

SUSTAINABLE SCREENING: THE BENEFITS OF EFFECTIVE INSECT SCREEN SPECIFICATION



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Screening enables a constant supply of fresh air to enter an indoor space, cycling out bacteria, pollutants and other contaminants.



INTRODUCTION

The effect of Australia's changing climate and the growing public emphasis on sustainability underscores the importance of good architectural design that works in harmony with the natural environment. According to the Bureau of Meteorology, 2018 was Australia's third-warmest year and a year characterised by protracted drought.¹ The 2018-2019 Australian summer was the hottest on record,² with trends indicating that this warmer-than-usual weather will continue into the foreseeable future.

In response, Australian designers and specifiers are focusing on creating sustainable buildings with features appropriate for the surrounding environment and weather conditions. This means identifying design solutions that deliver energy-efficient thermal comfort all year round, through Australia's warm, humid summers as well as its mild winters. Such solutions must also enable elevated sustainability and health outcomes without compromising on quality or aesthetics. In relation to these criteria, retractable insect screens outperform conventional door and screening systems.

In this whitepaper, we take a close look at designing for the Australian climate and the benefits of insect screening in this context, with a focus on retractable screens. We briefly outline some of the key considerations for specifying retractable screens, providing designers and specifiers the information they need to select the ideal solution for their next residential project.

DESIGNING FOR THE AUSTRALIAN CLIMATE

A key objective of sustainable building design is to create spaces in which occupants are comfortable while reducing the reliance on artificial heating and cooling. According to the Australian government, an estimated 40% of household energy is used for heating and cooling to achieve thermal comfort.³ As noted by the Australian Government's YourGov website, this rate could be cut significantly with effective climate-responsive design.⁴

Reducing energy consumption associated with heating and cooling is challenging for homes built before modern efficiency standards were in place. Affordability may also be a barrier as cheap but inefficient solutions are often attractive at the outset of building projects in a competitive and cost-sensitive environment. However, the trend of rising energy costs is shifting the market focus to energy-efficient solutions that result in long-term, operational savings.⁵

While Australia's climate is varied across the continent, rising temperatures and generally dry conditions are common factors affecting building design regardless of location. When designing for Australian homes, the most efficient design solutions will be those that:

- maximise cooling air movement;
- provide sun protection and mitigate solar heat gain during the summer; and
- enable appropriate sun penetration during the winter.

BENEFITS OF RETRACTABLE INSECT SCREENS

Retractable insect screens contribute to buildings that work in harmony with Australia's unique climate. The benefits of retractable screens and insect screening generally are discussed in more detail below.

Temperature regulation

Due to its perforated mesh construction, insect screening enables a natural flow of air to enter an indoor space. It also blocks out direct sunlight, minimising the build-up of heat.

The combined effect of natural ventilation and shading reduces the need for artificial cooling in summer, leading to significant energy savings and lower emissions. At the same time, well-specified screening allows a degree of sunlight to penetrate indoors, which is beneficial to thermal comfort during the winter season.

Natural light filtering

The mesh construction of insect screening also has the added benefit of blocking direct sunlight and protecting against ultra violet (UV) light. Due to being semi-transparent, insect screening allows a controlled amount of natural light to enter into an indoor space. Retractable wide-span screens offer even greater control of views and light, both of which would otherwise be blocked by a solid door or sliding panel. This can result in further energy savings from a reduced reliance on artificial lighting.

Prolonged exposure to UV light can fade and discolor items within the home. By providing some protection against direct exposure to UV light, insect screening can also help preserve valuable items such as furniture and flooring.

Pest control

Effective screening can stop pests from entering an indoor space, reducing the need to use toxic chemicals and pesticides indoors. The environmental impact of pesticides is well-documented.⁶ Unless carefully used, pesticides may kill pests but could also have an

adverse impact on non-target species. This leads to a reduction in local biodiversity and food availability and, in some cases, contamination of water, soil and air.

The use of pesticides can also affect occupant health and wellbeing. Overexposure to pesticides can lead to headaches, dizziness, vomiting, chest tightness and other complications.⁷ In serious cases, chronic poisoning can occur, leading to serious, long-term illnesses and health issues.

Occupant health and wellbeing

Well-specified screening also improves indoor air quality due to increased ventilation and airflow. Stagnant air and a lack of ventilation encourages bacteria and mould growth. Screening enables a regular supply of fresh air to enter an indoor space, cycling out bacteria, pollutants and other contaminants. Wide-span retractable screens are particularly beneficial in this regard, as they provide a larger opening than traditional screen doors leading to increased airflow.

Screening also provides an effective barrier to the outside world, while being semi-transparent. This allows occupants to benefit from the comfort of being indoors as well as an enhanced connection to the natural environment. Natural light and access to outdoor views can reduce feelings of being enclosed, which has a positive effect on the mood and aesthetic of indoor spaces.

Aesthetic appeal

Available from select suppliers, screens that are retractable and wide-span provide additional design benefits to designers, specifiers and homeowners. Wide-span screens enable greater views and airflow than conventional sliding panels or door. Due to their size and width, they can also be utilised to create unique installations and architectural features. A retractable sliding mesh that disappears when not in use enables a minimal, clean aesthetic that is in high demand with architects and homeowners.



INSECT SCREEN SPECIFICATION: KEY CONSIDERATIONS

Designers and specifiers should ensure that the screening solution chosen for their project meets the requirements of the intended application and installation context. Some of the key considerations when specifying insect screening are discussed below.

Installation

Most retractable screening systems can be retro-fitted and installed into an existing application. Retro-fit screens can be relatively discreet though the side profile, which contains the rolled insect mesh, is sometimes visible.

Some new retractable wide-span models feature an integrated frame that is built into the wall cavity. These newer models require a custom-sized frame to be installed during the construction stage when the door is being put in, even if the screen itself is installed at a later date due to practical or budgetary considerations. When properly specified and installed, the integrated frame is highly discreet with a screen that is barely visible when not in use.

Screening should be easy to install as well as replace. Leading solutions that feature an integrated frame also allow the screen to be removed easily for maintenance purposes.

Screen door size

There is growing demand for wider and higher screening solutions that still maintain a streamlined design aesthetic. A practical concern for wide-span screening is the potential for wind blow-outs. For larger screens, if the mesh is not anchored into the track, gusts of wind will blow the mesh out of the frame, leading to significant repair costs.

Leading manufacturers offer retractable wide-span screens with fully-anchored mesh that can better withstand windy conditions. Designers and specifiers should confirm whether their selected screening system has been independently tested to withstand wind loads by a laboratory certified by the National Association of Testing Authorities.

Mesh

Mesh design should be suitable for the intended application. Pattern and strand thickness will determine how much light and air will be able to enter an indoor space. These factors will also control the types of insects and pests the screening will effectively keep out. Some mesh options offer lower levels of visibility with an open weave design.

Material choice can also determine performance in relation to weather and corrosion. For example, an advantage of fiberglass mesh, which is often used on retractable screens, is that it will not corrode.

Design flexibility

Designers and specifiers should prefer solutions that are available in a variety of finishes and customisation options. This enables a variety of aesthetics, as well as the ability to accommodate different opening sizes and applications, and other project-specific requirements.

Due to the risk of wind blow-outs, there are few solutions that can offer retractable wide-span screening yet such solutions have significant design benefits. For example, large-span solutions that are less susceptible to wind blow-outs allow designers to utilise them in a wider range of installation contexts.





FREEDOM RETRACTABLE SCREENS

Since 1999, Freedom Retractable Screens (FRS) has been the industry leader for retractable insect screens. This Australian manufacturer is at the forefront of both commercial and residential insect screen technology.

With a focus on discreet style and cutting-edge technology, FRS provides customers with innovative insect screen solutions for french, bi-fold and sliding stacker doors and windows, as well as pillarless corners and large, difficult-to-screen openings. All FRS products are Australian-made and defined by style, quality and intelligent innovation.

ZL2 Integrated: Built-In Retractable Flyscreen System

The ZL2 Integrated System is an innovative retractable insect screen system that delivers a discreet, streamlined screening solution designed to let airflow in and keep insects and pests out. Unlike most retractable screens, which can only be retro-fit, the ZL2 is suitable for either retro-fit applications or new builds.

The ZL2's integrated frame is compatible with almost any door system, including bi-fold doors, sliding doors and stacking doors.

On new builds, this solution requires a custom-sized frame to be built into the wall cavity when the door is going in, a process that results in a screen that is almost invisible when not in use. The integrated frame can be fitted with a ZL2 80mm or 100mm retractable insect screen, either at the time of construction or at a later date if preferred. The 12.5mm lower track can be either recessed or mounted directly onto floor level.

The ZL2 screen incorporates Freedom's patented braking system and fully-anchored mesh to avoid mesh blow-outs in breezy conditions. Freedom's screens have been laboratory tested to a static weight rating of 590kgs of even pressure. This means that the ZL2 Integrated system can achieve greater widths and higher screening than all other equivalent solutions on the market both nationally and internationally.

Available in wide-span options, low profile construction and high quality design, the ZL2 responds to the evolving needs of architects, designers, specifiers and homeowners alike.

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