

COMPLIANCE OUT OF THE BOX: ELIMINATING RISK IN PASSIVE FIRE PROTECTION



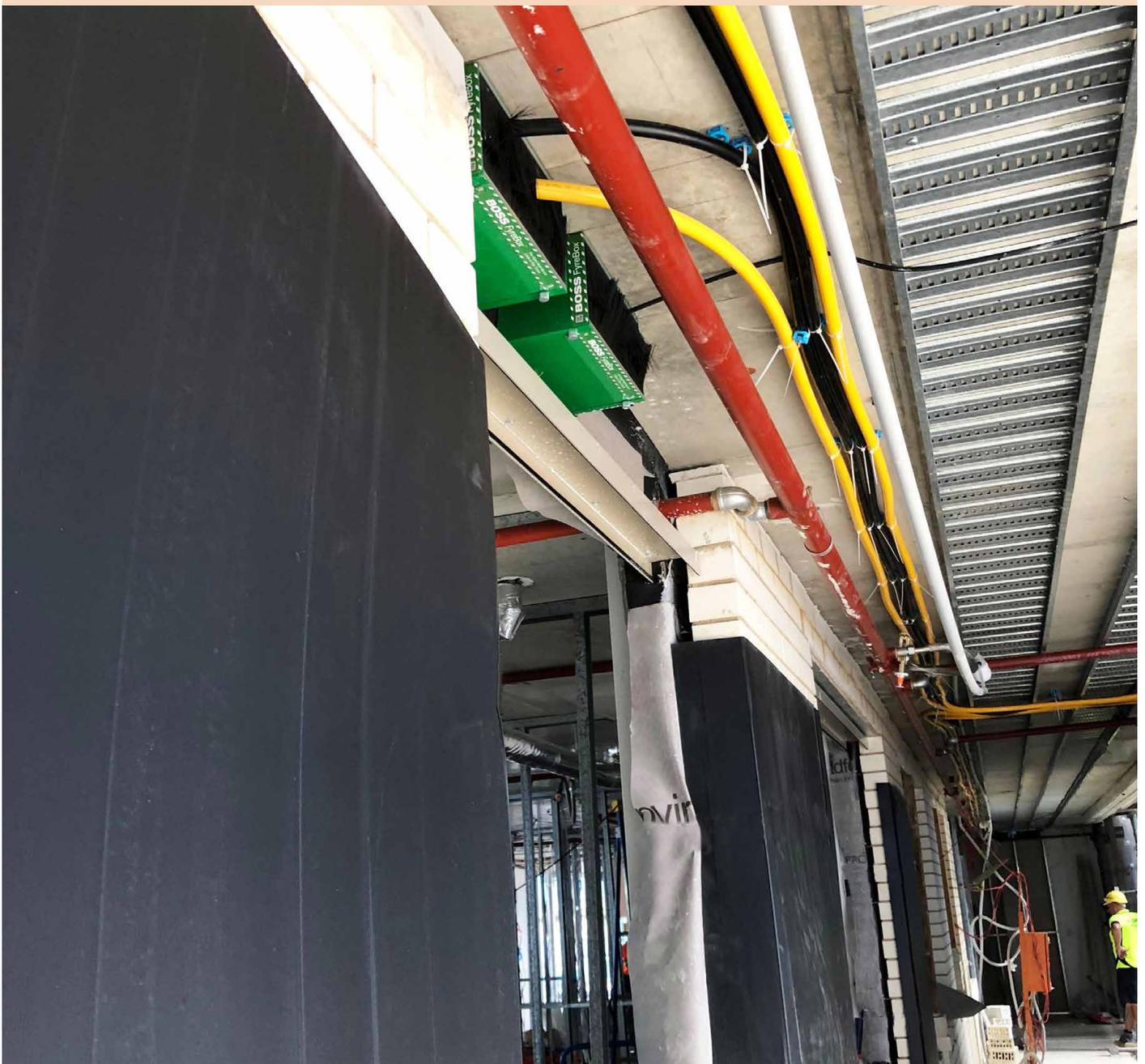
INTRODUCTION

The Australian construction industry is booming. According to the 2017 Construction Outlook Survey of the Australian Constructors Association, the total value of major project work across the country increased by 7.1% in 2017-18, and will rise by a further 6.8% in 2018-19.ⁱ The multi-level apartment sector in particular has seen solid growth, expanding by 18.9% in 2017-18 alone.ⁱⁱ

This growth has had widespread repercussions that include both significant innovation and new challenges. As complex construction materials and technologies enter wide use, residents of multi-residential developments are demanding more services within their living space. Coupled with a strong developer interest in increasing lettable area, the question of fire compliance has become increasingly complex.

With this in mind, the industry has begun to closely scrutinise trades and subtrades, many of which are currently falling short in meeting compliance when it comes fire rating multi-residential apartments, which in turn blows out deadlines and significantly increases project costs.

Throughout the industry, there is growing awareness of the risk of incorrect or inadequate fire separation, and builders and trades are accordingly growing more responsible and seeking innovative, effective solutions for passive fire protection. In this whitepaper, we explore the key barriers to achieving fire ratings on large buildings – particularly high rise apartments – in today's construction climate, and present the best ways to overcome these.





UNDERSTANDING THE PROBLEM

In the past, the major construction trades (these being electrical, air conditioning, plumbing, data, fire, and internet) often carried out their own passive fire protection after installing their services. As such, there was previously a strong market for Passive Specialist Application, a specialist trade that fire rated other trades' penetrations.

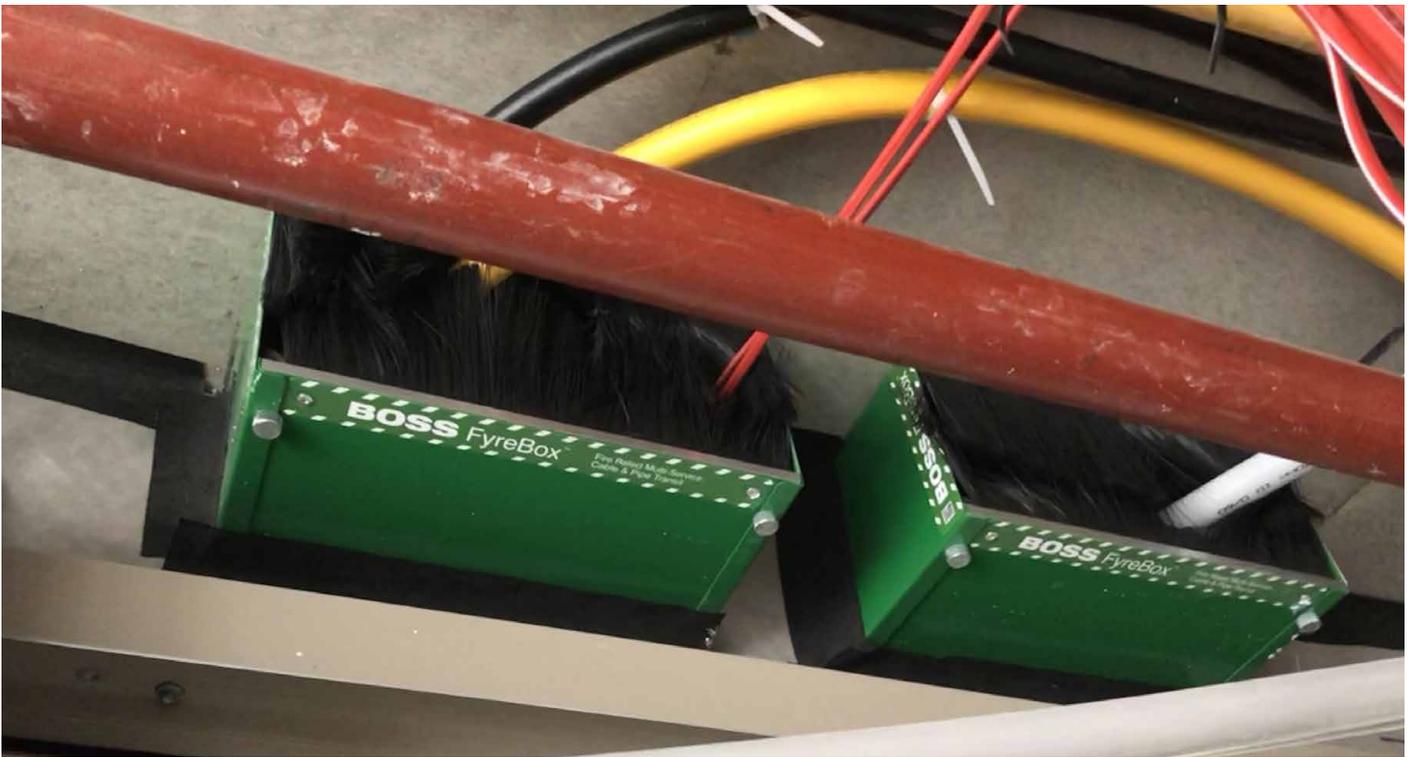
Now, in the interests of costs and externalising risks – which is to say, making subtrades accountable for the passive fire rating of their own penetrations – subtrades often fire rate their own work. While this shifts responsibility away from the builder or developer, it also poses a significant risk in terms of ensuring the adequacy of fire rating: over half of “approved” systems fail due to incorrect product specification, failure by the installer to follow strict installation guidelines and correctly install the product, and/or the product's underperformance or failure to perform “as tested”.

Installation error is a major threat to passive fire protection, since it is difficult to monitor the practice of different subtrades. Because of the wide margin for human error, there is always a significant possibility that the subtrade will misinterpret or simply not follow installation guidelines, particularly where the fire rating system is complex or unfamiliar.

Difficult installation contexts are becoming increasingly common, particularly in high-density apartments where space is at a premium. As a consequence of developers seeking to maximise lettable area, the ceiling space height in most multi-residential developments is decreasing, complicating the installation of services and passive fire protection. It is often difficult to identify a passive detail after it has been installed.

In addition to physical complications, the number of materials that must be protected within the tight confines of today's multi-residential apartments is increasing. Tenants now have more services than ever in their living spaces, many of which use multiple cables and pipes; trades must now engage with the latest in pipe material innovation and the myriad of plastics used for different pipe applications, such as PEX, PEX-AL, ABS, PP, PP-R, PE-R, HDPE, uPVC, cPVC, and more, not to mention navigate the difference between paircoil with cables, lagged, and unlagged services.

Unfortunately, the vast majority of fire rating technology on the market is simply inadequate or too complex for subtrades to correctly install one hundred percent of the time. Many options are also significantly lacking in quality and do not allow for easy assessment of performance.



HOW THE INDUSTRY HAS RESPONDED

A recent spate of high profile residential tower fires has placed fire rating under intense scrutiny and served to highlight the importance of adequate passive fire protection in preventing disaster. In Australia, the landmark case to remember is the 2015 blaze at the Lacrosse tower in Melbourne's Docklands; around the world, the fire that has sent the biggest shockwaves throughout the global construction industry is the 2017 Grenfell tragedy, which claimed 71 lives.ⁱⁱⁱ

In Australia, the Lacrosse fire prompted significant industry action that included a Victorian Building Authority Inquest and Senate Economics References Committee Inquiry into non-conforming building products.

Though the Inquiry has thrust flammable aluminium composite panels in particular into the spotlight, it is also a clear indicator of increased awareness regarding the role of adequate design and construction in ensuring fire safety.

Indeed, this awareness has trickled down throughout the industry, extending not only to specifiers and architects but also to manufacturers, product suppliers, and developers. For example, both LendLease and Multiplex have been known to carry out their own fire tests to 'prove' the systems already available and in common use in their projects, ensuring that they are indeed performing as described.

Growing concerns regarding fire safety have also prompted a general movement in the industry toward investigating new, innovative fire rating technologies. In conjunction with the rising popularity of multi-residential apartments, these concerns mean that developers are now seeking solutions that bundle services in tight spaces and bring passive fire separation back to the builder and out of the realm of subtrades with vastly different levels of knowledge, skill, and care. In short, developers are looking for means of fire rating that guarantee compliance, reduce cost, and completely eliminate the risk of getting it wrong.

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BOSS FYREBOX™

In response to growing demand for fire rating technologies that overcome the challenges typically associated with fire rating, BOSS FyreBox™ guarantees compliance with all the relevant fire performance standards. Perfect for tight spaces, the BOSS FyreBox™ bundles all services into one consolidated location, considerably streamlining both the installation process and passive fire protection as a whole.

One BOSS FyreBox™ can protect all trades for up to 120 minutes, and accommodates all penetrations in high-end apartments including: steel sprinkler pipes; copper pipes; multiple PEX and PEX-AL services for plumbing, uPVC conduit and NBN pipes, and lagged copper pair coil for HVAC systems. The BOSS FyreBox™ can also accommodate bundles of power cables, data cables, fire services, televisions, intercoms, and evacuation lights and signage.

The BOSS FyreBox™ can be installed before or after walls are erected. When installed prior to drywall, the BOSS FyreBox™ streamlines the subtrade scheduling process and eliminates the headache of multiple trades vying for space and access at the same time.

On average, it can reduce labour – and therefore costs – entailed in installation by up to 90%. In addition to its fire protection and low-fuss installation, the BOSS FyreBox™ is also acoustic rated to Rw50, making it ideal for minimising noise travel in high density apartment construction and meeting the requirements for apartments contained in the NCC. Beyond this, the BOSS FyreBox™ virtually eliminates any scope for error. At installation time, each

subtrade need only slide their services through the compact, easy to use box unit.

The mounting method is exactly the same as that for a nonrated wall, and removes the possibility of installation error due to poor workmanship, incorrect product selection, or misunderstood instructions. Where other methods of passive fire protection are accompanied by complex or hard to interpret instructions, the straightforward installation of BOSS FyreBox™ leaves little room for mistake.

With the BOSS FyreBox™, litigation for latent warranty issues and non-compliance are all things of the past, as are certifiers refusing to sign off on project completion prior to proof of passive fire measures. The single, streamlined product ensures compliance at the time of installation and allows fast, simple compliance checks in accordance with AS1851 – Maintenance of fire protection systems and equipment.

In November 2017, BOSS FyreBox™'s outstanding fire protection performance was recognised by the independent judging panel of the annual Fire Protection Industry Awards, who named Multiplex's Capitol Grand the winner of the prestigious Project of the Year award. BOSS Fyrebox™ was used throughout the high-end apartment project, and provided a guaranteed solution for eliminating the risk of non-compliance.

BOSS Fire was also the recipient of the **Product Innovation of the Year Award** at the 2018 edition of the annual Australian Construction Awards.

REFERENCES

- ⁱ The Urban Developer. "Australian Construction Outlook Forecasts Major Growth by 2019." The Urban Developer. November 14, 2017. <https://theurbandevolver.com/articles/australian-construction-sector-forecasts-major-greater-value-growth-2019>.
- ⁱⁱ "Major construction on track for solid upturn." Major construction on track for solid upturn- The Australian Industry Group. November 14, 2017. Accessed March 04, 2018. <https://www.aigroup.com.au/policy-and-research/mediacentre/releases/Construction-Outlook-Nov2017/>.
- ⁱⁱⁱ Rawlinson, Kevin, Vikram Dodd, and Harriet Sherwood. "Grenfell Tower final death toll: police say 71 lives lost as result of fire." The Guardian. November 16, 2017. Accessed March 04, 2018. <https://www.theguardian.com/uk-news/2017/nov/16/grenfell-tower-final-death-toll-police-say-71-people-died-in-fire>.