



University of Stirling,
aerial view of the campus

Growing Fire Risks

Starting a course of study at a university or college of further education is generally a young person's first time away from family and home. For many, leaving home is liberating and fun. Unfortunately it is not without its hazards; and partying, smoking, alcohol consumption and careless cooking are all factors that contribute to unwanted fires in buildings providing student accommodation.

One such incident occurred at Liverpool's Hope University's Aigburth Park site in 2010, where a student was rescued by fire-fighters from a burning kitchen. The 22 year old, who was found by fire-fighters unconscious on the floor, was believed to be only minutes away from death.

National statistics regarding fires in student accommodation are not available, but this incident in Merseyside is certainly not an isolated example. Indeed, South Yorkshire Fire and Rescue Service, who cover the university city of Sheffield, have reported that their fire-fighters attended 115 incidents in student properties during 2011. Three quarters of these were false alarms, the rest were nearly all kitchen fires.

Of course education helps; and many fire and rescue services, in conjunction with university support staff and students' unions, provide fire prevention advice to young people - especially during 'fresher's week'. This will stress the essentials of good housekeeping and explain the importance of emergency procedures and inbuilt fire safety equipment such as fire alarms and extinguishers and the need to ensure that door closers are not bypassed.

Worryingly, this activity is coming under threat as some fire safety teams, with reduced resources, are apparently cutting back on this worthwhile work.

At the same time, however, the types of buildings being used to accommodate students are changing as the boom in higher education coincides with a general housing shortage and escalating property prices.

All these factors are leading growing numbers of fire safety experts to raise concerns about the increasing fire risks in student accommodation.

Importantly, they are recommending automatic fire sprinkler systems as the most effective and efficient way of protecting both lives and property in this sector; and many Chief Fire Officers are asking questions of developers who, on behalf of governing bodies, fail to include such protection in new buildings.

Types of Accommodation

Either on or off campus, in simple terms, the market can be divided into three distinct types of properties:

- Halls of Residence
- Private Managed Accommodation
- Private Housing

Unfortunately, the quality of accommodation - particularly private housing and bed-sit type accommodation - can vary tremendously as costs fluctuate from town to town leading, in some cases, to students accepting quite shabby and sometimes unsafe property.

High Rise Blocks

Increasingly however private blocks now dominate the market for student housing. They are more lucrative than 'apartments' as developers can cram layers of small cabins, rather than space-devouring individual flats, onto relatively small footprints and sometimes awkward sites. Moreover, hi-rise living is now increasingly being experienced by many of today's students. One such property is the Nido building in Spitalfields which, it is claimed, is the tallest and largest student accommodation block ever built. Completed in 2010, it towers 33 floors over London's Spitalfields market and provides accommodation for over 1200 students.

Manchester now has own rival claim to the tallest student block; with the recently completed skyscraper close to the city's Oxford Road railway station and within minutes of both the University of Manchester and Manchester Metropolitan University.

This structure consists of four separate towers each of differing heights – but with the tallest being 100m



to the topmost floor. Greater Manchester Fire and Rescue Service was closely involved in the design of this building and successfully argued the case for the installation of an automatic fire sprinkler system, designed and installed to BS 9251: 2005, throughout the building.

Sprinklers for Property Protection and Life Safety

Fire sprinklers were invented almost two hundred years ago; however, until fairly recently were used primarily, for property protection purposes in large commercial and industrial premises only. They have been a key tool of the insurance companies, worldwide, for reducing fire risks in buildings.

It was not until the latter part of the 20th century when developments in the USA, combined with a growing interest from UK fire & rescue services, saw sprinklers evolving as a 'life safety' tool - especially for domestic and residential properties where most lives are lost.

Laws Requiring Sprinklers

In some circumstances in the UK, legislation requires fire sprinklers to be installed in residential buildings; however, currently the rules can differ depending on where the building is located and other circumstances - some of which can be controversial - but will often relate to the height of the property. In Scotland, for example, it is likely that any new 'high rise' building (i.e. a building with a floor over 18m) used for student accommodation will have to be sprinkler protected, but this may not always be the case in England.

Furthermore, in Wales, regulations are currently being prepared under the Domestic Fire Safety (Wales) Measure 2011. From a date expected to be set in (probably) September 2013, these will impose requirements to protect new 'residential buildings' with automatic fire suppression systems; and - whether they are high rise or not - are likely to include those used for student accommodation.

Alternative Approaches and Flexible Design

Consultation with local fire & rescue service fire safety and engineering experts is, therefore, essential. However, early consideration to install fire sprinklers in any new development is always strongly recommended and can often result in allowing for more flexible design of buildings and even financial savings.

At the University of Stirling, work has recently started on a multi-million pound project to provide new student accommodation. The development will create 788 bed spaces in total over the next three years and will include one five and two seven storey buildings. Significantly, these buildings will be protected with residential fire sprinkler systems throughout.



University of Stirling, existing building

Close co-operation with officers from Central Scotland Fire & Rescue Service has not only achieved the inclusion of superior levels of fire protection for students inside their new accommodation but also, as a result of an agreed relaxation to install new fire-fighting water mains and hydrants, significant financial savings and other benefits.

Business Continuity

It should always be appreciated that UK fire safety laws seek to ensure only *minimum* standards of fire protection for the safety of persons in and around buildings. However, this does not include fire-fighters involved in fire suppression activity. Furthermore, they are not formulated to protect property.

Consequently it must be appreciated that by simply complying with fire safety legislation a building owner might not be adequately protecting either the building or his/her future business activity. Fire sprinkler systems protect lives, property, the environment and will significantly reduce the risk of future business disruption from unwanted fires.

Where a PFI or similar contract is in place requiring a property developer to make available an accommodation building, the loss or non-availability of the building would have serious financial consequences.

CFO/BRE Report 2012

The financial implications of any building project is always going to be of prime concern; and the perceived cost of installing a sprinkler system is usually cited by developers as the main reason for not including this form of protection in new projects.

Nevertheless, the situation regarding costs is changing and evidence is available that shows the true costs of fire sprinklers are often less than imagined.

Apart from the opportunities that can often be secured to save costs elsewhere (as shown by the University of Stirling example) a report published in November 2012 by BRE Global on behalf of the Chief Fire Officer's Association (CFOA) provides new evidence regarding the cost benefits of residential fire sprinkler systems.

This report: '*Cost Benefit Analysis of Residential Fire sprinklers*' is an update of a previous study and of particular relevance here is that the research and analysis concludes that along with residential care homes:

"residential fire sprinklers as additional safety measures are cost-effective for:

- *most blocks of purpose built flats and large blocks of converted flats where costs are shared*
- *traditional bedsit type HMOs where there are at least six bedsit units per building and the costs are shared."*

This important piece of work makes the case for sprinklers now stronger than ever.

In September 2011 a chip pan fire occurred in a student accommodation block at the University campus in Devon Avenue, Cheltenham. The recently extended 3 storey block had been fitted with a residential sprinkler system as a requirement of Building Regulations to allow for a reduction in the boundary separation between it and a neighbouring building. Fortunately the fire occurred in the part of the premises which only days before the fire had



Extent of damage in Cheltenham student accommodation, 14th September, 2011

been fitted with sprinklers. The fire was extinguished by the actuation of just a single sprinkler head and damage was confined to light smoke damage and water on the floor. The accompanying photograph testifies to the effectiveness of the sprinkler system.

In January 2012 a fire sprinkler system operated in a building accommodating students studying at Aston University. A fire had occurred in the kitchen area of one of the student 'pods' in the newly built 6 storey block in Bagot Street, Birmingham. When they arrived, West Midlands' fire crews discovered the fire to be "out on arrival" as one head of the sprinkler system had activated and extinguished the fire.

A blaze broke out in a kitchen at Stafford University Halls of Residence. Fire-fighters were called to the scene extinguished the fire. An investigation discovered that ignition was accidental and caused when a sheet, being used by students for filming, fell onto some spotlights.

Undergraduate Nick Lawrance was presented with a 'certificate of appreciation' by fire-fighters for his actions at the scene of a blaze at Stephenson Hall of Residence, Broomhill, Sheffield. Nick and a friend bravely dragged a fellow student from his bed after smelling smoke coming from his bedroom. The bedroom had filled with smoke when a pillow placed too close to a lamp caught fire. The rescued student had returned from a night out in the city and did not wake up when the fire started.

TWO students who left a pan of food unattended at their flat in Manchester had a visit from three fire engines when their cooking burst into flames. Fire crews from Gorton and Moss Side were called to a second-floor flat within a block of apartments on Grafton Street in Moss Side. When they arrived two men aged 23 and 19 were on the balcony of the property suffering from smoke inhalation. Fire-fighters wearing breathing apparatus used two hose reels and a foam fire extinguisher to tackle the flames and put them out. The fire, which involved food in a frying pan, had spread to the extractor fan and left the flat and second floor corridor smoke logged.

The NHBC Foundation study 'Open plan flat layouts - Assessing life safety in the event of fire' was produced following a study examining the options for satisfying the requirements of the Building Regulations. It addresses layout, size, travel distances, enhanced detection options and sprinkler use. In addition it addresses the human implications, including the various reactions, wake up and response times from people occupying the building.

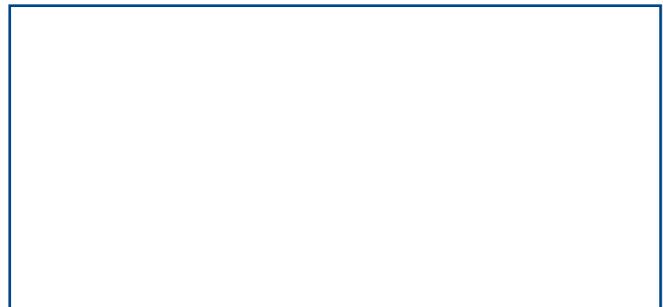
This important report provides additional evidence of the effectiveness and reliability of using modern residential fire sprinkler systems in conjunction with automatic fire detection. One of the main conclusions of the study was:

- *"These results indicate that open plan flats with a sprinkler system (in accordance with BS 9251 or BS EN 12845 as appropriate) and an enhanced detection system (LD1 system in accordance with BS 5839-6) can provide a level of safety that is at least as good as that of a similar AD B compliant design."*

In addition the NHBC Foundation Report comments about the reliability of fire sprinklers:

- *"It has been assumed that sprinklers will always operate (provided the sprinkler head reaches its activation temperature) and will always extinguish the fire once they have operated. While this is optimistic, it is likely not to be too unrealistic. Correctly maintained sprinkler systems have a very high reliability. Estimates vary, but the reliability will almost certainly be better than 90%. Sprinklers should at least prevent a fire from growing larger even if they do not succeed in extinguishing it once they have activated"*.

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