- **Construction Skills Certification Scheme (CSCS)** cards provide proof that individuals working on construction sites have the appropriate training and qualifications for the job they do on site
- **This is a voluntary scheme** However, most major house builders operate a "100% carded" policy
- CSCS closed Industry Accreditation to new applicants in 2010 but those already holding a card were able to renew on the same basis.
- From 1st January 2020, all cards renewed under Industry Accreditation will expire on 31st December 2024 and CSCS will stop issuing the card from 30th June 2024.

Chemical compatibility issues

- New entrants not always familiar with chemical compatibility issues and have used inappropriate methods to seal around CPVC sprinkler pipes
- Some installers have fitted CPVC pipe in very close proximity to data cables. Sleeving materials on some signal-carrying wires and cables often contains plasticizers that can pose problems if they leach into CPVC.
- Sprinkler contractors in some instances not being made aware that the build was on contaminated land



Lack of adequate design

- Fire strategies/ architects too often design rather than specify fire alarms, emergency lighting and suppression.
- Builders querying /modifying sprinkler requirements of strategy.
- Principal developers cutting corners

Water supply issues

- Installers report difficulty in receiving pressure and flow information from water undertakers
- Perceived preference of water undertakers for pump and tank rather than mains fed systems
- Water network suffering from leakage, leads to pressure and flow being reduced - in some instances this has led to installers being unable to commission systems as installed.

Water supply issues (2)

- Water supply choices (mains fed, boosted mains or pump and tank) have not been confirmed by contractors with all stakeholders including the water companies leading to last minute changes causing delays and difficulties, higher costs.
- Site managers not anticipating the water requirements for sprinklers so only domestic supply (25mm OD) pipe supplied.
- Clients not being certain what they are applying for i.e. combined sprinkler/ domestic supply or dedicated sprinkler supply.
- The use of a respite flat or lounge may be considered

High Rise Retrofitting considerations

- Early engagement with tenants/ residents key to understanding and obtaining cooperation
- The use of CPVC pipework eliminates hot work and complies more easily with health and safety regulations. It also minimise the friction losses thus making a mains installation more achievable.
- If pipework can be cut to size offsite this decreases onsite works and reduces noise and disruption for residents.

High Rise Retrofitting considerations (2)

Where the floor and ceiling construction is of solid concrete, the sprinkler system pipework may have to be surface mounted.

Leaseholders: some blocks could contain leaseholders who own their own home. Where a retrofit project is being carried out, the leaseholder would have to agree to the work being carried out and be prepared to pay their share of the installation costs.

Asbestos: Banned from Building construction in the 1980s still present in many older buildings, careful planning is required to minimise risks from asbestos exposure

Efficiency and Effectiveness

- There was a clear need to provide a UK base of evidence to demonstrate the efficacy of sprinklers
- National Fire Sprinkler Network (NFSN) and National Fire Chiefs Council (NFCC) commissioned a report published in May 2017
- Detailed analysis of sprinkler activations carried out in the UK using F&RS data as submitted through the Incident Recording System (IRS)



What does the data analysis reveal?

Performance effectiveness

Across all building types, the performance effectiveness sprinkler systems was assessed as **99%** in situations where sprinklers could have been expected to have operated

Operational reliability

The research indicates that the operational reliability of the systems was **94%** across all building types where sprinklers could have been expected to have operated

Sprinkler Saves

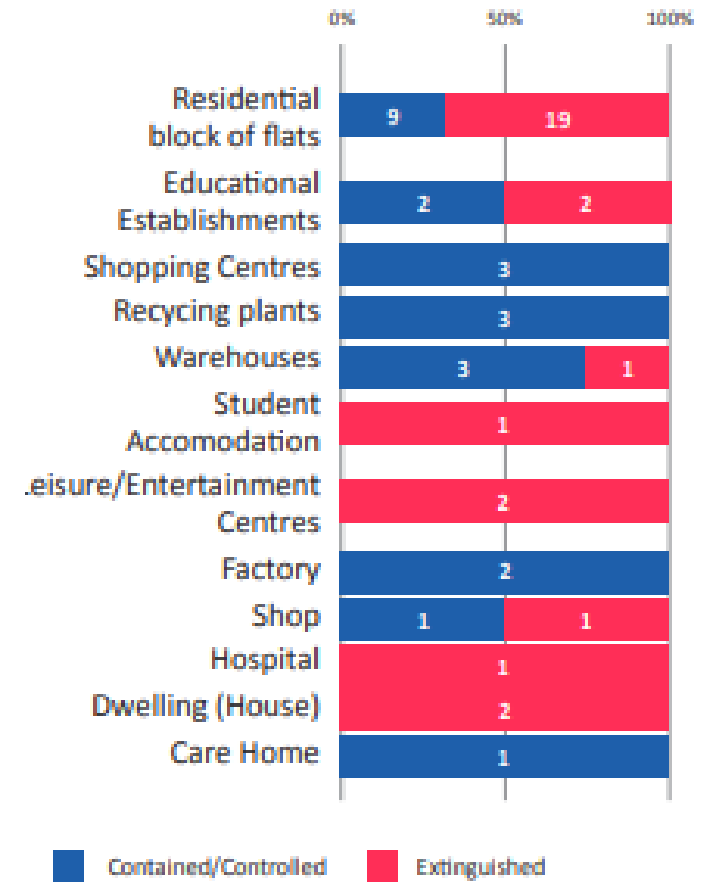
- The sprinkler saves website provides an online record of sprinkler saves in the UK
- <http://www.sprinklersaves.co.uk/>
- Of the 53 incidents reported for 2021/22, purpose-built block of flats dominated the figures with 28 incidents (53%).



Sprinkler Saves (2)

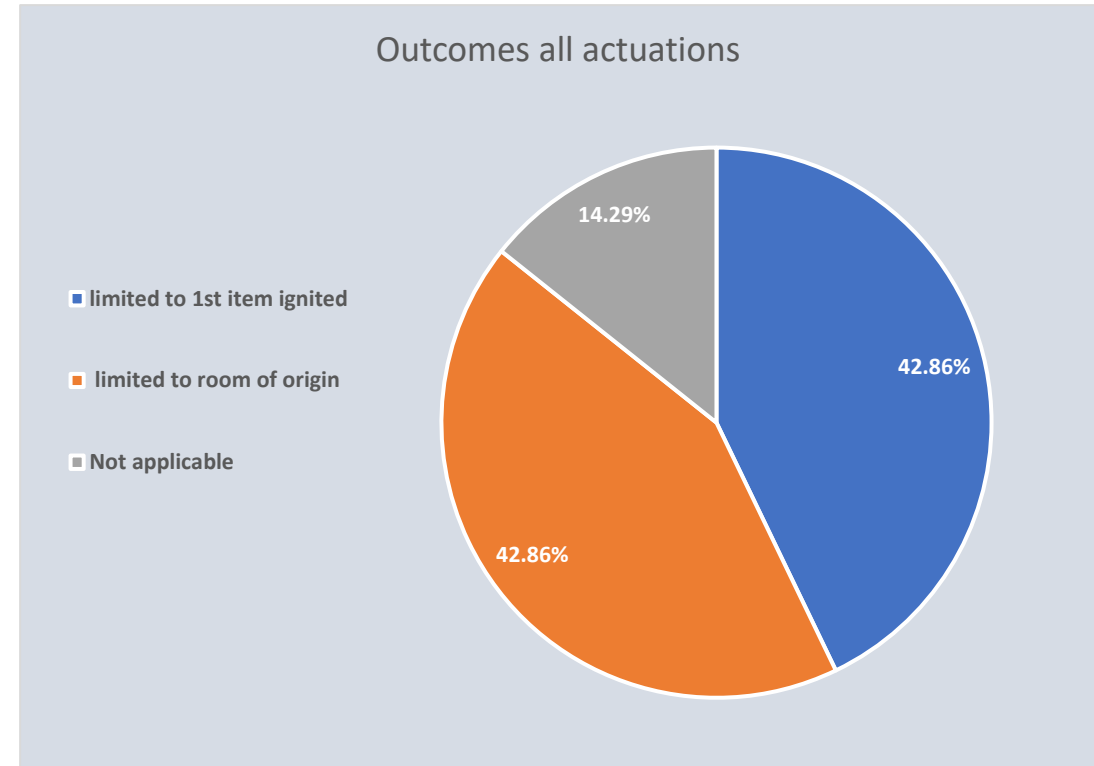
Of 28 actuations in flats

- Extinguished 67.86%
- Contained/controlled 32.14%
- Houses 100% extinguished (1 fire)
- Student accommodation 100% extinguished (1 fire)



Recent data

- Freedom of information request regarding sprinkler actuations in Wales 2021/2022
- 21 Actuations in Residential and domestic properties
- Approx 86% of outcomes fire damage limited to 1st item ignited or limited to room of origin
- Remaining 14% outcome recorded as not applicable(?)



Summary

- Political reluctance in the UK to legislate for residential and domestic sprinklers is waning.
- Political champions can speed up the process of legislating for sprinklers.
- The residential and domestic sprinkler sector in the UK is in a growth phase, bringing new entrants and some challenges.
- There is a growing body of UK based evidence that sprinklers are efficient and effective.
- When legislating for sprinklers greater clarity and tightening of loopholes would be highly beneficial.

Recommendations

- Education is key. We need to provide more knowledge to more people
- There is in some areas of the FRS a lack of knowledge regarding sprinklers and this needs to be addressed.
- 3rd party accreditation and certification is vital to ensure that residential and domestic installations are fitted to the highest standards. This should be mandatory.
- Lessons learned in devolved administrations when implementing sprinkler legislation should be shared and any loopholes or potential ambiguities should be removed.
- Continue to lobby for the more widespread use of sprinklers in all parts of the UK

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**Thank you for
your attention**

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