

FUTURE TECHNOLOGY *AND FIRE PREVENTION*

With the introduction of IoT-based systems and misting products, the real pioneers of alarm systems lie in more advanced technology

The Grenfell Tower Tragedy left a path of devastation in its wake that extended far beyond the building's smouldering foundations. The entire nation was left reeling as questions regarding the integrity and safety of many buildings across the UK were brought to the attention of the British government, who were swift to take action to prevent another tragedy like this taking place.

One of these measures was the Waking Watch Relief Fund: a government-funded scheme which seeks to cover the installation costs of alarm systems in high-rise buildings with subpar cladding, like Grenfell Tower, to alleviate the pressure on waking watches to maintain the building's integrity against fire. Waking watches are fire safety precautions undertaken by trained staff in which they patrol the building, visually confirming and documenting any risks to life from fire.

This fund received a £27m boost recently, taking the total funding up to £57m, but the longevity and reliability of this system has been met with some scepticism.

The Waking Watch Relief Fund encompasses around 281 UK buildings, which by no means is a discreditable number, but 800 other buildings across the country are still reliant on waking watches for their fire safety – an 85% increase in less than a year. At this startling rate of growth, soon the demand for an overhaul of fire precautions will exceed the funding that the scheme can provide.

The Scottish Tolerable Standard legislation earlier this year saw every property be required to install an interconnected fire and smoke alarm system. If one alarm is triggered, every other alarm in the network is subsequently activated, alerting everyone in the building of the impending fire threat as soon as possible. ➔

Adequate carbon monoxide prevention is also mandatory in buildings with flue-burning appliances or if flues can be found on the property.

Many in England are calling for similar legislation and the Government have unveiled a response in urging landlords to comply with new building regulations set out by them in response to the Grenfell Tower disaster. The rules enforced by the new Scottish Tolerable Standard may serve as an excellent tutor and guideline for any potential changes the government may continue to make in the future to ensure the safety of those living in risk-averse buildings across the country.

But while these schemes and legislations pave the way for a safer Britain, the pressure is now on for fire safety companies to capitalise on this to produce technology that is not only effective at preventing fire but is also cheap to manufacture and install. There are many promising avenues that technology is heading down for the future and while some of these solutions appear to be ripped straight from science-fiction, we are not too far away from this exciting reality.

AI AND IOT

One modern method of fire prevention that is beginning to become readily available now is the introduction of AI and IoT (Internet of Things) integrated fire systems. While interconnected smoke alarms have been required in UK homes as far back as 1990, it was only in 2019 that the regulations were updated to include rental properties.

Installation of these systems can prove to be cost ineffective, however, as often manual wiring is required to be laid in the property to connect additional alarms. This wiring is often left exposed, further placing them at risk of wear and tear and eventual non-functionality.

However, with the rise of wireless systems in recent years, installation of

"In as soon as 10 years, the entire face of firefighting and prevention could be changed irrevocably for the better"

these have proven themselves to not only be easier to install, but also less costly. With AI and IoT integration, installation is as simple as connecting the alarm to the network; the added unseen benefit is that additional wireless systems such as panic buttons and health monitors can be assimilated under one hub, so that more vulnerable residents will be able to live more independently while cutting additional costs on the landlord's side.

The added benefit of smart alarm systems is that they are connected not only to every device in your home but also possess the additional option of connecting beyond the property. Should a fire occur inside the building, the network of smart alarms can automatically inform the local authorities to the fire, ensuring swift and decisive action as soon as it occurs. These same systems can also send an alert to a resident's phone, allowing them to take appropriate action whether they are in the building or elsewhere.

Smart alarm systems are markedly more self-regulating when compared to more archaic and conventional manual systems, as they are able to identify and notify of any connectivity issues in real-time. Older systems require visual inspection to ensure they retain their functionality, which can be time-consuming and costly. Manual maintenance cannot happen regularly enough to identify a problem as soon as it occurs without hemorrhaging money,

so smart systems succeed their predecessors in this way.

Integration with other alarms in larger buildings will also prove instrumental in directing individuals away from the location of the fire, as the many different installations communicate with one another through the network. This ensures that inhabitants will be provided with safe passage towards an exit, while not relying on the individual's prior knowledge of the building's layout. This could be communicated to residents by increasing or decreasing the pitch or volume of the alarm depending on their proximity to the fire.

WATER MIST SYSTEMS

Rivalling a more traditional fire sprinkler system, water mist systems may be the way forward when it comes to combating fire while minimising the financial fallout. As opposed to the former, which utilises larger streams of water, misting drastically reduces water use by up to 90% while being more efficient in eliminating fire.

Upon activation the system uses a microscopic particle spray of clean, deionised water to produce a dense mist over the fire that covers a greater surface area than conventional sprinklers, cooling the fire but also restricting the intake of oxygen to it. The absence of chemicals in the system also allows the mist to be dispersed freely in occupied areas without any risk of collateral damage.

With the potential transition away from sprinkler-based prevention and into misting systems, costs will drop considerably as water usage decreases for the property owner, as well as any potential damages caused by excessive water from sprinkler systems. It is also environmentally friendly, as less water is siphoned away for usage combating the fire. The non-conductive nature of the mist also guarantees safe implementation during electrical fires and on delicate equipment such as books or records. ➔

SOUND WAVE EXTINGUISHERS

Fire extinguishers that use sound waves to combat fires were once an idea cast into development purgatory for many years, advancements made in technology have finally enabled the production of a functional, portable prototype.

These extinguishers employ low-frequency sound waves to completely suffocate the flame, much in the same way that you might blow out a candle but on a greater scale. These sound waves, while on the lower frequency of the human hearing spectrum, are not harmful in the same way that sound-based riot control devices are.

The benefit of this technology is that the emissions are clean, safe and don't require refilling, which enables a more universal usage when compared to conventional fire extinguishers. Sound wave extinguishers also leave behind little mess which eliminates any further damages caused to equipment.

Despite this, there are still flaws in the device that is preventing it from reaching the final stages of mass production. One of which is that the flame is at risk of reigniting as soon as the device is turned off, which could pose a serious threat to life and exacerbate the fire.

One proposed use for the sound wave extinguisher where it could thrive is in a place where there is no oxygen at all – the void of space. Fires in space are often even more threatening than they are in atmosphere and traditional extinguishers have trouble targeting flames, as their contents are strewn about everywhere in a vacuum. Sound waves have no trouble travelling in a space devoid of air, which could prove to be invaluable for astronauts on EVA missions.

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ADAM JURKA, NATIONAL SALES MANAGER, RAMTECH



Following the Grenfell Tower fire tragedy, finding a solution to the cladding crises that avoids costly in-person 'Waking Watch' patrols has

been a top priority. Adam Jurka, national sales manager at wireless technology provider Ramtech, discusses how an innovative new partnership using its WES3 temporary wireless fire alarm system is providing an alternative solution to protect residents in buildings with dangerous cladding, until replacement is carried out.

In the years since Grenfell, it has been proven by government statistics that the cost of employing a foot patrol undertaking 'Waking Watch' duties exceeds the average cost of installing an alarm system in three to seven months.

This is why Ramtech, a global participant in the fire protection technology space, has partnered with Intelliclad, which incorporates its innovative EN54-25 compliant WES3 wireless fire alarm solution. With Intelliclad, Ramtech's wireless fire alarms are placed in the external cladding façade to monitor and protect 24/7, so that in the event of a fire, an alert can be sent to all residents via a smartphone app, in addition to the main alarm system within the building, in compliance with BS 5839-1 L5. Each Ramtech WES3 alarm is also uniquely numbered, to be able to precisely pinpoint the exact location of a fire. This is a revolutionary development for buildings impacted by the cladding scandal, by helping to facilitate the removal of costly 'Waking Watch' patrols.

Ramtech's innovative WES3 solution, which has been utilised on countless projects across the globe, including Turner Construction, has continued to earn recognition. In fact, praise was recently received from the Minister of State for Building Safety and Fire, Lord Stephen Greenhalgh, on an apartment building in Croydon. Offering real-time monitoring and alerting relevant fire authorities in the event of an emergency, the future looks bright for Intelliclad as a transformative technology in the cladding sector.

CONCLUSION

While many of these technologies lay in our not-so-distant future, they have the potential to make the world we live in one in which the fear of fire is a distant memory. The key to unlocking this new reality lies in the hands of the manufacturers working to develop this life-changing solutions.

Despite this, there are still plenty of modern options available to us now, like IoT and AI, that can help alleviate these issues and prove instrumental in paving the way for their more advanced successors. **FB**