fire NZ

TE PAE CHRISTCHURCH
Tuesday 8th - Thursday 10th Sepember 2026

FPA NEW ZEALAND

The Institution of Fire Engineers
New Zealand Branch

SFPE New Zealand

NZ made

Loktronic

SECURITY · TECHNOLOGY · RELIABILITY

fire door holding electromagnets 12 & 24 VDC selectable

Standard, floor mounted, wall to door distance 114mm


A)


B)


C)

FDH40S

unbreakable universal mounting

• Low power consumption - low operating temperature • One product suits floor and wall mounting • Universal armature - offsets to 55° to suit doors opening past 90° • Wall mount extensions available • 12 & 24 VDC selectable • Push off button with no residual magnetism • Oversize armature for easy alignment • Emergency release button • Electroless nickel plated armature and electromagnet • Stainless fastenings • Full local support and back up

10 YEAR GUARANTEE*

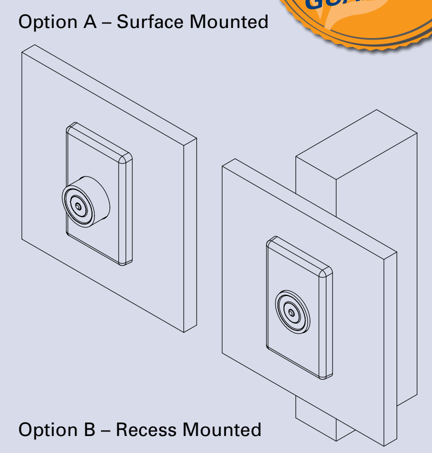
Designed, tested and produced in New Zealand to AS4178

A) Wall mounted, 126mm extn. tube (overall 202mm)

B) Wall mounted, 156mm extn. tube (overall 232mm)

C) Wall mounted, 355mm extn. tube (overall 431mm)

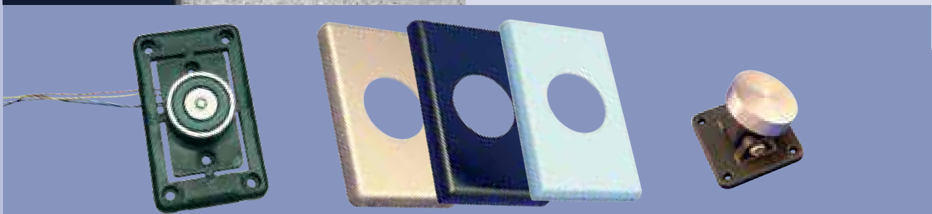
10 YEAR GUARANTEE



FDH40S/R

Surface and Recess mounting

This device enhances an outstanding range of unbreakable products which conveniently hold open fire doors. When a smoke/fire alarm is activated the magnet instantly releases the door to the closed position to prevent the spread of smoke and fire. These units feature a choice of 3 covers for optimum aesthetic appeal and durability. The installer can utilise one device for surface mounting or for recess mounting.



Satin Aluminium Gloss Black Gloss White

10 YEAR GUARANTEE*

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Loktronic

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FPA MEMBER

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FireNZ welcomes articles and letters from our readership. These can cover any aspect of fire protection, fire engineering (performance and design), legislation, fire safety practice, fire industry product development, fire fighting operations, techniques, equipment and case studies and technical news. All articles will be assessed by an editorial panel prior to publication who, at their discretion, reserve the right to either decline use of the article or seek amendments. Articles should inform, debate, educate and help our readership through sharing of both knowledge and expertise.

Themes for the upcoming magazine production will be promoted in advance of editorial committee deadlines to ensure all contributors are able to meet the final magazine delivery timelines.

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President's Message

President's Welcome

Welcome to this year's FireNZ conference, and a particularly warm welcome back to the South Island.

It's a real pleasure to have the conference return to Christchurch and to Te Pae. There is a lot of excitement about being back down here — not least the stadium tour, which I know a good number of you have been looking forward to. The South Island doesn't get the home fixture every year, so it's good to have everyone here to enjoy it.

I don't think it's lost on anyone that we gather this year against the backdrop of a deep and hard contraction across the construction sector. With that in mind, I want to both thank and congratulate everyone who has chosen to invest in this conference — whether that's through sponsorship, exhibiting, or backing your people to be here. That investment, in a year like this one, says something.

It also underlines a point worth making plainly: business in construction is no longer about simply surviving. We need wholesale change in how we think about the way we design, procure and execute our projects if the industry is to stay healthy for the long haul. Getting through the next quarter isn't a strategy. Building an industry with longevity is.

A conference like this doesn't happen on its own, and there are a few thank-yous I want to make properly rather than in passing.

First, to our sponsors. Your support is what makes an event of this calibre possible, and it doesn't go unnoticed. On behalf of everyone here, thank you.

To our exhibitors — thank you for being here and for putting the effort into your stands. My genuine encouragement to every delegate is to make the time to walk the floor, stop, and actually talk with the exhibitors. The conversations you have between sessions are often where the real value is. Don't rush past them.

To the committee, thank you for another polished event. In particular, my thanks to Scott and Elaine, who once again have done the hard yards to make it all look effortless. Anyone who has organised anything at this scale knows how much work sits behind a smooth-running few days.

On a personal note, this will be my final year as president. I want to thank everyone for the support you've shown me over the years — it has meant a great deal. I'll be honest: this was never a role I went looking for. But when someone throws you a hospital pass, you have two options. You can take it in the rib cage, or you can tuck

Justin McEntyre, FPANZ President

it under your arm and run as hard as you can with it. I'd like to think I at least ran with it.

As I hand the ball on, my enduring hope is that FPANZ remains a strong voice for contractors within our industry. Contractors have the least sway, the least power and the least influence of anyone at the table — and yet, somehow, it has become almost a sport to beat up on them. Too often, decisions and changes are pushed forward with little or no thought for the contracting fraternity, even though contractors carry by far the greatest share of the risk and the liability. That balance isn't right. My hope, as I step back, is that FPANZ keeps advocating hard for contractors and keeps working to level the scales. That advocacy matters, and it's worth protecting.

With that, I'll get out of the way. Enjoy the conference, get amongst the sessions and the exhibition floor, and make the most of the time together. And for those of you who've travelled to be here — take the chance while you're in the South Island to explore a bit more of it before you head home. It's worth it.

Enjoy FireNZ.

Justin McEntyre
President

President's Message

It has been a privilege to serve as President during another year of change and preparation for significant developments across our industry. Members have continued to contribute through technical working groups, standards development, mentoring, education, research and industry events. This generosity demonstrates the strength of our professional community and our shared commitment to improving fire safety outcomes across NZ and supporting safer buildings for everyone who uses them.

The NZ fire engineering and fire protection sector is experiencing substantial regulatory and professional evolution.

A key area of activity remains the Building Code fire safety review. The Chapter has continued discussions with MBIE and other stakeholders about improving the regulatory framework and addressing long-standing issues of clarity, consistency and implementation. This is an important opportunity to influence the future direction of fire safety regulation. Our technical feedback reinforces SFPE NZ's role as a trusted industry voice.

Alongside the Building Code review, wider building regulatory reform continues. Changes to consenting and the building system, including initiatives supporting greater use of overseas building products, create both opportunities and challenges. Fire safety must remain central to these discussions. SFPE NZ will continue advocating for innovation while maintaining public safety.

Another important development is Engineering New Zealand's new CPEng Class framework. A Fire Safety CPEng Class is currently under development and, if established, would become an important quality mark of high professional competence. I have personally been involved in supporting this work and am encouraged by progress. Specialist classes have the potential to strengthen public and BCA confidence, clarify competence expectations and recognise the specialist nature of fire engineering.

Guidance development has also continued across emerging issues. Engineering New Zealand's battery electric vehicle fire safety guidance is nearing completion following consultation and positive feedback. Work and discussions around PAS4509 firefighting water supplies, passive fire inspection practices and compliance schedule management also demonstrate our profession's commitment to addressing complex challenges.

An encouraging trend is the growing focus on building performance throughout its operational life. While design remains critical, there is increasing recognition of fire disciplines' input into SID decisions and construction fire safety management. I strongly support this life-cycle approach and expect it to continue gaining momentum.

Education and professional development remain priorities. Our relationship with the University of Canterbury continues to support future fire engineers through mentoring, guest lectures, project supervision and student awards. The growth of additional education pathways, including FutureSkills and micro-credentials, also reflects increasing demand for fire safety knowledge.

Our events programme has included webinars, technical presentations, factory tours, site visits and regional networking events. I thank our Regional Representatives, presenters, sponsors and volunteers who make these activities possible. Strong professional networks are essential to the fire disciplines', providing opportunities to share knowledge, challenge ideas and build relationships.

This year also provided opportunities to celebrate success. I was particularly pleased to see Dr

Hamish Denize , President, NZ Chapter SFPE

Paul Horne recognised through SFPE Global's prestigious 5 Under 35 Award programme.

As President, working alongside the Executive Committee, we have focused on continuing to deliver value for members. Improvements to communications and newsletters, have strengthened member engagement. I acknowledge the significant contribution of our Executive Committee, working groups and volunteers. Our achievements are the result of collective effort.

Looking ahead, the Building Code review, CPEng Fire Class development, emerging technologies, timber design, battery systems, resilience and egressability will continue shaping our profession. These challenges are significant, but they also provide opportunities for fire safety professionals to demonstrate leadership and deliver meaningful improvements.

Finally, thank you to all SFPE NZ members for your continued support. Whether you volunteer, present, mentor, contribute to a working group or participate in Chapter activities, your involvement strengthens our profession. I look forward to working alongside you over the coming year and seeing many of you at FireNZ in September and other events.

Hamish Denize President,
Society of Fire Protection Engineers,
New Zealand Chapter

President's Message

It is my pleasure, on behalf of the Institution of Fire Engineers (IFE) New Zealand Branch, to welcome you to FireNZ 2026.

Our ongoing partnership with the Fire Protection Association New Zealand and the Society of Fire Protection Engineers continues to make FireNZ a truly collaborative event. By working together, our organisations create a forum where ideas can be shared, emerging challenges explored, and collective expertise applied to improving fire safety outcomes for our communities. As our industry continues to evolve, the value of a united professional voice has never been greater.

The Institution of Fire Engineers is a global professional membership organisation dedicated to advancing knowledge, competence and professional recognition across the fire sector. Since its establishment in 1918, the IFE has played a significant role in improving fire safety around the world through education, professional standards and the sharing of technical knowledge. Today, our global membership spans more than 11,000 professionals across over 40 countries, supported through internationally recognised qualifications, professional registration, conferences, technical publications and a comprehensive programme of continuing professional development.

Over the past 12 months, the Institution of Fire Engineers has continued to strengthen its global impact through a number of significant initiatives. The launch of the IFE's new global strategy has established a clear direction for the organisation,

Scott Lanauze, President IFE NZ Branch

centred on professional excellence, innovation and collaboration across the international fire sector. The Institution also commenced its inaugural International President's Technical Conference, reinstated the Graduate Lecture and Rasbash Lecture, and delivered its first hybrid Annual General Meeting to improve accessibility for members worldwide. Continued investment in digital learning, online, examinations and professional registration pathways has further enhanced opportunities for members, while the IFE has continued to represent the profession internationally through technical engagement with governments, regulators, and industry partners on competence, higher-risk buildings and emerging fire safety challenges.

The past year has seen continued progress across New Zealand's building regulatory framework. MBIE has continued work on the review of the Building Code fire safety provisions while also releasing an updated Compliance Schedule Handbook for review. It is hoped that by providing greater clarity and consistency for building owners, territorial authorities, Independent Qualified Persons (IQPs), and practitioners responsible for managing specified systems, that fire safety will continue to be taken seriously. As our built environment becomes increasingly complex, with evolving building technologies, changing occupancy patterns, and higher expectations around accessibility and resilience, the need for a competent, collaborative and evidence-based fire sector has never been greater.

The IFE New Zealand Branch remains committed to developing the capability of the fire profession. Our examination programme continues to provide internationally recognised qualifications that support career development across the fire sector, while the ongoing expansion of digital assessment has made these opportunities more accessible than ever before for candidates throughout New Zealand and the wider Asia-Pacific region.

Two of our popular Firefighting Operations for Fire Engineers workshops have been scheduled for this summer. Through a series of practical fire scenarios, attendees gain valuable insight into fire growth, smoke movement, flashover, firefighting techniques, search and rescue, and the operational challenges faced by firefighters. This unique opportunity to experience fire dynamics and firefighting operations in a realistic environment makes the event one of the Branch's flagship professional development offerings, strengthening the connection between operational practice and fire engineering design. Check out our website for further information and how to register for these.

The New Zealand Branch continues to make a meaningful contribution to the global Institution. Our members remain actively involved in international governance, technical collaboration and regional engagement, ensuring New Zealand continues to have a respected voice within the global IFE community. The continued development of the Asia-Pacific network has further strengthened relationships between neighbouring branches, enabling greater collaboration, shared learning and mutual support throughout our region.

Closer to home, our Branch Council continues to support an extensive programme of professional development, networking opportunities and member engagement throughout New Zealand. These achievements are only possible through the dedication of our volunteers, whose passion and commitment continue to strengthen both our Branch and the wider profession. To every volunteer who contributes their time and expertise, thank you.

Finally, I would like to acknowledge our conference partners, sponsors, speakers, exhibitors and organising committee for their commitment to making FireNZ 2026 possible. Their ongoing support enables this conference to remain a leading forum for professional development and collaboration within New Zealand's fire industry.

I trust you enjoy FireNZ 2026, make valuable new connections, and leave inspired by the knowledge and expertise shared throughout the conference. On behalf of the Institution of Fire Engineers New Zealand Branch, I wish you a successful and rewarding conference.

SFRMs: Performance, Practicality and Whole-of-Project Cost

Sprayed Fire Resistive Materials (SFRMs) remain a practical and cost-effective method of protecting structural steel and other building elements from fire compared with intumescent coatings. For specifiers and applicators, however, selecting an SFRM involves more than achieving the required fire resistance rating. Material efficiency, application characteristics, labour, equipment, construction sequencing and overall installed cost can all influence the outcome.

Matching the system to the application

SFRMs encompass a range of gypsum-based and cementitious formulations and densities, allowing systems to be selected according to the building, structural elements and required fire performance.

Commercial-density products such as Southwest Type 5GP are designed for spray application to beams, columns, joists, decks and other structural elements. Their straightforward mixing, application and clean-up can support efficient installation across larger projects, with assessments including AS 1530.4 and AS 4100.

Where greater physical durability or more demanding environments are involved, high-density cementitious systems provide another option. Pyrocrete 40, for example, provides both cellulosic and hydrocarbon fire protection and is suitable for applications including industrial facilities, power plants and petrochemical environments, as well as commercial and residential buildings..

Evolving SFRM technology

Modern SFRMs are also developing beyond the traditional heavy, rough fireproofing layer. Newer formulations are addressing application efficiency, weight and environmental considerations alongside fire performance.

Perlifoc HP Eco+ is a gypsum-based fireproof mortar using lightweight fillers, also providing fire resistance of up to 240 minutes, depending on the structural element. It also carries an Environmental Product Declaration (EPD) and environmental certifications relevant to sustainable building projects.

Looking beyond material cost

For SFRMs, the most useful measure of cost-effectiveness is often installed cost, rather than the price of the material alone.

Coverage, loading, sprayability, labour, equipment wear, curing and the potential for rework can all affect project cost. A system that is efficient to mix and apply, or reduces application stages and downtime, may deliver greater value across the construction programme.

For specifiers, this reinforces the importance of considering the complete system: required fire rating, substrate, environment, application method, thickness, compatibility and project programme.

For applicators, clear specifications, accurate loading information, suitable equipment and technical support can help improve productivity and consistency.

The objective is not simply to specify an SFRM that meets the fire test. It is to select a system or combination of systems that delivers the required protection efficiently, consistently and economically across the whole project.

Minister calls for Fire and Emergency funding system evaluation

Insurance levy funding model called into question as fire incidents decline as a proportion of FENZ incident responses.

The Department of Internal Affairs has been asked by Minister Brooke van Velden to look into whether there are better ways to fund Fire and Emergency New Zealand (FENZ) than the current insurance levy system.

"95% of Fire and Emergency's income is collected from levies on property insurance protecting against the risk of fire. The Fire Service levy was introduced in 1975 and, despite changes to the core services FENZ delivers, is still the funding model used today," said Ms van Velden.

"The Fire and Emergency New Zealand Act 2017 added a number of non-fire related functions for FENZ to perform, such as responding to medical emergencies, maritime incidents, and severe weather events and disasters. Given the widened mandate, there is a valid question about whether this model is fair for levy payers and fit for purpose.

According to a statement by the minister, records indicate that between 1 July 2025 to 31 March 2026, only 59% of incidents FENZ responded to, including false alarms, were fire related.

She also indicated that free-riding, where people do not insure their property but still rely on the service, is another "longstanding issue" with the funding model.

"Given the significance of the levy, it is timely to consider whether its design and operation remain appropriate, or whether improvements are possible."

The Department of Internal Affairs will engage with targeted stakeholders and consider any problems with the current system and alternative approaches, taking into account feasibility of implementation.

This comes just one month following the May announcement that Mr Raveen Jaduram has been appointed Chair of the FENZ Board, taking over from Rebecca Keoghan MNZM, who has served as Chair since July 2021, following her earlier role as Deputy Chair from June 2019.

"I expect the Board to exercise active and rigorous governance over Fire and Emergency New Zealand's investment in fire appliances, including maintaining a clearly articulated, multi-year investment pipeline that aligns with operational needs, affordability, wider system capability, and value for money for levy payers," said the minister in announcing the appointment.

Mr Jaduram is an experienced Crown entity Chair and former public utility chief executive, with more than 30 years of senior leadership across infrastructure, water, transport, and regulated services.

"Mr Jaduram's depth of experience in infrastructure governance, financial oversight, and system stewardship will be invaluable to Fire and Emergency New Zealand and will help the Board carry out its purpose, supporting effective emergency services," said Ms van Velden.

"I would like to thank Ms Keoghan for her service during a critical period for Fire and Emergency New Zealand. She has supported the organisation through its post-amalgamation phase, strengthening its structure, and advancing important work on workplace culture and organisational integrity."

Pertronic F220 fire panel safely controls Arena's fans

The Pertronic Industries F220 fire panel was the logical choice as an upgraded replacement for an F120 fire panel at Christchurch's Wolfbrook Arena.

The F220 swap-out was the comparatively easy part of the changeover carried out by Argus Fire Protection Christchurch. The forward and backwards compatible F220 seamlessly connected to existing standalone point smoke detectors. Programming the arena's fan controls was the element which required additional expertise.

Wolfbrook Arena is the latest name for New Zealand's second largest indoor stadium which opened in September 1998 at a cost of $32 million. Depending on event type it has a maximum capacity of 9000 people.

The sports and entertainment complex is adjacent to Addington Raceway and Christchurch Stadium and is surrounded by 3000 car parking spaces.

As well as sporting events and concerts, Wolfbrook Arena hosts many annual trade shows, and is a venue for big gala dinners, lunches, balls and cocktail parties.

Back-end technical service and expertise is one of Pertronic's major marketing offers, and programming the arena's fan controls to specifically open and/or close or start and stop during a fire event was part of a contribution led by the South Island Technical Services team.

The set-up and testing of the F220's interaction with fans in five different areas of the stadium was carried out at Pertronic's Sockburn base. Once programming was proven to be 100% foolproof, the F220 was then commissioned onsite at Wolfbrook Arena.

"We often assist our contractor and installer customers with technical know-how," says South Island manager David Churstain.

"While we pride ourselves on selling an extremely easy-to-programme panel, we appreciate that setting up

complex fire protection systems may sometimes require our specialist knowledge.

"However, we consider the provision of this proficiency is all part of the package that comes with Pertronic."

The Wolfbrook Arena fire detection and protection fitout includes two LED mimics and one LCD mimic.

The LCD's fully functional graphic interface can be up to 1200 meters from the fire panel, connected through a RS485 bus. The mimics allow fire alarm professionals to monitor and control all fire panel functions at a distance. This makes regular testing and monitoring of the entire fire system much easier.

David Churstain said the Wolfbrook Arena's upgrade is one of many fire protection services offered by Pertronic in the South Island.

Most customer-ordered fire panels and peripherals can be delivered across the island within 24 hours from Pertronic's fully stocked Christchurch base.

"Our job is to make it as easy as possible for contractors and installers to do their job – quickly ensuring people and property are protected from fire," David says.

"It is as simple as that – as demonstrated at Wolfbrook Arena."

PERTRONIC ALARM SYSTEM
MANUAL / SMOKE / HEAT
CARPARK
GROUND FLOOR
LEVEL 1
LEVEL 2
PERTRONIC ALARM SYSTEM
LEVEL 1
GROUND
F5 Fire Alarm System
Terracotta Warriors

Beyond Compliance: Engineering Firewater Infrastructure That Performs

For years, firewater storage was often viewed as another item on a project's compliance checklist.

Today, that mindset is changing Across New Zealand, industrial developments are becoming larger and more complex. Distribution centres are expanding. Manufacturing facilities are evolving. Data centres are emerging as critical infrastructure. Existing sites are being upgraded to meet modern fire protection requirements.

As projects grow in scale, so does the importance of firewater infrastructure.

For Reliant Solutions General Manager Brad Kelly, that shift has changed the conversations his team has with clients.

"Our clients aren't asking us to build a tank," he says. "They're asking us to help protect businesses, critical infrastructure and the people who work there. That requires far more than manufacturing capability. It requires experience, engineering expertise and an understanding of how the entire firewater system needs to perform."

It is a conversation Reliant Solutions has been leading for decades.

Known throughout New Zealand for delivering complex water infrastructure, the company has become a trusted partner for engineers, consultants, contractors and developers who need confidence that their firewater solution will perform when it matters most.

Every project starts with a question. What is the right solution for this site? The answer is rarely straightforward. Ground conditions, available space, hydraulic performance, maintenance access, future expansion and compliance all influence the design. The challenge is bringing those considerations together into one integrated solution that works in practice as well as it does on paper.

That is where Reliant Solutions excels. Every firewater storage system is engineered around the operational requirements of the project. Whether it is a circular bolted steel tank or a custom rectangular configuration, the focus remains the same. Deliver the right solution for the site, the system and the client. Reliant Solutions designs and installs systems that comply with the relevant standards, including NZS4541, AS2304, AS2118,

AS2419, AS/NZS3500, AS1657 and AS/NZS1170.

Just as importantly, Reliant Solutions manages the entire process. Design, manufacture, construction and installation are delivered by one experienced team. That provides clients with one point of accountability from concept through to commissioning and removes the complexity of managing multiple suppliers.

"Our job is to remove uncertainty," says Kelly. "Whether we're working with an engineer, a contractor or an asset owner, we're there to make sure the firewater solution is right from the outset and performs for the life of the asset."

That philosophy has earned Reliant Solutions the trust of clients across New Zealand on commercial, industrial and infrastructure projects where performance cannot be left to chance.

A recent Palmerston North installation reflects that approach. The project included a 522kL fusion-bonded coated steel firewater tank designed to comply with NZS4541 automatic fire sprinkler requirements. While every project is different, the objective never changes. Deliver infrastructure that clients can rely on with complete confidence.

As New Zealand continues investing in larger industrial facilities and critical infrastructure, the need for specialist firewater expertise will only continue to grow.

For Reliant Solutions, the role extends well beyond supplying firewater storage.

It is about understanding risk, solving engineering challenges and delivering infrastructure that protects people, businesses and communities for decades to come.

Because when it comes to critical firewater infrastructure, confidence is engineered.

Meet the Speaker: Emma Sutcliffe

Emma Sutcliffe talks with Nicholas Dynon about how a passion for sustainability, an education in journalism, and service as a volunteer firefighter, led her to focusing on thermal runaway in EVs.

Emma Sutcliffe is CEO of EV Firesafe.

Emma Sutcliffe is the CEO of EV FireSafe, an internationally recognised Australian company at the forefront of research, consulting, training and response to electric vehicle battery fires.

Emma is an operational firefighter and previously worked as a journalist and an EV charging and conversion specialist. In 2021 she created the evfiresafe.com website and developed a now internationally recognised global database of electric vehicle battery fires.

EV FireSafe's research work is funded by the Australian Department of Defence, and the organisation now shares its data and knowledge with emergency responders in over 100 countries.

At this year's FireNZ Conference, Emma will be presenting on the topic of "Extinguished or Escalating? Risks of Delayed and Secondary Thermal Runaway in EVs".

ND: How did your career in fire protection begin?

ES: I've come into the fire protection industry sideways really – I originally trained as a journalist, with an ambition to work in conflict zones.

One of my favourite books was One Crowded Hour by Tim Bowden, about the Australian cameraman Neil Davis. He covered the Vietnam War and somehow survived virtually the entire conflict, only to be killed years later while covering a military coup in Bangkok. It always struck me as an extraordinary story.

My previous work aligned with my environmental values; I live off-grid, have a worm-farm septic system, and much of my journalism focused on environmental and sustainability issues. Around 2016, I bought my first electric vehicle and, at roughly the same time, joined the Country Fire Authority (CFA) as a volunteer firefighter.

Professionally, I was working in business development within the electric vehicle industry, and went on to create two companies in EV charging and vehicle conversions. One of the conversion projects was an early prototype for the Australian Department of Defence .

In 2018, there was a major bushfire threatening my home town of Little River. I was out of town when it started. When I tried to return, the fire had crossed the road and I couldn't get through, so I left my car on the roadside, grabbed my firefighting gear from the boot and joined the nearest appliance. About nine hours later I returned to discover my electric vehicle had been heavily damaged by the fire, although no thermal runaway occurred!

I wanted to know more about battery fires, so I approached one of my Defence contacts and said, "I'd really like to understand what would happen if an EV battery caught fire. Everyone says they're difficult to extinguish." He suggested it was a topic they were interested in and Defence provided a small round of seed funding for me to do some research.

Originally I was simply going to produce a report, but I quickly realised there was information that emergency responders everywhere could benefit from. Instead, I created the evfiresafe.com website which contains information backed by our global research database of EV battery fires, which now contains thousands of incidents that can be analysed for information such as cause, connection to charging etc.

Today that website is accessed by emergency responders in well over 100 countries every year to learn about electric vehicle fires and battery safety. I'm incredibly proud of what it's become.

Defence have funded us since 2021 to research EV fire emergency response, including numerous overseas trips to speak to other experts and blow up cars, and I am eternally grateful for their amazing support.

So, I became part of the fire industry almost by accident.

ND: That's a fascinating journey. How has that supported the work you do today?

ES: Journalists become very good at finding information, understanding complex subjects and explaining them clearly.

Our great strength has been taking highly technical information and making it simple and accessible. Whether it's thermal runaway or battery chemistry, we explain it using plain language, straightforward graphics and practical examples. My personal experience as a firefighter obviously helps there too.

People often ask me to explain thermal runaway. I can usually do that in less than five minutes, and by the end they understand the concept. That's really what journalists do every day: take complicated information and communicate it clearly.

Since then we've built a world-leading multidisciplinary specialist team. We now have experienced firefighters, high-voltage specialists, fleet experts, fire investigators and other technical specialists. If I need expertise in a particular area, I have it within our global team.

ND: If you had to describe EV FireSafe in about 100 words, what would you say the organisation is all about?

ES: In short, we make the transition to electrification safer for everyone. I strongly believe better understanding of the hazards and risks of lithium-ion batteries, either in electric vehicles or other applications.

While we've primarily focused on emergency responders, 2026 is all about converting our experience and evidence into safety frameworks for business and industry, and support their transition through building confidence and capabilities.

Rather than rushing to market with consultancy and training, we've taken time to design and test safety with large companies. A great example of this is our EV Assessment of Battery Condition framework that provides a simple 'traffic light' system for safer handling of heavily damaged EVs. We've partnered with Cox Automotive, and rolled it into every Manheim salvage vehicle site across Australia through a digital booking in system. So, we know it's easy to follow, it works and it keeps people safer. That training will be available to everyone in early September.

We've also developed a sector-based Battery Fire Safety Induction course, which is a fast way for organisations to upskill everyone using their own environment. For example, for a major fuel supplier, we adapted the Induction to match the retail and distribution sides of their business, with a simple summative assessment to ensure learning.

The course I'm most excited to launch is the EV FireSafe Red Card, which provides in-depth safety training and incident management for non-emergency responders - similar to the construction industry White Card. It's built from global incident data, our first hand real-world experience and practical safety principles, providing the right knowledge to spot risks early, and protect people, property and operations.

Our consulting team is best known for EV and charging infrastructure risk assessments in high-consequence environments — including ports, airports, mining operations and heavy EV fleets. We look beyond passenger vehicles to the real-world risks of electrification, including electric ground support equipment operating beneath multi-million-dollar aircraft.

We've developed a bespoke risk assessment methodology that combines site inspections, practical recommendations and global best practice. Clients receive a clear risk assessment and site report, backed by the practical tools to act on it — from pre-incident plans and response procedures to charging-site signage and other risk controls.

ND: Looking back over your career, it seems there's a consistent thread: you've been motivated by important issues. Initially sustainability and environmental issues, and then—with your experience as a volunteer firefighter and losing your own electric vehicle in a bushfire—EV-related life safety. Is that a fair summary?

ES: Yes, I think that's a very fair way of putting it. Although I'd broaden it slightly. Our work certainly includes electric vehicles, but it's really about thermal runaway across all lithium-ion battery technologies.

Electric vehicle battery fires receive a great deal of attention, but they're not actually our biggest fire risk. The greater challenge comes from products such as e-bikes, e-scooters, power banks and disposable vapes.

In Australia we're seeing at least one significant battery fire every day involving those products. I imagine New Zealand is experiencing something similar.

Our goal is twofold. First, we want to prevent deaths, injuries and property loss. Secondly, we want to encourage the safe adoption of technologies that can help decarbonise society.

One of the things we've been able to do through EV FireSafe is demystify the technology. Most importantly, we've helped emergency responders understand the hazards, recognise the risks and learn how to manage them safely.

ND: Your FireNZ presentation is titled Extinguished or Escalating? Risks of Delayed and Secondary Thermal Runaway in Electric Vehicles. Tell us a little about that.

ES: Thermal runaway in electric vehicles is actually quite rare. To date we've documented only around fifteen confirmed EV battery fire incidents in Australia.

Fire and emergency agencies are becoming increasingly familiar with how to manage those incidents while they're occurring. The next challenge, however, is what happens afterwards. Just because a fire is 'extinguished', doesn't mean the incident is over, as we now have a risk of delayed or secondary thermal runaway.

A battery pack contains thousands of individual battery cells. If an EV experiences thermal runaway, not every cell necessarily burns. Some cells remain energised but may have suffered heat damage or impact damage. Those damaged cells can reignite much later.

That vehicle may already have been recovered from the crash scene and loaded onto a tow truck. It may be sitting in an insurance assessment yard, a repair workshop or a salvage facility. At that point there's still a risk those remaining cells can enter thermal runaway.

Many existing guidelines recommend monitoring a damaged vehicle for 24 or 48 hours. However, we've documented cases where secondary thermal runaway has

occurred up to two years after the original incident. Until the battery pack has been completely dismantled or destroyed, that risk remains. There's also delayed thermal runaway.

One New Zealand example involved an electric vehicle recovered from seawater. The vehicle didn't ignite while submerged. Instead, saltwater entered the battery pack and the thermal runaway occurred later during the recovery process. That's delayed thermal runaway.

What concerns us is that everyone involved during and after the emergency response—fire and emergency agencies, towing and recovery, insurance assessors, salvage operators, repairers and dealerships—shares responsibility for these vehicles, yet many don't fully understand the hazards they're managing.

ND: So the concern isn't simply the initial battery fire. It's everything that happens afterwards.

ES: Exactly. Once an electric vehicle has been involved in a collision or a fire, we often assume the risk has passed once the flames have been extinguished. That's not necessarily the case.

If the vehicle is sitting inside a building, for example, firefighters may extinguish the fire and then recover the vehicle. However, as that vehicle is being winched onto a tow truck or removed from the building, it may enter thermal runaway again—or for the first time.

Many people still think of electric vehicles in the same way as petrol or diesel vehicles: once the fire is out, the incident is over. With lithium-ion batteries, that's not always true.

That's why we've established a specialist team involving high-voltage experts, fire investigators and other specialists. We're trying to understand how to manage these vehicles safely after the initial emergency has ended.

Unfortunately, we continue to see damaged vehicles transported to salvage yards or assessment facilities without appropriate quarantine procedures. Sometimes they're simply picked up with a forklift and moved around as though they're no different from any other damaged vehicle.

We're trying to raise awareness that there's a significant hazard here which many people simply don't recognise. We've seen numerous injuries associated with secondary thermal runaway.

One case we reference involved an electric vehicle that had been involved in a high-speed collision. The vehicle entered thermal runaway and firefighters responded while wearing self-contained breathing apparatus, so they were protected during suppression activities.

However, as the vehicle was being loaded onto a tow truck, it entered secondary thermal runaway. The firefighters were caught in the resulting vapour cloud. Eighteen months later they were still suffering ongoing respiratory injuries and had not returned to operational duties.

When we talk about these incidents, we're not talking about a sore throat or temporary discomfort. These injuries have the potential to be life-changing.

We've also encountered examples where investigators have attempted to move damaged EVs with forklifts, unintentionally disturbing damaged battery packs and triggering thermal runaway.

Emergency responders are gradually becoming familiar with these hazards, but there are many other organisations involved after the emergency response who still have little understanding of the risks. That's where much of our current work is focused.

ND: To think that firefighters could still be suffering serious health effects over 12 months after exposure is extraordinary.

ES: It is. These were highly trained firefighters who were properly equipped during the initial fire response, yet they were injured later during vehicle recovery. Some may never return to operational firefighting.

Internationally we're also aware of fatalities involving people exposed to toxic gases from lithium-ion battery fires. Many of those incidents involve e-bikes or e-scooters being charged inside homes while people were asleep.

ND: That's something we hear about regularly, particularly in high-density apartment buildings where people keep e-bikes inside their units. But what you're saying is that battery fires involving electric cars remain uncommon, even though the consequences can be severe?

ES: Yes. The probability is relatively low, but the potential consequences can be extremely high. Take a large salvage yard as an example. One organisation we've worked closely with operates a major salvage facility in western Melbourne.

If damaged EVs were simply mixed with the general vehicle population and one entered thermal runaway, the resulting fire could have consequences well beyond the site itself. That's why understanding the chain of responsibility is so important.

Whenever our own team undertakes work on damaged battery systems, we're wearing full-face respirators, disposable protective clothing and following strict decontamination procedures.

By comparison, a tow truck operator may arrive wearing normal work clothes because they simply don't appreciate the risks they're facing. Every time I see that happen I cringe.

We're not trying to alarm people unnecessarily. Even a vehicle that appears relatively undamaged after a collision may still present a thermal runaway hazard if the battery pack has been compromised.

A Tesla on fire. Image: US Government.

That's what the EV ABC training is all about. The process guides those with responsibility for a damaged EV through battery assessment using thermal imaging, visual inspection and data-backed risk indicators.

Depending on the outcome, a vehicle may be suitable for routine transport, or responders may decide additional precautions are required—for example, escorting the vehicle with fire service support, increasing separation distances or implementing enhanced monitoring procedures.

The objective is straightforward: Help people make informed decisions based on evidence rather than assumptions.

ND: How well trained would you say first responders currently are when it comes to these issues? How would you describe the current state of education around thermal runaway and electric vehicle incidents?

ES: Overall, I'd say the situation has improved significantly, but we still have a long way to go.

One of the things I'm most proud of is the way firefighters from around the world have engaged with our work. We travel extensively, and it's incredibly rewarding when firefighters tell us they've used our website or our research to better understand electric vehicle incidents.

I think the firefighters who feel most confident around EV incidents are generally those who've attended one in person, become curious and then gone looking for additional information. They discover our research, follow that trail and build their knowledge from there.

The challenge is that emergency service organisations have so many competing priorities. Electric vehicles represent just one emerging technology among many, and it's easy for the topic to slip down the priority list.

A couple of years ago there was enormous concern because everyone was asking, "How do we deal with electric vehicles?" Since then we've only experienced around fifteen confirmed EV battery fires in Australia, so naturally attention has eased somewhat.

The problem is that EV adoption continues to increase rapidly. As electric vehicles grow from a small proportion of new vehicle sales to a significant share of the market, these conversations become increasingly important again.

ND: Is there anything else you'd like our readers to understand before your FireNZ presentation?

E**S:** Hopefully I'll scare people just a little—not to create fear, but to encourage healthy respect for the risks. More importantly, I hope the presentation starts a broader conversation about who, in New Zealand, needs to be involved in managing these hazards.
At the moment, I'm not sure that conversation is happening to the extent it should be.

Meet the Speaker: Xiang Zhou

Xiang Zhou talks to Nicholas Dynon on harnessing the power of artificial intelligence to provide firefighters with earlier warning of escalating fire conditions in buildings.

Xiang Zhou is a PhD candidate in Fire Engineering at the University of Canterbury.

Xiang Zhou is a PhD candidate in Fire Engineering at the University of Canterbury, supported by the UC–CSC (China Scholarship Council) Joint Scholarship. His research focuses on fire dynamics, temperature field prediction in tunnel fires, numerical simulation of building fires, and the application of artificial intelligence in fire engineering.

He has authored and contributed to several academic papers, including experimental studies on temperature distribution in tunnels under longitudinal linear fire sources and numerical reconstruction models for complex building fire incidents.

His current project, "Predictive Modelling for Firefighting Applications Using Transferable and Continually Learning AI Models," which integrates advanced machine learning techniques with fire science, is the subject of a recent research grant from the Society of Fire Protection Engineers (SFPE).

At FireNZ 2026, Xiang is presenting on the topic of "Transferable and Robust AI Modelling for Smart Firefighting Using Graph Neural Networks".

ND: I'm interested in understanding how your career journey began. What did you study as an undergraduate, and what influenced that decision?

XZ: I'm originally from China, and I completed both my Bachelor's and Master's degrees there, and both were related to fire engineering. Looking back, choosing fire engineering was something of a coincidence.

In China, particularly for students from rural areas, there aren't always many opportunities to explore different career options or discover what interests you most. After all, getting a good score on the Gaokao—one of the most competitive university entrance exams in the world—is no easy feat. Sometimes your university placement and major are determined more by circumstance than by careful planning.

In many ways, I feel that fire engineering chose me rather than the other way around. Fortunately, as I progressed through my studies I gradually realised how meaningful the field is.

Fire engineering is fundamentally about protecting people's lives and property, and I found that purpose very motivating.

I also enjoy the multidisciplinary nature of the field. It draws upon physics and mathematics, while also requiring practical understanding gained through fire experiments and real-world observations. That combination of theory and experimentation really appealed to me.

After completing my Master's degree I reached something of a crossroads. I wasn't sure whether I should continue immediately with a PhD or spend some time working in industry and gaining broader life experience.

I eventually accepted a teaching position at a vocational college, where I taught fire protection engineering. That experience proved extremely valuable. Teaching encouraged me to think more deeply about the discipline and ultimately convinced me that I wanted to pursue doctoral research. That decision eventually brought me to the University of Canterbury.

ND: Which university did you attend in China?

XZ: I completed both my Bachelor's and Master's degrees at the China University of Mining and Technology, which is located in Xuzhou, Jiangsu Province. I majored in Fire Protection Engineering for my Bachelor's degree and Safety Science and Engineering

for my Master's degree, with a specialisation in building fire safety.

ND: Your Master's was research-based rather than coursework?

XZ: Yes, it was entirely research-based. My research focused on tunnel fire experiments. We investigated how different fire locations and sizes for line fires influenced smoke movement and temperature development within urban utility tunnel.

ND: After completing your Master's you spent some time teaching before deciding to undertake a PhD. Why did you choose the University of Canterbury? Why New Zealand?

XZ: In some ways, that decision also involved a little coincidence. I've always been passionate about fire engineering. At the same time, Artificial Intelligence—particularly neural networks—was developing very rapidly, and I became increasingly interested in applying AI techniques to fire safety.

While searching for PhD opportunities I came across the work of Dr Aatif Ali Khan at the University of Canterbury. His research focused on applications of artificial intelligence in fire engineering, which aligned perfectly with my own interests.

Dr Khan has a very strong research background, having completed his PhD at Hong Kong Polytechnic University and published extensively on AI applications in fire engineering.

I noticed he was recruiting PhD students, so I contacted him. We had several very productive discussions, everything progressed smoothly, and I was fortunate to be offered the opportunity. That's how my PhD journey at the University of Canterbury began.

ND: This year you're presenting a paper titled "Transferable and Robust AI Modelling for Smart Firefighting Using Graph Neural Networks." What's it all about?

XZ: My research focuses on applying AI techniques to fire engineering rather than solely developing new AI algorithms.

Perhaps the easiest way to explain the problem is to imagine firefighters arriving at a large, unfamiliar building. Every second matters. They have to make critical decisions using only limited information, relying heavily on their experience.

Our research aims to develop an AI model that can rapidly predict how a fire is likely to develop using temperature data collected by firefighters as they move through a building.

The objective is to provide real-time decision support. In particular, we want to help firefighters understand whether conditions remain tenable for firefighting operations and, more importantly, predict the onset of one of the most dangerous stages of fire development: flashover.

Flashover is the point at which almost every combustible material within a room ignites almost simultaneously. When that happens, fire conditions escalate dramatically and the environment quickly becomes extremely hazardous. Our goal is to provide firefighters with earlier warning of that transition.

What makes our research different is that many existing AI models are designed for a single building or a single task. Specifically, they generally require complete information from every compartment within a building before they can make reliable predictions.

If those models are applied to another building or another task, they often need to be retrained from scratch. Instead, we're trying to teach the model knowledge that can transfer between different buildings and different tasks. That means substantially less data, less computational effort and much faster deployment.

Ultimately, we hope that will make AI-based decision support practical for real operational firefighting. In simple terms, we're trying to make AI models more transferable and more robust when they're used in real emergencies.

ND: So, existing AI models are generally specific to a particular building or task because they've been trained for those environments. You mentioned that your approach makes use of "common knowledge." What do you mean by that?

XZ: Imagine a fire starting in one room of a multi-compartment building. Initially the fire develops in that room. Hot gases rise and form a smoke layer beneath the ceiling.

Eventually the smoke reaches the doorway and begins flowing into adjacent spaces, such as corridors and neighbouring rooms. As time passes, smoke gradually fills those connected spaces.

That sequence is fundamentally the same regardless of the building. It's a common pattern of fire development within the fire origin room and smoke movement through interconnected spaces.. Those physical processes represent the common knowledge we're trying to teach the model.

Rather than learning every building and task independently, the model learns these underlying fire behaviours and transfers that understanding to new environments and new tasks. Doing so significantly reduces the amount of training data required.

ND: When you're training the model, what kinds of information are being considered? Are you considering room dimensions, building materials, time to combustion or similar variables?

XZ: Fire is an extremely complex phenomenon involving many interacting variables. The underlying datasets incorporate all of those factors, including building layout, compartment size, construction characteristics, ventilation, fire sizes. However, rather than using every one of those variables directly, our model uses temperature measurements as the primary input.

Temperature effectively becomes a representative indicator that captures the fire development situation considering the influence of many underlying factors. The model analyses temperature histories from different compartments and uses those relationships to predict future fire development.

For example, one application is predicting future smoke layer temperatures within the fire origin room, using temperature measurements from multiple compartments.

Another is predicting whether flashover is likely to occur. The same temperature information can also be used for other prediction tasks, such as estimating future heat release rates of the fire. Temperature therefore becomes the common input across multiple prediction tasks.

ND: So, temperature is effectively acting as the common language through which the model interprets what's happening inside the building.

XZ: Exactly. That's a good way of describing it.

ND: From a practical firefighting perspective, how would a firefighting crew actually use this system? How would it assist them operationally?

XZ: Existing AI models generally require information from every compartment within a building before they can generate predictions.

Our approach is different. The model uses temperature data collected progressively by firefighters as they advance through the building during search, rescue and firefighting operations.

As firefighters move through the structure, they deploy temperature sensors. The information collected from those sensors is continuously fed into the model. As additional temperature data becomes available, the model updates its predictions and provides decision support in real time.

The objective is to help firefighters understand whether conditions remain tenable for both occupants and emergency responders.

At present, firefighters often rely heavily on qualitative observations and experience when assessing fire development.

Our research aims to complement that experience by providing quantitative predictions that can support operational decision-making. As more sensor information is collected, the predictions become increasingly accurate. That's the operational scenario we're ultimately working towards.

ND: Just so I understand correctly, what types of sensors are you envisaging? Are we talking only about temperature sensors, or would firefighters also use technologies such as visual imaging, LiDAR or chemical sensors?

XZ: At this stage our model only requires temperature information. That can be obtained using thermal sensors, thermal cables or temperature detectors.

In future research we'd certainly like to incorporate additional sensing technologies so the model can develop a more comprehensive understanding of the fire environment. For now, however, temperature alone provides the information we need.

ND: So, the model is making predictions based primarily on fire behaviour represented through temperature, as opposed to detailed structural information relating to the building itself?

XZ: The AI model is fundamentally data-driven. The datasets used during training already contain information about building layouts, lining materials, compartment sizes and many other relevant variables.

Rather than requiring those variables individually during deployment, the model learns the relationships between input and output during training. These relationships are informed by the complex range of variables incorporated into the training data. Temperature then becomes the key observable input. The neural network learns how temperature patterns reflect the development of the fire while accounting for the influence of the underlying building characteristics.

One of the strengths of artificial intelligence is its ability to capture highly complex relationships using relatively simple input and output variables.

At the same time, this creates one of AI's biggest challenges. People often describe neural networks as a "black box" because it isn't always obvious how the model reaches a particular conclusion.

Confidence in the predictions therefore depends heavily on the quality of the training data, the way experiments have been designed, and the engineering expertise used throughout the modelling process. Expert knowledge remains critically important.

Meet the Speaker: Mayank Shrivastava

Dr Mayank Shrivastava talks to Nicholas Dynon about his research on the fire resistance of steel Columns embedded in two-way fire rated wall systems, and enabling greater use of bare steel where an engineering assessment allows it.

Dr Mayank Shrivastava is a Senior Structural Fire Engineer at HERA.

Dr Mayank Shrivastava, a Senior Structural Fire Engineer at HERA (Heavy Engineering Research Association of New Zealand), has led the design of low to mid-rise buildings, residential structures, apartment buildings and bridges, with additional experience in warehouses, multi-storey developments, and the peer review of complex projects.

With more than 17 years of experience across Aotearoa and overseas, Mayank holds a PhD in Structural Fire Engineering from the University of Canterbury. His expertise in structural fire engineering includes advance fire safety design, development of fire design methodologies, and contributions to software tools that support performance-based fire engineering practice.

At HERA, his work focuses on advancing structural and fire safety design, enabling the sustainable use of steel, and promoting circular economy solutions. He works across research, consulting, membership engagement, and training, with a strong emphasis on delivering practical solutions that benefit both industry and the wider community.

At FireNZ 2026, Mayank is presenting on the topic of "Fire Resistance Assessment of Steel Columns Embedded in Two-Way Fire Rated Wall Systems".

ND: What first led you towards engineering, and ultimately to the path you've taken into structural fire engineering?

MS: My journey really began when I was a teenager. My father worked in the civil engineering industry, so I already had an affinity for that field.

Mathematics was always one of my strongest subjects. I knew I wanted to pursue something based around science and mathematics rather than medicine. Looking back, I think I instinctively knew engineering was where I belonged, even if I couldn't fully articulate why at the time.

I completed my Bachelor's degree in Civil Engineering in India, followed by a Master's degree in Structural Engineering. After graduating, I joined Larsen & Toubro, India's largest construction company, where I worked for five years on the Mumbai Monorail project—the first monorail project in India.

I joined as a trainee engineer and was fortunate to find myself in the right place at the right time. I worked on the design of monorail stations, platforms, girders and supporting structures, and advanced through several roles as my responsibilities expanded.

While designing steel structures, I became increasingly curious about fire engineering. What interested me most was the relationship between the fire itself and the resulting structural response. I became fascinated by how different fire scenarios could lead to very different outcomes, and how uncertainty could be incorporated into performance-based design. That curiosity eventually led me to pursue research in probabilistic structural fire engineering.

ND: So, there was a fairly compliance-driven mentality—meeting the fire protection requirements without necessarily questioning whether there was a more effective engineering solution?

MS: Exactly. Fire safety was often approached as something that simply had to be done because otherwise the structure might fail, but without really considering whether resources were being used efficiently. It was a very prescriptive approach.

HERA House. Image: HERA.

As structural engineers, we spend enormous effort optimising seismic design. We carefully calculate reinforcement, member sizes and detailing because we understand the engineering behind earthquakes. With fire engineering, however, the attitude often seemed to be, "Just paint everything."

That struck me because earthquakes and severe fires are both low-probability, high-consequence events, yet the engineering approaches were completely different.

That curiosity led me to begin researching structural fire engineering while I was still working in India. I contacted around 200 professors around the world with a research proposal. The University of Canterbury was one of the institutions that expressed interest in the work.

ND: In simple terms, what was your research proposal about?

MS: It focused on the probabilistic assessment of performance-based structural fire design.

In simple language, it was about understanding both the likelihood of different fire scenarios occurring and how structures respond to those scenarios, rather than assuming every fire presents the same level of danger.

If you asked someone outside the profession what a severe fire looks like, they might describe a very hot fire or one that burns for a long time. For a structure, however, neither of those factors alone determines how severe the fire is. What matters is how the structure actually responds to the particular fire scenario.

For example, fire may briefly reach very high temperatures, but if it burns for only a short period its effect on the structure may be limited. The real challenge is identifying the fire scenarios that are most critical for a particular building and understanding how the structure is likely to perform under those conditions.

That was the central focus of my research.

As a result of that work, I received a fully funded international doctoral scholarship to study at the University of Canterbury. After completing my studies, I moved into industry, working as both a structural engineer and a fire engineer.

I always felt that I sat somewhere between those two disciplines. I couldn't honestly describe myself as a traditional fire engineer because my expertise wasn't in fire dynamics, evacuation or smoke management. My work was centred on the structural response to fire.

I often compare it with earthquake engineering. An earthquake engineer doesn't try to predict exactly when an earthquake will occur. Instead, they design structures to withstand the forces when it does occur. Structural fire engineering follows much the same philosophy.

I continued working across both structural and fire engineering disciplines for about five years before the opportunity arose to join HERA.

What attracted me to HERA was the chance to work at the intersection of research, industry and innovation. It offered the opportunity to combine academic research with practical engineering experience while developing new solutions that could benefit the wider industry.

ND: Tell us a little about HERA. What's its purpose as an organisation, and what sort of work have you become involved in there?

MS: HERA is an independent research organisation that supports New Zealand's heavy engineering industry, particularly the structural steel sector.

Its role is to advance innovation, undertake research, develop industry capability and promote best practice. Within HERA there are specialist groups covering structural engineering, seismic engineering, sustainability, finite element analysis and structural fire engineering.

We undertake research that provides specialist engineering expertise to industry. We deliver training programmes and education, develop design guides, and create practical tools that engineers can use in their everyday work. One of HERA's strengths is translating research into practical engineering solutions that make the industry's work easier and more efficient.

ND: What does your role involve specifically?

MS: My work focuses primarily on structural fire engineering. We develop research-based solutions, design guides and practical tools that help engineers design steel structures more efficiently for fire conditions.

We're constantly engaging with industry to understand the challenges engineers are facing. Once we identify those problems, we develop solutions through research and then publish reports, design guides and engineering tools that help practitioners solve those problems. Ultimately, our aim is to improve both engineering practice and industry capability.

ND: Your presentation at this year's FireNZ Conference is titled "Fire Resistance Assessment of Steel Columns Embedded in Two-Way Fire-Rated Wall Systems". How would you explain that topic to someone outside the profession?

MS: Imagine you have a plasterboard two way fire rated wall with a steel column located directly inside it. Now imagine someone tells you, "We need to fire-protect that steel column by applying intumescent coating."

A natural question is: why? The steel is already behind the plasterboard. Cant plasterboard provide the fire protection?

In many situations throughout the industry, steel columns located within inter-tenancy walls or other two-way fire-rated wall systems are routinely protected without fully considering the protection already being provided by the surrounding construction.

One of the key questions our research asks is whether the steel can safely remain unprotected, and how. The second question is whether we can properly account for the protection already being provided by the standard plasterboard itself.

The FireNZ presentation forms part of a much larger HERA research programme that seeks to answer those questions.

Finally, we're asking whether a performance-based assessment can demonstrate that fire protection can either be eliminated altogether or, where that's not possible, reduced to the minimum level actually required.

ND: So ultimately this is also about sustainability?

MS: Absolutely. Steel is one of the world's most recyclable construction materials. It can be reused directly or recycled repeatedly throughout its life.

If unnecessary fire protection is applied, that material often has to be removed when the structure reaches the end of its service life. That consumes additional energy, creates waste and increases cost. Our objective is to optimise fire protection.

The ultimate goal is to enable greater use of bare steel where engineering assessment demonstrates it is appropriate. Where fire protection is still required, we want to ensure that only the minimum amount necessary is applied while maintaining the required level of safety. That's the key objective of the research.

ND: As someone outside the profession, when I hear phrases like "using the minimum amount of fire protection", my instinctive reaction is that it sounds like we're trying to get away with less. That makes me a little uncomfortable. Should it?

MS: No, it shouldn't. The one thing that is never compromised is safety. Safety remains the highest priority. What we're trying to change is the current design philosophy.

Dr Shrivastrava talks fire safety and sustainability. Image: LinkedIn.

Dr Shrivastrava supervises HERA Whanake Scholarship recipient Lydia Frater. Image: HERA.

At present, a structural engineer may spend considerable time analysing and designing a building, carefully calculating the loads on every beam and column. However, when it comes to fire protection, the approach is often much simpler. Engineers identify the most critical member, determine the required thickness of fire protection for that member, and then apply the same specification to every similar category steel member throughout the building or pass on the critical details to the paint suppliers to decide the fire protection thickness.

That approach isn't unique to New Zealand. It happens in many countries. In many cases, a single critical temperature is selected, the required coating thickness is calculated for that condition, and then the same fire protection system is applied throughout the similar members without considering whether every member actually requires that level of protection.

ND: So the concern is that those decisions are often being made without fully considering other forms of protection already built into the design—things like plasterboard systems?

MS: Exactly. Let me give you a simple example. Imagine a steel beam (610UB101) that must maintain its structural capacity for 30 minutes during a fire. Based on engineering calculations, we might determine that the steel must not exceed a critical temperature of 720 degrees Celsius during that period.

If the beam is completely exposed, calculations may show that it would reach approximately 802 degrees Celsius within the required fire resistance period. In that situation, some form of fire protection is clearly necessary.

Now imagine exactly the same beam positioned behind a standard 13mm plasterboard wall. If we properly account for the thermal protection already provided by that plasterboard, the predicted steel temperature may reduce to around 691 degrees Celsius—well below the critical temperature.

Nothing has been added to the building. The plasterboard was already there. The only difference is that we've undertaken an engineering assessment to quantify the protection it already provides. The plasterboard acts as a thermal barrier during the early stages of the fire, delaying the heating of the steel.

We're not changing the building. We're not reducing safety. We're simply improving our understanding of how the existing construction performs so that we can optimise material use.

ND: So the objective is about making sure the level of protection is appropriate for the actual risk.

MS: That's right. Our aim is to optimise fire protection. Where bare steel can safely be used, we want to demonstrate that through engineering assessment. Where fire protection is still required, we want to minimise it while maintaining exactly the same level of structural safety.

The objective is better engineering, more efficient use of materials, reduced cost and improved sustainability—all without compromising safety.

Meet the Speaker: Linus Lim

Dr Linus Lim talks with Nicholas Dynon about an international career in fire, working on the tallest hybrid timber and steel tower in the world, reflections on 24 years as a fire engineer, and the importance of good mentors.

Dr Linus Lim is a Principal at Holmes.

Linus is a Principal at Holmes who specialises in structural fire engineering for steel, concrete, and timber structures. He has over two decades of international project experience in projects across Australia, New Zealand, the USA, UK, and Singapore.

His role entails developing structural fire engineering design strategies for buildings and performance based alternative solutions, working closely with approval authorities and design teams. He leads a specialist team of structural fire engineers, working on projects involving response of different types of buildings and structures under fire exposure.

Linus completed his Doctorate on membrane action and compressive axial restraint in concrete floor systems under fire, and his Masters on the stability of slender concrete walls under fire. He serves on the Australia and New Zealand standards committee for the structural fire design of steel and composite structures.

Linus will be delivering two presentations at this year's FireNZ Conference: "Atlassian Hybrid mass timber, concrete and steel building, Sydney", and "Fire Engineering for an Ever changing Built Environment".

ND: Where did your career journey begin?

LL: I began my academic studies at the University of Canterbury studying civil and structural engineering. I learned about seismic design and the importance of structural robustness and ductility in earthquake engineering.

Towards the end of my degree, I had the opportunity to return to Malaysia, where I'm originally from, to undertake an internship with an engineering company. Interestingly, quite a few of the engineers there were University of Canterbury graduates where Canterbury structural engineering graduates were held in very high regard.

During that internship, I undertook some structural design work and met a structural engineer who became my supervisor and took me under his wing. He gave me a hospital project to undertake some analysis and design work on. One of the significant questions that arose concerned fire resistance because the hospital was going to be steel-framed. This was in the mid-1990s.

I started digging into the literature on structural design for fire resistance and realised that, at the time, it was still largely limited to design based on standard fire tests. Nevertheless, I developed a structural steel design and specified fire protection for the structure.

When I returned to Canterbury, I wanted to undertake a Master's degree in structural engineering. As part of the programme, I took on a research project with Professor Andy Buchanan.

ND: We've had the privilege of interviewing Andy for a previous edition of the magazine.

LL: He's a great guy. He's a very practical engineer, and I learned an enormous amount from him about taking a step back and looking at the bigger picture—understanding how everything fits together rather than always disappearing into the weeds of microscopic detail.

The details are obviously very important, but Andy always impressed upon me the importance of understanding the bigger picture and the realities of construction in the context of my research.

For my Master's, I undertook a structural fire engineering research

Altassian Central building

project examining the stability of thin walls during fires in warehouses. Andy later convinced me to undertake a PhD.

Together with the late Professor Peter Moss, who passed away very recently, he helped me secure a scholarship. My research was also supported by Professor Jean-Marc Franssen in Belgium and focused on the behaviour of composite floors in fire. I spent several years on that work and graduated with my PhD in 2003.

Before I graduated, I was approached by Martin Feeney from Holmes, who asked me whether I'd like a job? I thought about it and eventually said, "Yes, I'll take you up on the offer."

I initially spent a few months working in Auckland while waiting for a visa to move to Australia. I worked with Martin for around three months. Those three months working with Martin as a young engineer were a great experience. He's an engineer's engineer and a great mentor.

The Auckland fire team was quite small at the time—perhaps half a dozen people and had a genuine family atmosphere. A few months later I moved to Sydney and worked with Holmes there for three years.

I subsequently joined Arup, where I spent a total of seven years. Roughly half of that was in London and the other half was back here in Sydney. I later return to Holmes in 2013 and have been here ever since.

I've been extremely fortunate to have been supported by a very good group of leaders and engineers at Holmes and Arup, as well as the people who helped me right from the grassroots of my career. Having good leaders, good lecturers and a strong educational foundation has been enormously valuable.

ND: And it's resulted in a genuinely international career—an internship in Malaysia, then working across New Zealand, Australia, the United Kingdom, and elsewhere.

LL: Yes, certainly. Working at both Arup and Holmes has also exposed me to projects in the Middle East, Asia and the United States. Holmes has offices in Australia and New Zealand as well as the US, so I've had the opportunity to see how people in different parts of the world approach the same questions and sometimes arrive at quite different answers.

A lot of that comes down to how different societies perceive the same issues and risks. It's valuable to have that perspective.

ND: That's interesting. When it comes to approaches to risk, and to fire protection generally, does culture play a significant role? Are there differences in the way different cultures or countries think about risk?

LL: I think there are differences in risk mindset. I'll give you an example.

In Australia and New Zealand, I think we're generally quite open-minded about accepting scientific explanations as a means of addressing risk, which is fantastic.

There's a logical mindset that says: "Here's the question being asked. What's the risk, and how do we address it?" That allows us to have a good technical conversation about the problem.

In other parts of the world, people facing exactly the same problem aren't necessarily able to address it from a scientific perspective. Part of that comes down to lack of familiarity with the topic and also on performance-based fire engineering.

Rather than saying, "Let's have a technical and logical discussion about the issue," the response may be: "We've done it this way for the last 60 or 70 years, so we're going to continue doing it that way." Yet, the questions we're being asked today may have changed significantly over the solutions we've applied in the past .

A good example is the modern office environment. Today, we largely have paperless offices. The amount of combustible material available to burn inside an office has reduced significantly compared to the offices of the 60's and 70's, when fire load data surveys were done. Today, we have computers, monitors, a mouse and office furniture but far less paper.

Professor Andy Buchanan in 2015. Image: University of Canterbury.

Yet in some places, people still don't necessarily want to recognise that change. They'll say, "We want you to do a fire engineering based on data from the 1960s or 1970s."

Conversely, in Australia and New Zealand, we're fortunate to have highly capable engineers on the approving-authority side who can engage constructively with engineers on the design side.

You can say, "Let's talk about this. Here's the actual fire risk. What are the real problems, and how can we design a safe and robust outcome?" Some countries don't necessarily have that luxury.

So some of what we describe as cultural differences aren't necessarily cultural at all. They may reflect what's lacking within a particular country's professional or regulatory environment.

There simply may not be enough appropriately qualified people available to help performance-based fire engineering move forward.

In some countries, you can also encounter quite a blasé attitude towards fire safety. Whilst there is an expectation to design to "Follow the prescriptive code requirements" but then there's relatively little attention paid to how that design is actually managed or implemented. It might simply be left to an architect or structural engineer to work out.

In New Zealand and Australia, by comparison, there's generally considerable care taken over how we get from the design to the finished product.

ND: I see that you're listed as a keynote speaker for two presentations in the programme. Your first presentation, on day two, is about the Atlassian hybrid mass-timber, concrete and steel building in Sydney. Tell us about that project.

LL: The Atlassian project presentation is very close to my heart. I've been working on the project for nearly five years. It is the tallest hybrid timber and steel tower in the world. The building topped out not long ago.

We've been involved since relatively early in the concept stage. We were brought onto the project to develop the fire engineering strategy for the building. It's a very unique building, both architecturally and structurally.

My presentation will explain some of those unique features, what we've tried to implement from a structural design perspective, and how timber fits within the overall building.

There are concrete mega-floors at every four levels, with what you might describe as timber habitats between those mega-floors. To my knowledge, that hasn't been done elsewhere in the world in quite this way, certainly not from a hybrid timber perspective.

There were a number of significant risks and issues we needed to address. One of those was the building's location adjacent to Australia's largest railway station, Sydney Central.

Additionally, that there are still many unknowns around the

Altassian Central building. Image: Holmes.

performance of timber in fire—particularly its actual performance in a real fire rather than simply its performance in a standard furnace test.

We needed to provide a design that firefighters could safely and quickly access the building to undertake the operations, and occupants could evacuate safely, while developing a design that could ultimately be approved by the fire brigade, transport authorities and certifying authority—and, one that could actually be built!

ND: Where do you see the future of timber and hybrid timber construction? Is this something we're likely to see much more of?

LL: I think we are likely to see more of it. My view is that we should use structural materials according to their best characteristics. If you're constructing a super-tall building, for example, it may be better to use the materials most suited to that task, such as concrete or steel. If you tried to construct a 40-storey building entirely from structural timber, it might not be practical.

The columns could become excessively large, and you could encounter issues with lateral stability from wind alone. There may also be challenges obtaining approval from fire brigades and authorities.

Again, some of this depends on which country you're working in. The United States, for example, has codes written differently to permit considerably greater use of mass timber. For a super-tall building, however, I think a hybrid structure presents a very compelling design option. There's certainly considerable international interest in that approach.

The interest comes from the same fundamental question: if you want to construct a tall building without excessively increasing the size of structural columns, could a hybrid approach provide a better solution?

I think we should use mass timber where its strengths are greatest. From both structural and sustainability perspectives, buildings of around seven or eight storeys can be an excellent application. Here in Sydney, we're seeing quite a few mass-timber buildings reaching that seven- to eight-storey range.

ND: Let's move to your second keynote topic: "Fire Engineering for an Ever-Changing Built Environment." Can you give us a general introduction to what you'll be covering?

LL: I've been practising as a fire engineer for 23 years, and over that time I've seen significant changes in how we construct buildings and in the types of challenges that we encounter. I'm going to touch fairly quickly on several of those changes during the presentation.

One example is e-bikes and e-scooters, for instance. People bring e-bikes into their apartments. A fire from one of these devices can start and grow very rapidly, so suddenly you have a new type of ignition source within the residential environment. In some cases, people leave them in the corridors of apartment buildings in the paths of egress to a stair. That creates another problem.

We also have significant challenges involving modern motor vehicles in car parks. We've seen some very large and catastrophic fires in car-parking buildings. The way cars burn today and the way they're constructed are very different from vehicles in the 1990s when lots of research on car fires was conducted. Cars are bigger, and they're parked consequently closer together because car-parking spaces haven't become correspondingly larger.

Every time you go to a shopping centre and try to open your car door, you're getting closer to the vehicle beside you because the cars themselves are getting bigger. That potentially affects the propensity for fire to spread rapidly from one vehicle to another.

Then we also have batteries within vehicles. So we need to revisit some of the assumptions we used when designing structures in the 1990s and ask: are they still appropriate today? That's one aspect of the presentation.

Another is the office environment, which we discussed earlier. Office fire loads have changed considerably.

Another significant issue relates to sustainability. I'm seeing considerable emphasis on redeveloping existing buildings rather than simply constructing more new ones.

There's a desire to revitalise existing buildings, particularly structures constructed over the last 80-100 years. We have sandstone buildings, old timber buildings and many other existing structures being redeveloped. From a fire engineering perspective, this can be much more challenging than people realise.

Something built 80 or 100 years ago may not perform as well as we would expect of a building constructed today. Yet, interestingly, sometimes we discover that it actually performs better than expected.

I'm also going to focus on timber construction which is a construction form that is attracting significant attention at the moment. I'll discuss some of the challenges we encounter as designers explore different approaches to timber construction.

These aren't merely theoretical challenges. They're practical issues that arise at the early design stage and also during construction. As fire engineers, we have to work through those issues and find practical ways to resolve them.

Mass timber construction. Image: Holmes.

ND: Is there anything else you'd particularly like to mention?
LL: There's one thing I would like to re-emphasise: the importance of good mentorship for young engineers. That begins at university. Whether someone is studying at undergraduate or postgraduate level, having a good mentor is extremely valuable.

Lecturers and other mentors can help students understand not only the importance of practical application, but also the value of genuine theoretical knowledge.

Students sometimes ask, "Why are we studying all of this? We're never going to use it." But then, later in your career, you encounter a particularly challenging project and suddenly find yourself saying, "Let me dig those notes out again. What did I learn about this?"

The world is changing very quickly. You therefore need a strong foundation of good theoretical knowledge. You can't simply rely on AI, because nobody truly knows whether AI is correct.

As an engineer, you need to have a mind of your own and be capable of making your own decisions. Those fundamental foundations help guide you throughout your career.

As you progress professionally, the importance of having a good mentor cannot be overstated. When you have a good one, you realise just how important that person can be to your career.

But mentorship works both ways. I practise martial arts, and there's a saying we use: a student will walk a thousand miles to find a good teacher, but a teacher will walk ten thousand miles to find a good student.

Good engineers aren't necessarily easy to find either.

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Wildfire-damaged historic buildings may not be as ruined as they appear, but saving them means acting fast

No country has a postfire assessment protocol for historic buildings comparable to what exists for assessments after earthquakes, and that's an issue write Rebecca Napolitano, Giorgia Giardina, and Tiago Miguel Ferreira.

In a summer of wildfires severe enough to trigger Spain's first-ever national emergency for a forest fire, a historic stone structure called the Nevera de Castro stands in a landscape burned bare in the Castellón region. Its walls are blackened by smoke and heat. A local news outlet noted that "a technical inspection will be necessary to know its real state."

That one sentence names a problem that plays out after every major fire.

When a wildfire reaches historic masonry buildings – stone, brick and block structures that have stood for centuries – the first photographs tell a simple story: Everything is black and looks ruined. But masonry conducts heat so poorly that the damage is often only centimetres deep.

Timber roofs, wood floors and interior framing in historic buildings are extremely vulnerable to fire and can let fire jump building to building, but the load-bearing masonry shell often survives. Preserving even a part of the original structure can dramatically reduce reconstruction costs and retain the historic fabric that gives these places their identity.

But to save these buildings, people have to act quickly.

A masonry wall that has lost its timber roof or floors is now unbraced. Wind alone might bring it down. The stone itself can also start to deteriorate. When limestone is heated to about 750 degrees Celsius, the calcium carbonate, which makes up most of the rock, decomposes, leaving solid calcium oxide and carbon dioxide gas. If rain reaches that surface before it is covered, the calcium oxide can react with the water and expand by as much as 20%, enough to crack the stone from within.

Some types of masonry can start to disintegrate days after a fire if no one has weatherproofed it after the fire.

Why thick walls don't fail as you might expect

Masonry conducts heat poorly. In a thick wall exposed to a wildfire, the exposed surface heats up while the cooler interior remains relatively unchanged.

These thermal gradients generate stresses that may crack or spall – chip

Rebecca Napolitano
Associate Professor of Architectural Engineering, Penn State

Giorgia Giardina
Associate Professor of Geo-Monitoring and Data Analytics, Delft University of Technology

Tiago Miguel Ferreira
Assistant Professor of Structural Mechanics and Structures, Universidade de Lisboa

The colours of fire damage are visible on the Church of São Domingos in Lisbon, 67 years after a fire. The vault shows the pink-red tones that signal temperatures above 570 F (300 C). The columns are blackened by soot. Where the outer surface has spalled or chipped away, the undamaged masonry is visible beneath. Tiago Miguel Ferreira

or flake off – the outer surface, but the heat often does not penetrate deeply enough to compromise the structural core. Research on fire-exposed sandstone structures found a sharp boundary between the heated, red-coloured surface and the unaltered stone behind it, with the damaged crust only about an inch (2 to 3 centimetres) deep.

At the Monasterio de San Jerónimo de Guisando, a 14th-century monastery in Ávila, Spain, the whole hillside burned in July 2026, but the monastery reported that the church wall itself acted as a firebreak, stopping the fire's advance.

The 650-year-old wall did exactly what a thick, non-combustible wall should do.

Clay brick is especially resilient because it was already fired at 900 to 1,000 C when it was made. A 2025 study tested structural clay units reheated to 1,000 C and found no statistically significant loss of compressive strength – its ability to hold weight.

The weak link is the mortar between the bricks, not the bricks themselves. Industry fire-rating tables show that a solid brick wall only about 150 millimetres thick can withstand four hours of standard fire exposure. Many historic masonry walls are two to four times that thick.

How engineers evaluate the damage

As architectural engineers, including the director of the Heritage 3D Lab at Penn State, we help communities rescue historic buildings after fires.

Evaluating a burned building starts with colour. When concrete or stone turns pink or red, it signals that the stone has been exposed to temperatures above roughly 300 C and iron in the material is effectively rusting in the heat. That is the threshold where it begin to lose significant strength. Gray or white means the stone got even hotter, water is cooking out and the material is turning to ash.

But colour is only a surface clue.

The critical question is how deep the damage goes. Fire damage in a thick wall is almost always one-sided. When researchers tested concrete masonry walls with fire on one face, those walls retained roughly 46% of their compressive strength, enough that they can be stabilised and repaired. When the same walls had fire on both faces, their compressive strength dropped to 14% to 27% of the original.

Engineers can estimate the depth of the damage using methods such as petrographic analysis – cutting thin sections from the wall and examining the microcracking under a microscope.

After the Notre Dame Cathedral fire in Paris in 2019, researchers drilled cores through the limestone vaults and mapped exactly where the heat stopped. The fire was catastrophic, but the heat stopped short of the full depth, even in vaults – the arched stone ceilings of the cathedral – only about 12 to 15 centimetres thick.

Paris' Notre Dame Cathedral ablaze in 2019. Image: Unsplash.

The colours of fire damage are visible on the Church of São Domingos in Lisbon, 67 years after a fire. The vault shows the pink-red tones that signal temperatures above 570 F (300 C). The columns are blackened by soot. Where the outer surface has spalled or chipped away, the undamaged masonry is visible beneath. Tiago Miguel Ferreira

Unlike the prolonged heat associated with many structure fires, a wildfire front can pass a building within minutes. Even when flames are intense, the relatively short duration of exposure gives heat little time to penetrate thick masonry walls, assuming interior materials don't catch fire and continue burning from within.

The outer surface may crack or spall as it expands under rapid heating, while the interior remains comparatively cool, preserving the mechanical properties of the masonry.

The clock is ticking for recovery

The clock is already ticking by the time an assessment can be conducted to determine whether a building can be saved.

The first step to saving it is shoring it up – propping up weakened arches, bracing freestanding walls and weatherproofing exposed surfaces to avoid more damage.

The governing principle in the International Council on Monuments and Sites guidelines for structural restoration of architectural heritage is minimum intervention – do only what is needed to guarantee the safety and durability with the least harm to the historical or cultural value of the property.

Fire-damaged mortar joints are repointed. Spalled or calcined stone faces are cut back to reach sound material and then patched or replaced with stones from the same quarry, where possible.

After the 1997 fire at Turin, Italy's Cappella della Sindone, the Chapel of the Holy Shroud, restorers replaced 1,400 marble elements and consolidated 4,050 more. They reopened the original quarry at Frabosa to get stone that would match the 17th-century building materials.

These are not fast processes. The chapel took 21 years to restore. But the window that determines whether restoration will even be possible is measured in weeks and relies on shoring up the masonry and weatherproofing it.

When demolition is (and is not) the answer

Not every fire-damaged building can be saved. When flames penetrate the interior of a building and attack its walls from both faces, the fire causes far greater damage to the masonry. Some types of masonry block can disintegrate days after a fire if minerals in the blocks get wet and expand.

But demolition should be a careful decision based on proper assessments. And right now, no country has a postfire assessment protocol for historic buildings comparable to what exists for assessments after earthquakes.

Wildfires determine what burns. People determine what is lost. Until those protocols are developed, the default will often be to treat a standing wall as debris rather than a valuable building block for the future.

This article was originally published in The Conversation on 14 August 2026.

Major deployments of firefighters to combat North American wildfires

With wildfires raging in the United States, the latest multi-agency contingent of NZ firefighters joins two deployments already on the ground in the US and Canada.

A large contingent of New Zealand firefighters left for the US on 11 August to support the response to wildfires in the north-west of the country. The latest in a series of such deployments over recent months.

Fire and Emergency New Zealand is leading the deployment, which includes crews from the Department of Conservation, the forestry industry and the New Zealand Defence Force alongside volunteer and career firefighters and incident management personnel.

"New Zealand is better prepared when all of our firefighting partners train, exercise and deploy together," said Fire and Emergency Deputy National Commander Megan Stiffler. "Having depth in our response capability to manage simultaneous large incidents in New Zealand requires specialist skills from across the sector.

"The strong relationships that enable that cooperation and coordination are on display as the members of our joint taskforce from around the country mobilise in preparation for their departure to the United States tomorrow."

Jarron McInnes from Manulife in Rotorua is deploying as a Crew Leader with the forestry sector's specialist crew. He has previously deployed to fight wildfires in Canada and Australia and says that forestry-trained firefighters have worked with Fire and Emergency in overseas deployments for decades, bringing specialised chainsaw skills and expertise.

Forestry workers are used to extreme conditions, "but it's their

Helicopter fighting BC forest fires during a hot sunny summer day. Taken near Port Alice, Northern Vancouver Island, British Columbia, Canada.

chainsaw skills where they really shine – tree felling, cutting fire breaks and fire lines," said Mr McInnes.

"The four DOC personnel have been selected based on their extensive wildfire suppression experience in New Zealand and internationally, as well as their specialist expertise in advanced and hazardous tree felling," said DOC Wildfire and Field Skills Manager Brent Swanson.

"It's also a great opportunity for our crews to build on their experience and gain further learnings from our overseas colleagues, to improve our response to wildfires in New Zealand," he said.

According to Staff Sergeant Matthew Anker, Fire Master at NZ Army's 4 Emergency Response Troop (Waiouru), the deployment is closely aligned with what the unit's soldiers train for.

"It is an opportunity for them to apply those skills in support of our international partners, while gaining further experience that will strengthen our response capability at home," he said.

The contingent are expected to take on multiple roles, ranging from firefighters and fire engine crews to chainsaw specialists, and including incident management roles such as helibase managers, logistics and liaison officers.

Two other deployments are already on the ground in the US and Canada, with five Incident Management personnel working on fires in Washington State and Oregon and six in British Columbia.

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Upon registration you will receive an invitation to download our conference app where details of the presentations will be shared. Any amendments to this program will be available on the conference app.

PROGRAMME: DAY ONE

Tuesday 8th September

Stream 1	Product Showcase	Site Visit OFFSITE
EHS/Exhibitor Pack In		One Stadium Site Visit
Registration & Trade Show opens / Lunch		
Opening by Event MC & Opening address by FPA, IFE, SFPE Presidents		
KEYNOTE SPEAKER: Lt. Adam Lynch *Lithium-Ion Battery Fires: Evolving Tactics and Trends*		
SPEAKER: George Hare *Is full encapsulation of mass timber sufficient?*		
KEYNOTE SPEAKER: Emma Sutcliffe *Extinguished or Escalating? Risks of Delayed and Secondary Thermal Runaway in EVs.*		
Afternoon Tea		
KEYNOTE SPEAKER: Abhishek Chhabra *Architecting Trust: Harnessing the ISO 17000 "Toolbox" and FCIA's DIIM™ Framework for New Zealand's Passive Fire Future*		
SPEAKER: Justin McEntyre *BIM and Passive Fire - Lessons learned so far*	PRODUCT SHOWCASE **Promat - Promatect® 100X partition board, FRR -/120/120+ wall and ceiling systems**	
SPEAKER: Dr Mayank Shrivastava *Fire Resistance Assessment of Steel Columns Embedded in Two-Way Fire Rated Wall Systems*		
SPEAKER: Xiang Zhou *Transferable and Robust AI Modelling for Smart Firefighting Using Graph Neural Networks*		
SPEAKER: Natasha Leniston-Bagnall *Strength of Woodcrete under Fire Conditions*		
Conference Close / Recap		
Drinks and Canapes		
FireNZ Presidents Club *by invitation only*		

Please note that the speakers and topics are correct at the time of publication but are subject to change if required

PROGRAMME: DAY TWO

Wednesday 9th September

Stream 1	Product Showcase
Registration & Trade Show opens	
Opening by Event MC	
Panel Discussion: **Rob Holland, Paul Richards, Chris Alderson** *Construction Fire Safety - a discussion*	
SPEAKER: Tim Mitchell *Emerging Wildfire Risks and Issues in New Zealand*	
KEYNOTE SPEAKER: Commissioner Gavin Freeman *Evaluation of EVIE – Victoria's 'Electric Vehicle for Incident and Emergency: Operational Capability, Environmental Impact, and Economic Feasibility*	
Morning Tea	
KEYNOTE SPEAKER: Dr Linus Lim *Atlassian Hybrid mass timber, concrete and steel building, Sydney.*	
KEYNOTE SPEAKER: Dr Claire Benson *Systems in Sync - Fire and Fire Protection Engineering for Hazardous Substances*	
Lunch	
KEYNOTE SPEAKER: Lt. Adam Lynch *Trends in Electric Vehicle Response Tactics*	
SPEAKER: Nadine Fargier *Lithium-Ion Battery Energy Storage Systems: What the Testing Really Tells Us*	PRODUCT SHOWCASE **Clarinspect - How Do You Know The Coating Was Applied Correctly? Prove It With FireQA Coatings QA & Log**
SPEAKER: Darren Aitken *NZS PAS 4509 Fire Fighting Water Supplies Update*	PRODUCT SHOWCASE **BRANZ - Update on the new fire testing laboratory at BRANZ**
Afternoon Tea	
SPEAKER: Cameron Douglas *Design Methodology for Timber Columns Exposed to Real Fires - A Thesis Summary*	PRODUCT SHOWCASE **Mt Hutt Digital - Leveraging e-Learning to up-skill and keep your team safe**
KEYNOTE SPEAKER: Emma Sutcliffe *Identifying Battery Fire Hazards in a Post-Natural Disaster Environment*	
SPEAKER: Charles Boyce *Passive Fire Compliance for Modular Construction*	
Conference Close / Recap	
Drinks and Canapes	
GALA DINNER	
Close of Day Two	

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PROGRAMME: DAY THREE

Thursday 10th September

Stream 1	Product Showcase
Registration & Trade Show opens	
Opening by Event MC	
SPEAKER: Darin Millar *Te Kaha - One Team*	PRODUCT SHOWCASE **Steel & Tube - Seismic and Reticulation Solutions**
KEYNOTE SPEAKER: Commissioner Gavin Freeman *Fire Rescue Victoria - Leading with Integrity in a Complementary Fire Service*	PRODUCT SHOWCASE **Zone – Expanding Timber Design Options Under NZBC: A Practical Guide to achieving Type A Timber Cladding in NZ**
KEYNOTE SPEAKER: James Lake *Fire Sprinkler Protection for Carparks - The Impact of hazard Classification Changes and Evolving Challenges*	PRODUCT SHOWCASE **Fireshield – Fire Protection Coatings – Case study – OB at NDH**
Morning Tea	
KEYNOTE COUCH SESSION: Commissioner Gavin Freeman, Emma Sutcliffe, James Lake, Dr Linus Lim *How do we make good fire-safety decisions when the evidence isn't complete?*	
Formal conference closing address	
Lunch	
Trade Show closes	
KEYNOTE SPEAKER: Dr Linus Lim *Fire Engineering for an Ever-changing Built Environment*	
SPEAKER: Dr Aatif Ali Khan *An Open source tool for CFD-FEM modelling for structures in fire.*	
SPEAKER: Samuel Aguiar *Fire-Stopping Standards in NZ: Comparing EN 1366 and AS1530.4 Frameworks*	
SPEAKER: Morteza Taghizadeh *Brief introduction of the BCA fire review during the Building Consent process and common fire RFIs - Christchurch City Council*	
Conference Closes	

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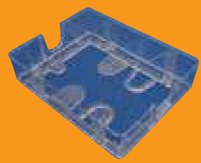

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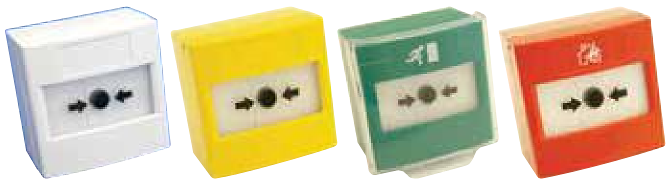

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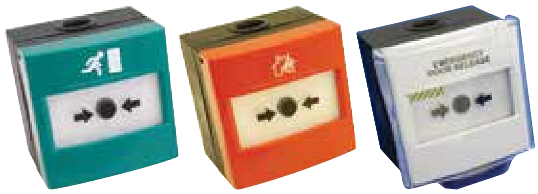

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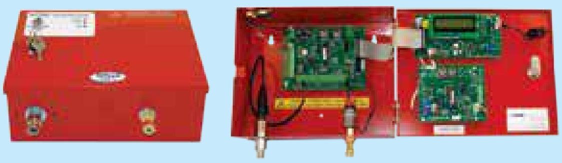
Approved to EN54-11
Material: Polycarbonate / Glass Reinforced Nylon
Current rating: 1 Amp @ 12 - 24 v DC, 6 Amps @ 125 - 250 v DC
Optional clear cover
2 x SPDT switches
Positive action that mimics the feel of breaking glass
Visible warning flag confirms activation
Simple polycarbonate key to reset operating element – no broken glass
Dimensions in mm: 89 x 89 x 90

Battery Load Tester Ref. 730-101
ViTECH, strong, lightweight aluminum case, 5,15 and 30 amp battery load tester for fire and alarm use.
Weight: 500gms, Size: 165mm x 90 x 70mm.



Fire Brigade Alarm: (Closed/Open) Ref. 730-231
ViTECH branded Type X (730-230) and Type Y (illustrated) models with temperature compensated pressure transducers with digital display showing pressures for defect, re and pump start.

Anti-Interference Device
Ref. 730-400 series
ViTECH AID for sprinkler valve monitoring; ts all ball valve sizes.

Loktronic

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FPA MEMBER