Dignity through AUTOMATION

Richelle Sinclair, Executive Representative to the CEO at The Fire Knight, outlines why legacy protection lags modern materials and faster incident growth

For decades, the foundations of fire safety in the built environment have rested on two pillars: smoke alarms and sprinkler systems. While both serve essential purposes, they share a critical weakness: they rely on intervention that may come too late.

Traditional fire protection was designed for a different era. Buildings once used slower-burning materials, occupants were assumed to be mobile, and intervention was expected to come from householders or firefighters arriving promptly. Smoke alarms were intended simply to wake people. Sprinklers were developed primarily to protect property, activating only when flames reached high temperatures. Both assumed slower fire growth and simpler risks than those we face today.

Against this backdrop, the contrast is stark. While society has embraced innovation in every sphere, fire detection and suppression remain locked in a reactive model. If our phones, cars, and homes have all become "smart," why hasn't the same leap been made in the systems designed to protect our lives from one of humanity's oldest threats?

In the modern built environment, fires move fast. Lightweight construction materials, synthetic furnishings, and tightly sealed buildings mean a small flame can become a fully developed fire in minutes. Traditional systems were not designed for this reality.

Smart fire systems are emerging as the missing link. By detecting fires at the earliest stages and automatically triggering suppression, they buy precious time for evacuation and emergency response. Seconds and minutes make all the difference, particularly in homes and care facilities where residents may not be able to move quickly, or at all.

A confronting reality in care settings

The situation is especially confronting in assisted living and disability housing. In Australia, carers are under no legal obligation to assist with evacuation during a fire in a private, residential setting. That stark reality leaves many vulnerable people exposed, relying on systems designed decades ago for healthier, more mobile populations. Comparable frameworks in the UK and USA also stop short of requiring carers in domestic settings to assist evacuation, despite stronger rules for institutional facilities.

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On a personal note, my 83-year-old mother lives in a ground-floor housing commission unit in Brisbane. Her bedroom opens onto a balcony, but every window and the balcony itself are secured with bars. If a fire were to start in her small kitchen, the most likely ignition point, the only interior path to safety could be cut off, and she would be unable to squeeze through the barred exits. A smart fire detection and suppression system in that kitchen would dramatically increase her chance of survival by controlling the fire before escape routes are compromised. Situations like hers are far from unique, and they highlight the urgent need for autonomous, early-stage fire protection for people who cannot rely on rapid evacuation or human assistance.

Smart fire systems are about protecting property and providing dignity and safety to those who cannot otherwise protect themselves. By intervening automatically, without waiting for human action, they bridge a moral and practical gap in current standards of care.

Lessons from the specialist disability accommodation sector

Our recent association with the Specialist Disability Accommodation (SDA) sector of Australia's National Disability Insurance Scheme (NDIS) has highlighted just how critical this gap is. These facilities are home to individuals with high support needs, yet even here, fire-safety provisions often fail to go beyond the basics.

As Debbie Kindness, General Manager at NDIS Property Australia, explains: "The primary challenge is a regulatory gap. The current NDIS SDA Design Guidelines don't mandate specific fire safety measures, leaving critical decisions to voluntary or cost-based compliance, which can result in protection gaps. Retrofitting solutions like sprinklers into existing homes is also costly and disruptive. Most importantly, residents often have mobility or cognitive impairments, making rapid self-evacuation nearly impossible."

Industry culture adds another barrier. Tania Gomez, Director of Tania Gomez Consulting, observes: "Emergency management is considered during the audit process because there is a standard around it, but when I speak to providers about testing their plans, doing drills, and the requirements to do this with participants, it's largely not considered. They have a plan, but find testing it too hard, and as a result often do nothing about fire management outside of what's reviewed during audit."

Gomez notes that awareness of the limitations of traditional suppression ▸

methods is still low, adding that the biggest opportunity for change lies in "building knowledge and awareness of the dangers of fire, and creating strategies to educate and empower frontline staff in emergencies."

Provider decision-making is equally pivotal.

Nick Lukowskie, General Manager of the Equitifund Group, highlights the complex mix of factors influencing adoption: "In certain circumstances, compliance requirements, particularly those tied to building classifications, may not permit the installation of non-traditional fire systems. However, where a mandatory system is not prescribed, there is scope to apply a risk assessment and cost-benefit analysis to guide decision making. Ultimately, adopting a practical, risk-based approach provides the most effective pathway when assessing the suitability of smart fire safety systems."

Nick also notes the biggest barrier: recognition. He says: "The most pressing challenge lies not in the system's functionality, but in its acceptance and recognition as a formal fire safety solution. Building certifiers, insurers, and other governing bodies may be hesitant to acknowledge it as compliant. Without such recognition, the system risks being overlooked or dismissed despite its potential to address safety gaps in existing housing." On practical rollout, he also stresses the need for detection and suppression as an integrated base layer.

The SDA sector has become a proving ground for the role smart fire systems can, and must, play. But the lesson is not limited to one sector. If this level of vulnerability exists in specialised accommodation, it exists across the built environment.

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From alarms to smart detection

Technology is now stepping in where legacy systems fall short. The latest generation of smart fire detection doesn't just sense smoke; it monitors a broader spectrum of risk indicators.

Our own system has evolved significantly. Originally designed with broad-spectrum VOC (volatile organic compound) sensing, it has since been refined to incorporate targeted gas detection, including carbon monoxide (CO), carbon dioxide (CO^2), liquefied petroleum gas (LPG), and methane. This shift has delivered earlier, more reliable detection of both fire and explosion risks.

Instead of waiting for thick smoke or extreme heat, smart systems detect the earliest chemical changes in the environment. This allows them to trigger suppression or alarms before flames spread, giving occupants and responders a crucial head start.

Making smart fire systems mainstream

The case for smart fire systems is compelling: they save lives, protect property, and reduce risk across diverse environments. Yet adoption remains limited. Too often, they are seen as optional extras rather than standard inclusions.

Just as smoke alarms became a non-negotiable feature of modern housing, smart detection and suppression should be embedded in every new build. For existing housing stock, retrofitting must be made practical and accessible, ensuring millions of homes are not left behind.

The technology is here, the benefits are clear, and the need is undeniable. What remains is for regulators, developers, and policymakers to catch up, and for the industry to embrace a future where early-stage, autonomous response is the norm, not the exception.

Debbie Kindness concludes: "Protecting vulnerable populations requires a best-practice approach, not just minimum compliance. We must anticipate risks and act preventively. Inadequate fire safety carries profound human and liability consequences. Advanced fire safety should be a mandatory standard of care, regardless of current policy."

Richelle Sinclair
Executive Representative to the CEO at The Fire Knight