

New Civil Engineer

Grenfell Tower fire | Key questions raised

15 June, 2017 By [Katherine Smale](#)



The horrific [fire in the Grenfell residential tower in North Kensington yesterday](#) has sent shockwaves through the industry. Given the building was so recently refurbished, questions will now be asked about just how the fire was able to spread so quickly.

The 24-storey reinforced concrete tower was built in 1974, however it recently underwent an £8.6M refurbishment to install new insulated exterior cladding, new double glazed windows and a new communal heating system. Planning documents say the intended cladding is was an 'aluminium composite material rainscreen panel' - two aluminium cover sheets filled with a polymer core.

Investigations are already underway and will try to establish the cause of the fire and understand the factors that enabled it to spread.

Aside from official investigations, the engineering and building sector is also raising its own questions.

A key question is whether fire regulations have been adapted to learn from previous disasters.

Specialist fire consultant Mosen managing director Fathi Tarada says the UK is behind the curve when it comes to fire regulation having been overtaken by the Middle East. He said after the fire in the [Address Tower in Downtown Dubai in 2015](#), it updated fire regulations to ban all combustible cladding panels and questions why the UK has not followed suit.

“We’re now in the situation that the external cladding regulations are tighter in Dubai than in the UK and we need to learn from this as a matter of urgency,” says Tarada.

“With fire regulations, unfortunately, you wait for people to die before you change them - it’s that extreme.”

While he says aluminium is not considered to be combustible, in fires which go over 600°C, it is.

He suggests tight-knit nature of the apartments at Grenfell Tower may have fuelled the fire with little ventilation to keep the temperature of the fire down.

“If you’ve got a box and set fire to wood in it and you’ve got some air flow through the box, temperatures will stay reasonable say around 200 degrees,” says Tarada. “But if you tighten up the gaps but have some gaps for air so you have an under-ventilated fire, then it can get really quite hot.”

Again, he says lessons should have been learnt after Lakanal House fire in Camberwell, London in 2009. In the coroners’ findings it was suggested the government update fire regulations, especially with respect to tall residential buildings.

“After Lakanal House fire the coroner suggested the government review building regulations and look carefully at fire detection, fire compartmentation, fire suppression - but I don’t think we’ve moved very much further with this,” he says.

“Fire suppression [such as a sprinkler system] wasn’t installed, and in my opinion that’s a mistake. Yes they are expensive, but there systems which offer good protection for relatively modest cost.”

A spokesman for the Department for Communities and Local Government told New Civil Engineer it had acted on the [coroner’s suggestions after the Lakanal House fire](#), including writing to local authorities to ask them to consider retrofitting sprinkler systems and simplifying Part B of Building Regulations which covers fire.

Other factors may also have played a part.

Consulting Engineers senior partner John Knapton says open windows due to the hot weather may have drawn the fire into the building and curtains may have ignited, further fuelling the fire.

Knapton thinks it unlikely fire separation systems between the flats would have failed as rapidly as the fire was allowed to spread.

“From a structural engineering point of view it would seem very unlikely that this was a fault of the fire protection from a dwelling to dwelling, floor to floor,” said Knapton. “The spread of the fire appears to have been facilitated externally rather than internally. That doesn’t mean the cladding material itself is causing the fire, but it has spread through the façade.”

Despite being severely damaged, Grenfell Tower did not collapse. This may be in part due to regulations brought in after a gas explosion in Ronan Point tower in 1968 caused one corner of the building to progressively collapse.

Built six years after that, the tower will potentially have been designed to incorporate horizontal ties which hold the building together and prevent a collapse disproportionate to the cause.

The contractor for the recent refurbishment of the Grenfell Tower was Rydon. Its chief executive Robert Bond said: "Rydon completed a partial refurbishment of the building in the summer of 2016 for Kensington and Chelsea Tenant Management Organisation on behalf of the Council. The project met all required building regulations and handover took place when the completion notice was issued by the Department of Building Control, the Royal Borough of Kensington and Chelsea. We are working with the relevant authorities and emergency services and fully support their enquiries into the causes of this fire."

New Civil Engineer's sister publication *The Architects' Journal* has launched a JustGiving page to help victims of the fire. You can donate [here](#).

Readers' comments (1)

- [peter claridge](#) 15 June, 2017 9:55 am

It's the building that's insulated - NOT the cladding!
