

# LET THE BREEZE IN: ACHIEVING EFFICIENT, CLIMATE-SENSITIVE DESIGN WITH VENTUS LOUVRES



LOUVRE GALLERIES





## INTRODUCTION

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Australia is a continent known for weather extremes and climate variability. Known as the “sunburnt country” and characterised by its vibrant outdoors culture, Australia will be particularly affected by predicted global changes to climates and increasing rates of warming. In 2016, the Bureau of Meteorology (BOM) noted that temperatures have increased by approximately 1°C each year since 1910.<sup>1</sup>

The CSIRO and BOM have jointly predicted that if current climate change and emissions trends continue, a temperature rise of more than 5°C may occur by the end of the century.<sup>2</sup>

Warmer temperatures are impacting Australians today. 2017 was the third-warmest year on record, and also saw the annual national mean temperature rise to 0.95°C above average.<sup>3</sup> Australian city dwellers are being subjected to uncomfortably high temperatures, with 35°C degree days becoming more

common throughout the capital cities.<sup>4</sup> Against this backdrop, the need for climate-sensitive homes and residential spaces has never been more urgent. In the face of rising temperatures, residential spaces in Australia need to offer a high level of performance and functionality to deliver a comfortable, healthy living environment all year round.

On top of this, the growing consumer awareness of the human impact on climate change has encouraged the demand for homes that deliver relief from heat without negatively impacting the environment.

In this whitepaper, we explore how carefully designed window louvre systems respond to the issue of rising temperatures by balancing functionality, performance and sustainability. Of particular note is their ability to deliver versatility and energy efficiency within a climate sensitive design.

## DESIGNING FOR COMFORT

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Thermal conditions have a direct impact on the comfort of occupants, as well as their health and wellbeing. The Green Education Foundation notes that thermal comfort is “achieved only when the air temperature, humidity, and the movement of the air are in proper balance with each other.”<sup>5</sup> The University of Texas suggests that “thermal equilibrium” – that is, maintaining a balance of heat lost and heat produced – is critical to maintaining thermal comfort.<sup>6</sup> To meet the challenge of rising temperatures, design solutions such as louvres must balance the variables that can impact on thermal comfort, such as radiant and ambient temperature, humidity, and air motion, as well as the characteristics and activities of the occupants themselves.<sup>7</sup>

Louvre windows achieve this balance by increasing circulation and ventilation, allowing natural breeze to enter an interior space.

This not only opens up rooms and/or entire houses depending on design, but also acts as a form of passive cooling. As a result, louvres can play a significant role in keeping interior spaces cool during warmer months, managing humidity, and reducing condensation build-up.

Well-designed louvre systems can also provide window shading and allow users to control natural light levels. When correctly designed, such louvre systems should allow light to enter an interior space while minimising solar heat and damaging UV rays. In winter months, weather-tight designs can protect against the winter sun, as well as wind and rain. Louvres can help regulate indoor air temperature by keeping out cool air during cooler months. This additional functionality allows louvres to offer year-round comfort in all types of climates.





## ENHANCING ENERGY EFFICIENCY

More than ever, consumers are valuing solutions that offer maximum functionality but save on energy and only have a small environmental footprint. Due to rising temperatures, energy use from air conditioners are on the rise, with a direct impact on infrastructure and household budgets.<sup>8</sup>

On very hot days, unprecedented household energy demands have the potential to cause power interruptions in major cities.<sup>9</sup> The rising cost of energy across Australia is also making consumers more conscious of energy efficient solutions.

Per the Australian Energy Council, the cost of household electricity increased by 80-90% between 2007 and 2017.<sup>10</sup> Furthermore, electricity costs currently make up 2.17% of total household spending.<sup>11</sup>

Louvre systems offer an energy efficient solution with clear financial benefits. The natural ventilation provided by well-designed louvre systems is the key feature in this regard. Louvres provide passive cooling and ventilation, which is to say that external air movement (i.e. wind) and pressure differences are used to cool an interior space as opposed to the artificial, mechanical cooling provided by air conditioners.<sup>12</sup>

The ventilation provided by louvre systems is reliant on natural forces, and accordingly delivers cost savings and reduced energy consumption to its users. According to the National Institute of Building Sciences, natural ventilation can save 10-30% in total energy consumption in favourable conditions.<sup>13</sup>

In a similar vein, the natural lighting provided by louvre systems can also reduce electrical lighting costs.<sup>14</sup> Mechanical air conditioners, on the other hand, not only consume significant amounts of energy but also attract ongoing maintenance and repair costs.

## SHAPING HEALTHY INDOOR SPACES

Louvres are also useful solutions when seeking to create interior spaces that promote health and wellbeing. A Washington State University study determined that proper ventilation is “essential for a comfortable, healthy and productive indoor environment”.<sup>15</sup> Additionally, the same study highlighted that natural ventilation can improve indoor air quality by reducing odours, humidity, dampness, and dust and dirt accumulation, all of which can negatively impact on the health of occupants.<sup>16</sup>

Louvres can also allow a healthy amount of natural light into an interior space. Natural lighting has been positively linked to improved human performance and health. According to Architecture Lighting Magazine, scientific studies have reported that day-lit indoor environments “increase occupant productivity and comfort, and provide the mental and visual stimulation necessary to regulate human circadian rhythms.”<sup>17</sup> As natural light is dynamic in nature, louvre systems can also be designed with advanced lighting and shading controls to manage discomfort caused by glare and solar heat gain.

“ The ventilation provided by louvre systems is reliant on natural forces, and accordingly delivers cost savings and reduced energy consumption to its users. ”



## DELIVERING FLEXIBLE CONTEMPORARY STYLE

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A key concern of architects, designers and homeowners is finding a solution that is visually consistent with their specific tastes and style but is also flexible enough to suit a range of applications and environments.

Louvres come in a practically limitless variety of sizes, materials, colours, dimensions and designs. Given this range of options, louvres offer a high degree of aesthetic and design flexibility.

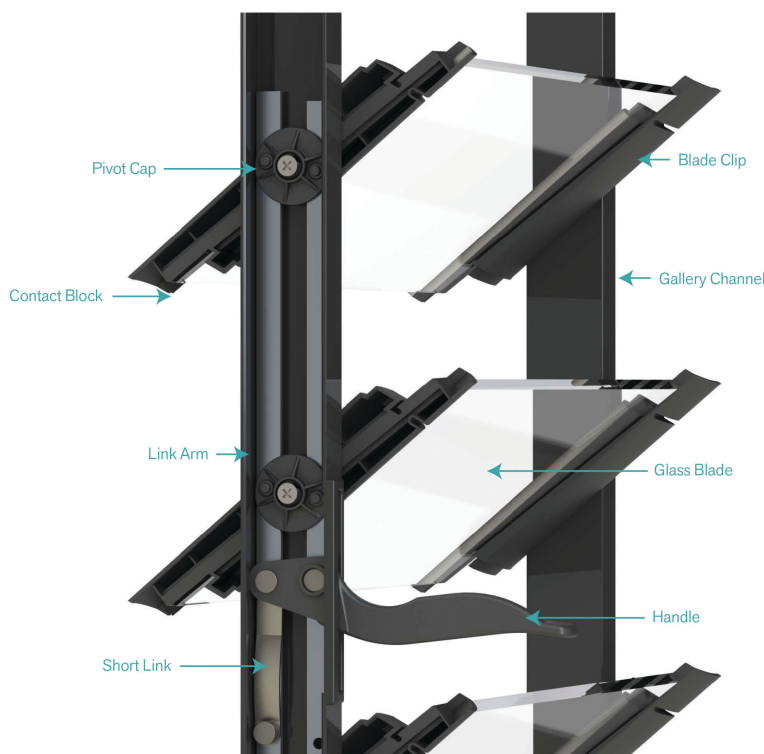
Louvres are also versatile in that they can be implemented in a number of different ways to meet different needs.

For example, louvres can be installed in specific rooms in different parts of the house that are particularly susceptible to the effects of high temperatures.

Louvres can also be installed throughout the entire home to create an effective ventilation system that delivers fresh air and cool breeze throughout.

Beyond this, the position of louvres can be adjusted to accommodate outdoor views, or louvre systems otherwise carefully placed so as not to compromise interior privacy.

## PRODUCT OVERVIEW



## DORIC

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Doric has been the Australian market leader in innovative door and window hardware for residential, architectural and commercial applications for over 45 years.

With a hard-earned reputation for quality and innovation, Doric delivers high performance solutions to both the Asia Pacific and North American regions. Supported by a world-class internal research and development department, Doric is at the cutting edge of

design and technology. The recipient of multiple Australian Window Association Design Awards, Doric utilises the most advanced techniques in design and manufacturing to remain ahead of the curve.

All Doric products are backed by stringent testing and quality benchmarks and are complemented by the highest levels of service and delivery.





## VENTUS LOUVRES

When creating healthy, functional interior environments, Ventus Louvres is the ideal window solution. Using the highest quality materials, and manufactured to Australian Standards, Ventus Louvres combine modern design with unmatched performance.

With a 100% vent opening, ergonomic handles, non-scratch UV stabilised powder coat, and state of the art components, Ventus Louvres are Australia's leading standard louvre product.

With Ventus Louvres, homeowners can reap the benefits of natural lighting and ventilation, alleviating the need for artificial heating, cooling or lighting, reducing total energy consumption and delivering major cost savings. Ventus Louvres is the all-year-round performer and its advanced design is built to withstand Australia's harsh climate.

In addition to excelling in high temperature climates, Ventus Louvres also offers protection from the elements. Ventus Louvres are fully weather tight and easily resist wind, rain, and other weather events when in a closed position, thus providing

homeowners with a versatile window solution for all sorts of conditions. Ventus Louvres provide architects, designers and homeowners with high levels of design flexibility. The system can be used for windows and also to enclose verandas, balconies and the areas above existing balustrades. Available in a wide range of colours, styles and finishes, the sleek design of Ventus Louvres can be matched to homes of any size and aesthetic.

Ventus Louvres are fully compliant with the fall prevention requirements set out in the Building Code of Australia (BCA) and meet the relevant BCA testing standards. In fact, Ventus Louvres exceed the 250N result required by the BCA.

This means that a 125mm sphere cannot pass through the louvre at a horizontal outward force of 250N. This product has been tested to meet AS4420 test methods and has passed AS/NZS2047 – 2014.

In addition to providing high levels of performance, functionality and style, Ventus Louvres are backed by a 10-year warranty.

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