

High profile

England's first sprinkler installation in a high-rise apartment building proved its worth during a recent fire. Chris Lowe explains

NORTHAMPTONSHIRE FIRE and Rescue Service recently answered a call to a sprinkler activation at Northampton House, the first high-rise apartment building in England to have sprinklers installed (see *FP&FEJ*, March 2003, p.48).

On 18 July 2005 at 5.38pm, the service's control room received a call from ADT alarm centre in Manchester, advising of an alarm and sprinkler operation at the ten-storey building, a former office block which now contains 189 luxury flats. Two appliances were mobilised and the first one was in attendance three minutes later. By 5.45pm, fire control was informed that a chip pan had caught fire in a flat on the fourth floor and the flames had been extinguished by the sprinkler system before the arrival of the fire service.

The investigation of the incident found that one of the occupants of the flat had inadvertently left a pan containing about 25mm of cooking oil on an electric cooker ring, which was switched on. She sat in the combined lounge/kitchen area with another woman and a baby but soon became aware of the smell of burning. The occupant lifted the lid of the pan, which caused the oil to ignite. She then poured water onto the fire, which produced flames reaching to ceiling height.

After ensuring the other person and the baby evacuated through a nearby door, the occupant found herself being showered by the activating sprinkler head. It seems very likely that the fire was extinguished before the fire crew had even left the station.

The sprinkler head was not centrally sited in the kitchen but offset away from the cooker. The kitchen formed part of a lounge/diner combination, with a single concealed sprinkler head covering the kitchen area and sited about 2.5m from the wall, against which the electric hob was built into the kitchen worktop. The ceiling height was about 2.3m from floor level. The lounge/diner area had additional concealed heads to that which covered the kitchen.

Once the sprinkler had activated, it was supplemented by a booster pump, which continued to deliver water to the head until isolated by fire service personnel. Since the water supply was not limited, as may be the case in a domestic house, there was a considerable output of water into the flat.

Salvage operation

The floor was not constructed of solid reinforced concrete, but was an *in situ* floor built from terracotta pots, honeycomb and concrete. It was therefore a floor that did not form part of the loadbearing outer walls but simply butted up to them, offering the potential for water to travel to the edge of the floor and then below. The honeycomb and screed construction also allowed the egress of water through any weak spots in the screed.

Fire crews quickly turned their attention to salvage and damage limitation in adjoining and other flats. Water had entered five flats on the floor below and three flats two floors below the fire flat. Generally, salvage operations ranged from mopping the floor dry and isolating electrical supply, to giving advice and reassurance to residents.

The water had collected in pools, with no single floor or room completely covered in water. Water had entered the electrical system in seven of the flats and electricians advised that 24 hours should be allowed for the wiring to dry out before checking and switching back on.

Forced entry was made to five of the flats, since one was unoccupied and the occupiers of the others were unavailable. This was carried out with the assistance of a local locksmith, who

was able to open the doors with a minimum of damage and re-secure them before leaving. A police officer chaperoned the operations for the protection of both occupiers and the entering fire service personnel. There was no lasting damage to other flats in the building.

Protecting life and property

Chip pan fires have a devastating potential, not only in terms of destroying property but also in taking people's lives and posing risks to members of the emergency services. Had this flat not been sprinkler protected, the likelihood is that the occupants would have evacuated and responding firefighters would have faced a well-developed compartment fire on the fourth floor of the building, with all the potential of a back draft situation, little opportunity for ventilation prior to entry, and all the hazards such a situation presents.

In the worst-case scenario, the occupants of the flat may have been unaware of the fire development until it was too late. Had a fire developed in this flat without the knowledge of the occupants, the sprinkler system would almost certainly have made this a survivable fire in the home. This adds a whole new dimension of protection to those not at home when a fire starts, and to those who may be asleep and unaware when a fire does break out. Had the occupants chosen to do so, they could have taken remedial action to dry out some of the contents of the flat and not had to leave as a result of the fire.

Sprinklers, which are widely advocated in industrial premises, predominantly to save materials and business, will also save life and property in the home. With the majority of fire deaths occurring in the home, it is time providers of domestic and residential accommodation of any type, moved sprinkler protection up the list when considering safety priorities.

Northampton House is an excellent example of the potential benefits that can be realised from early consultations between all parties involved in a construction project, including developers, building control and the fire authority. Such an approach may not only result in financial savings for the developer and enhanced fire protection for the building occupiers and firefighters, but may also allow the designers and architects to achieve greater innovation in the design of even the simplest of buildings □

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Further information on the Northampton House project is available from Trinity Services Northampton Limited on tel: +44 (0)1604 459 776; e-mail: trinitysprinklers@msn.com

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Conversion project

THE MAJOR building project to convert Northampton House from a the ten-storey office block into a residential block providing luxury flats, was undertaken in 2001. The building was built in 1973 as an office block with open-plan offices on each floor, and was originally occupied by the County Council before it moved to a new headquarters. The building clearly required considerable refurbishment if the fire safety requirements for residential premises were to be met.

To comply with the relevant regulations, a number of significant improvements needed to be made to the building. These included the installation of a second firefighting shaft and mechanical ventilation of the existing firefighting shaft. Also, due to the proposed internal design, the original windows had to be removed.

Due to the complexities of site access and internal arrangements, a domestic fire sprinkler system was recommended in the early stages of the proposal. It was considered that the installation of a fire sprinkler system would reduce the risk to an acceptable level and maintain a reasonable degree of protection for both residents and firefighters.

Close liaison between Northampton Building Control and Northamptonshire Fire and Rescue Service Fire Protection Department was instrumental in helping to reduce the risks both to residents and to firefighters in the design stage.

With the developers persuaded that a sprinkler system would provide the most cost-effective means of satisfying the requirements of both building control officers and the fire authority, a system was selected and installed at a cost of £150,000. Trinity Services, a Northampton-based company, installed, commissioned and certified the 189 luxury apartments.

The system comprises a 3,300-litre water storage tank with an electric pump, which is housed in an area of the underground car park. The system is able to supply water to a maximum of three sprinkler heads for three minutes. Concealed fast response heads cover all risk areas, with each apartment containing six or seven heads. All heads are linked to a central computer.