AN AGE-OLD SOLUTION TO CONTEMPORARY CHALLENGES:

THE RESURGENCE OF ARCHITECTURAL TIMBER IN INTERIOR USE

INNOWOOD
SUSTAINABLE TIMBER ALTERNATIVE

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INTRODUCTION

The landscape of contemporary design is incredibly complex. From increasingly stringent regulations and standards to industry and market concerns regarding technical performance, health, sustainability and aesthetics, Australian designers and specifiers must account for a breadth of considerations on commercial and residential building projects.

The growing demands on building design have encouraged innovation across the industry, with manufacturers investigating new materials, technologies and systems, including improvements on existing solutions. For example, thanks to new production techniques, next generation timber products offer elevated levels of stability, strength, durability and fire safety, while reducing the environmental impact of construction and delivering the timeless aesthetic of natural wood.[1]

In this whitepaper, we take a closer look at architectural timber and its resurging popularity as a material for interior use and explore how advances in technology and design creativity have made this age-old material a viable solution in contemporary design. We pay close attention to the high performance characteristics of new timber composite materials in addition to their design flexibility and health benefits. Finally, we present designers and specifiers with a selection of high quality architectural timber solutions that can enhance their next commercial or residential project.

DEFINING ARCHITECTURAL TIMBER

The term “architectural timber” has a broad meaning that encompasses any timber element that is designed to be visible within a finished space as opposed to structural timber, which is concealed by other materials and building elements. Accordingly, this definition includes a wide range of building elements from interior walls and ceiling cladding to freestanding dividers and partitions, battens and baffles.

Architectural timber was commonly used throughout most of the 20th century but changing tastes and material innovation saw its popularity diminish at the turn of the century as other materials were perceived as exciting and modern. In recent years, the use of architectural timber has regained popularity due to its versatility and aesthetic appeal.[2] Architects also now place greater value on timber’s sustainability, quality and speed of construction.[3] Furthermore, the market has expanded to include innovative composite materials that retain all the performance characteristics of timber but offer a more environmentally-friendly and flexible design solution.

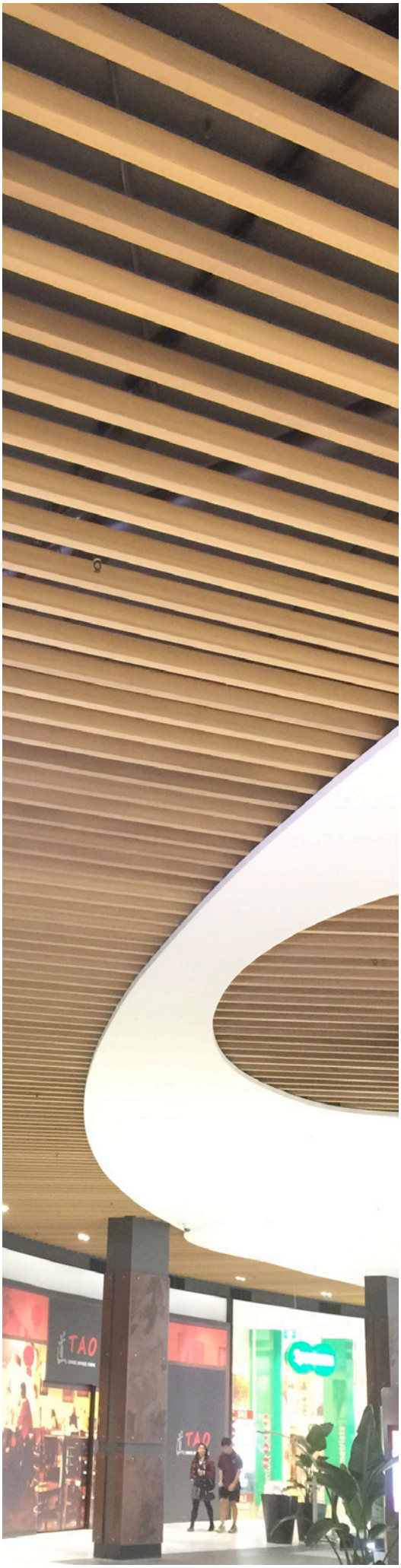
THE SHORTCOMINGS OF ALTERNATIVE MATERIALS

The alternatives to architectural timber vary, from natural materials to entirely synthetic products, many of which offer their own benefits like lower upfront costs and ostensibly low maintenance requirements. Vinyl and laminate building products, for example, are typically easy to clean and affordable with relatively low installation requirements. Such products are also available in a range of profiles and styles including timber looks and finishes.

In spite of these benefits, many alternatives to architectural timber fall short in terms of two critical characteristics, specifically:

- **Aesthetics**
  Due to issues relating to material composition, design and durability, many alternatives to architectural timber have limited long-term aesthetic appeal. For example, vinyl and paint can show wear and age, and the former can fade unevenly over time. Both are also trend-driven and can date quickly. Ceiling tile linings can accumulate dust and dirt, resulting in unsightly stains and discolouration. In addition, many modular partition and wall lining systems use poor quality materials and basic designs, resulting in an overall lack of character in an interior space.

- **Performance**
  As they are often cheaply made and mass-produced, many alternatives to architectural timber fail to meet the increasingly high standards that must be met by construction materials. The key performance areas include acoustics, thermal insulation and especially fire performance. Timber is a tried-and-tested material with a long history of use in construction, whereas lower quality materials can be untested or fail to meet minimum standards, making such materials inappropriate for use throughout different internal spaces.



ARCHITECTURAL TIMBER: THE NATURAL CHOICE

Architectural timber products, especially modern composite materials, offer outstanding performance, design flexibility and health benefits. As explained below, these benefits make architectural timber an ideal solution given the complex needs of contemporary building design.

Performance

Architectural timber products offer outstanding performance in relation to three critical categories: fire performance, acoustic insulation and thermal insulation.

Though timber is a combustible material, it has significant insulating properties and burns in a slow and controlled manner.[4] Timber products can also be treated to a high degree of fire resistance. In the case of a fire, a layer of charcoal forms on the timber surface, which acts as an insulator that protects its core layers. This charring protects against heat penetration, allowing the timber to retain its strength and stability.[5] At first, the rate of charring is fast but as the char depth increases, a stronger protective layer is created which slows the overall combustion rate.[6]

Given the current regulatory focus on fire safety, designers and specifiers should ensure products selected for a building project are compliant with the relevant performance requirements in the *National Construction Code* (NCC). Composite materials, which are engineered for enhanced performance, frequently exceed these standards, granting designers and specifiers peace of mind that they are complying with increasingly stringent regulatory requirements for fire safety.

Timber also offers significant acoustic performance with the ability to reduce the transmission of sound vibrations. Accordingly, it is the ideal material for dampening excess sound and echo.[7] Effective in either panel and batten configurations, this quality allows architectural timber to provide additional sound performance for offices, schools and commercial environments in which noise control and comfort is essential.

In addition to its high fire and acoustic performance, timber also offers highly efficient thermal insulation properties. Timber contains air pocket within its cellular structure, which provide a natural barrier to heat and cold.[8] In terms of thermal performance, timber outperforms other materials such as stone, steel and aluminium by significant margins.[9] These properties not only deliver enhanced thermal comfort but also reduce the need for artificial heating and cooling, making timber a sustainable and cost-effective building solution.

Design Flexibility

While all types of architectural timber offer a considerable amount of design flexibility, composite timber products excel in this area. Composite timber is typically available in a variety of profiles. It is also easily installed in vertical and horizontal configurations to suit spaces of varying sizes and shapes. It can also be used for contiguous surfaces for wall and ceiling cladding, evenly spaced battens and louvre blades. This versatility is combined with easy machining capabilities and a range of finishing options, enabling designers to use composite architectural timber to transform any interior space and add the warmth, character and texture for which natural timber is prized.

Health Benefits

Numerous studies have demonstrated that interior usage of timber can improve the health of building users and occupants by, among other things, regulating humidity and enhancing indoor quality.[10] Timber's ability to absorb, store and release moisture helps prevent interior spaces from becoming too humid or dry. By regulating air moisture content, timber can help minimise the risk of mould and particulate matter accumulation, which can cause illness and exacerbate asthma and/or allergies.[11] Timber also traps less dust than soft materials like carpet and is considered hypoallergenic.[12]

These health benefits can be enhanced by choosing composite timber products with low or no volatile organic compound (commonly referred to as "VOC") content. Such products will not release vapours and gases that are potentially harmful to occupants and present a sustainable alternative to natural timber as they can be safely recycled at the end of their useful life.

Lastly, architectural timber can play a central role in green space and biophilic design approaches.[13] Biophilic design emphasises referencing natural elements when creating indoor environments to enhance occupant health and wellbeing. With the look and feel of wood, designers can use architectural timber to establish a connection with the natural world. This connection with nature has been shown to have significant psychological benefits on occupants, including reduced feelings of stress and increased positivity.[14]

INNOWOOD

For over a decade, Innowood has been the global market leader in sustainable, high performance composite timber products that address the complexities of contemporary design across all sectors.

With strong in-house design and manufacturing capabilities, the company utilises its extensive commercial, residential and industrial experience to deliver a range of solutions that offer all the benefits of natural timber in addition to enhanced performance characteristics.

Offering an environmentally-friendly, low-VOC timber alternative, Innowood is characteristically in tune with the growing market demand for high quality, code-compliant and stylish architectural timber products.

Along with fire performance, Innowood composite timber has also been independently tested for structural performance, weather resistance, durability and wet-slip resistance. In line with the company's commitment to sustainability, Innowood composite timber is also thermally-efficient, non-toxic and 100% recyclable.

Innowood materials are self-extinguishing in the event of a fire and provide outstanding fire resistance as proven under the Early Fire Hazard Test set out in AS/NZ 1530.3.

InnoCeil
A versatile, design-oriented product, InnoCeil is an engineered timber-look ceiling system with multiple standard profiles and feature elements, curves, waves and shadow effects. InnoCeil systems are easy to install, with a variety of ceiling installation and fixing methods, and it can be seamlessly integrated with services such as lighting and air conditioning.

InnoClad
InnoClad is an architectural composite wood system for internal lining that is suitable for a wide range of commercial and residential applications. Offering high thermal performance and fire resistance, excellent acoustic ratings and the ability to be installed in vertical or horizontal configurations, this solution can be used on new builds, renovations and retrofits alike.

InnoScreen
InnoScreen screen systems offer a sustainable, flexible and versatile alternative to conventional façade designs for commercial and residential projects. With the look and feel of real timber, this product can enhance the appearance of internal walls or ceiling treatments. Easy and fast to install, with concealed lock-in fixing and direct face or rear fixing methods available, this solution can save time and money while delivering high levels of performance and quality.

InnoFloor
InnoFloor uses innovative technology to deliver an eco-friendly, aesthetically-appealing and high performance flooring solution. InnoFloor can be used in both domestic and commercial projects and comes in a choice of Standard Flooring, Parquetry Flooring, and Sandwich flooring.

InnoFloor Sandwich Flooring is available for internal use with Acoustic Underlays. Sandwich flooring can be laid over existing concrete or traditional wood flooring. In addition to its hardwearing finish, this flooring solution includes an extra protective layer that is highly scuff and stain resistant. Due to this quality, the Sandwich flooring option is ideal for high traffic areas and requires minimal cleaning and maintenance.

For more information visit innowood.com

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