



Social security

A recent seminar explored some of the key concerns in high-rise social housing – from unusual fire spread to different floors, to the risks posed by unclean extract ventilation. **FRM** reports

FIRE SAFETY in high-rise social housing is a major talking point in the UK fire safety industry at present. The fallout from last year's tragic fire at the 12-floor Lakanal House block continues to be felt – the incident prompted widespread concerns over substandard fire safety provisions and fire risk assessments in council high-rises. At the same time, local authorities are under mounting pressure to meet the *Decent Homes* initiative, a minimum standard that is seeing councils upgrade their housing stock to ensure it is free of hazards and in a reasonable state of repair.

Tapping into this continuing area of debate, Swiftclean (UK) held a seminar on 15 October to examine fire risks in residential high-rise buildings and the actions that councils and other stakeholders can take to tackle the problem.

The *High rise, high risk* event was attended by senior figures from social housing, councils and housing associations, as well as organisations that manage council homes across many local authorities. It explored four main issues:

- the common causes of fire spread in high-rise housing
- selecting a competent fire safety risk assessor
- maintaining communal ventilation systems and fire safety modifications
- the retrofitting of pressurisation systems to escape areas of high-rise housing

Unusual fire spread

Dr Chris Foster, of forensic investigation practice Burgoyne's, set the scene by outlining a number of high-rise fires and the information they provide

about what he called 'the unusual and alarming mechanics of fire spread'.

He examined incidents at two commercial buildings – a multi-fatality fire at the Jodma building in Sao Paulo, Brazil, in 1974, where fire spread up the outside of the structure; and the blaze at Telstar House in Paddington, west London, in 2003.

Focusing on the latter incident, he described how there was significant flame emission from windows in the 13-floor office building: 'It is thought that flame height increased as window blinds ignited, and this, together with considerable ventilation, created a "cascade effect", which led to the fire spreading from the 7th floor (the floor of fire origin) to the 12th floor.'

One might think that the risk of fire spread would be worse in modern offices than in residential blocks because many commercial structures have open-plan layouts and limited compartmentation, said Dr Foster. However, there have been a number of fatal fires in high-rise social housing – in particular, the Harrow Court blaze in 2005 and last year's fire at Lakanal House – where fire spread from the flat of fire origin to other

“ Burning fragments may have started smaller fires on the outside of lower floors, igniting net curtains ”

floors, placing more residents at risk and causing greater structural damage.

At Harrow Court, an 18-floor residential block in Hertfordshire, the fire started in the lounge of a flat on an upper floor and spread upwards outside the building to involve the flats above. There was also fire spread through ventilation ducts. One resident and two firefighters died in the flat where the blaze started. In addition, it is thought that firefighting water cascaded down through the structure, sparking a secondary electrical fire.

External fire spread was also a feature of the Lakanal House fire in south London. Dr Foster explained how the blaze moved from a flat on the 9th floor to engulf parts of the 11th floor, while drafts also caused burning fragments to start smaller fire on the outside of lower floors. 'It is possible that windows in these lower flats were open and that the burning fragments ignited the net curtains within,' he suggested.

Structural precautions

Moving on to fire protection measures, he gave an overview of relevant regulations and guidance – including Approved Document B to the Building Regulations in England and Wales, the Regulatory Reform (Fire Safety) Order 2005, the Housing Act 2004 and *Housing – Fire Safety*, the guidance produced by Local Government Regulation (formerly LACORS). Much of

this is concerned with means of escape and structural fire precautions – for example, separation within and between dwellings, and the use of fire-stopping and cavity barriers to prevent fire spread in ducts, voids, service risers and common areas.

Warning that 'fire will expose deficiencies in structural fire precautions, with potentially serious consequences', Dr Foster emphasised the need to:

- ensure requirements for compartmentation are maintained
- fire stop service risers and services that penetrate walls and floors
- construct sealed voids from appropriate materials and ensure adequate fire stopping
- ensure ducts are properly insulated and separated from combustible material
- avoid the unnecessary use of combustible materials in voids

Risk assessors

Attention then switched to the need for effective fire risk assessments, as required by the Fire Safety Order, with Simon Ince of Warrington Certification arguing the case for a national register of competent fire risk assessors.

Mr Ince explained that the lack of suitable and sufficient risk assessments often features in the prosecutions and fines being imposed on companies and individuals for breaches of the Order. Referring to the substantial



fines handed out to a number of large and often multinational companies, he said that 'if the big names get it wrong, then it likely that many small and medium-sized business will too'.

An estimated 40% of audited risk assessments are found to be unsuitable, he said, going on to warn of the dangers of cheap, substandard risk assessments carried out by people who do not possess the required levels of competence.

There are a number of professional registers and certification schemes for risk assessors – run, for example, by the Institution of Fire Engineers, the Fire Industry Association and Warrington Certification – but, argued Mr Ince, the introduction of a single, national register holds a number of benefits.

'A national register of approved competent assessors who are third-party accredited would give peace of mind to those owners and managers – including those in the social housing sector – who appoint a professional fire risk assessor in order to meet their own legal responsibilities.

'Such a register – as proposed by Warrington – would help marginalise "cowboy" assessors and would offer safety and assurance for the user. It would include a technical capability reference of the assessor, professional indemnity of all assessors, and a code of professional conduct to ensure all ethical and professional protocols are followed and maintained.'

Local councils face pressure to upgrade ageing housing stock at a time of budgetary cuts





Recent high-rise incidents have illustrated the risk of external fire spread between floors

Fire industry organisations are currently looking at the merits of the proposal, and it seems to have initial backing from the Government, with Fire Minister Bob Neill MP having stated: 'there would appear to be real benefits to responsible persons if it were possible for the sector to develop and publicise a single register.'

Extract ventilation

The specific risks posed by unsafe and poorly maintained ventilation ducts in high-rise blocks was the next area of discussion.

Martin Hembling, group sales director of Swiftclean (UK), described how communal extract systems maintain

air quality by removing moisture and odours. They are generally found serving internal bathrooms, kitchens or toilets where there is no open window.

Most designs have fans on roofs connecting to each flat via ducted systems. However, in the event of a fire in a flat, the dirt and debris that accumulates in the ductwork over time could ignite and contribute to the spread of fire and smoke through the extract system.

As a result, it is important to have a regular monitoring scheme in place, said Mr Hembling, to ensure that ventilation ducts have the required level of fire resistance and are in good working order. In particular, he stressed how the regular cleaning of extract

systems and the installation of fire blocks can help to prevent a fire spreading to adjoining flats.

And yet, this is a measure that many building managers fail to appreciate. As Mr Hembling explained: 'We have an ageing housing stock, with most residential blocks 40 or 50 years old. The mechanical equipment in them is old too – indeed, many fans serving communal extract systems may need overhauling. At the same time, there is often an *ad hoc* approach to maintenance or none at all. The result is that many ducts are not cleaned properly and may be clogged up with potentially ignitable material.'

He went on to recommend that such systems be monitored every two years, adding that the need for inspections and maintenance of the ducts should be included in the building's fire risk assessment.

'There should be checks behind grilles and cleaning as necessary, as well as checks on fire-rated intumescent blocks, fire dampers, intumescent valves and shunts,' he advised.



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The need for regular maintenance of extract systems was emphasised at the seminar

Smoke control

Finally, Jim Wilde of Flakt Woods explored the benefits of smoke control systems in providing safe means of escape from high-rise residential buildings – and the value of pressurised systems in securing smoke-free escape routes. ‘Smoke must be prevented from contaminating escape routes – the

corridors, lobbies and stairwell of high-rise buildings – or, if this is not possible, be quickly and reliably removed from these escape routes to maintain visibility,’ he said.

He outlined the two main methods of smoke control: natural ventilation involving smoke shafts and vents; and mechanical/powered systems that use pressurisation.

A BRE report, *Smoke ventilation of common access areas of flats and maisonettes*, issued in 2005, underlined the importance of smoke control systems to help residents evacuate safely from high-rises and assist firefighting operations. It concluded that:

- if exposed to smoke from a dwelling for more than a short duration, the adjoining corridor/lobby can be expected to become smoke filled
- without appropriate smoke control measures, neighbouring corridors/lobbies and stairwells can be expected to become smoke filled

The report went on to argue that powered smoke control methods are

more reliable than natural methods. In particular, it said that, ignoring adverse wind or building stack effects, natural venting methods via either window vents or into a vertical smoke shaft can protect the stair very well – but only the stair. They leave the corridor and lobby smoke filled.

However, suitably designed mechanical systems can provide protection to the stair that is ‘resilient to adverse wind and building stack effects’. This can be achieved by depressurising the corridor/lobby relative to the stair, or by directly pressurising the stair relative to the corridor lobby. By careful design, mechanical methods can also provide a degree of smoke control in the common corridors and lobbies.

The seminar provided a good insight into the issues that look set to dominate the social housing sector for the foreseeable future, as housing managers and others continue to grapple with managing risk in often ageing housing stock at a time of cuts to local authority budgets ■

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