

SAFETYLINE JALOUSIE



THE FUTURE LOUVRE



BLUE SQUARED
WINDOW AUTOMATION

SMARTAIR SYSTEM

WHY WORK WITH US?

Designed and developed exclusively by Technal, a division of the European giant Norsk Hydro. Safetyline Jalousie louvre windows have a long history of superior performance in commercial, public and residential projects across the globe.

They have been manufactured in Sydney, Australia since 2009 by SMR Designs, a family owned and operated Australian company.

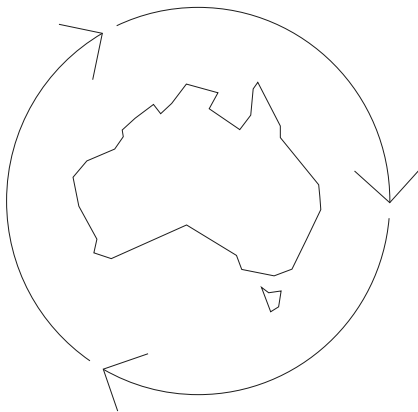
Safetyline Jalousie has provided louvre windows to over 2000 projects Australia wide, supplying approximately 250,000 high performance louvre windows along with over 40,000 motors to operate our windows to a selection of these projects.

Safetyline Jalousie has distributor partner agreements across all states and territories that allow the company the capability to provide louvre windows to over 4000 window fabricators throughout Australia, providing job certainty and upskilling for current and new industry apprentices.





Developing sustainable built environments within Australia with better building airflow.



Smartair Circular Impact

- Australian Produced Safetyline Jalousie Louvres
- Direct on-the-ground jobs growth
- Better building airflow
- Developing sustainable built environments within Australia.
- Energy saving
- CO₂e reduction





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INTRODUCTION

Post-Covid architecture is in the spotlight today with the design and construction industry engaged in an important conversation to improve sustainability, promote better and safer buildings, and prioritise occupants' wellbeing.

Indoor air quality and ventilation are essential aspects of sustainable architecture, as they affect the health, comfort, and productivity of occupants, as well as the energy efficiency and environmental impact of a building.

In Australia it is recognised that we spend around 90% of our time indoors where the air often contains 4-10x the pollutants of outdoor air. Optimizing ventilation is key to preventing the spread of airborne viruses and reduces negative health outcomes associated with poor air quality. Recent studies show that green building designs that optimise natural light and fresh air can have a significant impact on occupants' productivity and cognitive performance.

Due to the important role window opening plays in shaping the indoor environment, implementing automatic window control systems is an effective building control strategy. Natural ventilation provided by automated windows is a smart solution that significantly improves the indoor climate while consuming little energy and with low investment costs.



The Purpose

Safetyline Jalousie in conjunction with Blue Squared Window Automation seek to highlight how the SmartAir System drives and stimulates economic, social and environmental outcomes that not only create immediate opportunities to enact on, but enable long term, stable trajectory outcomes like indoor health targets, jobs growth, workplace productivity and energy reductions.

This sustainable product in conjunction with the proposed economic incentives and health advantages, will prove its worth for now and the future of its built environments.

“Smart-Air is a unique system that allows natural ventilation in buildings through an honest, smart design. It provides a great solution for architects who want to combine comfortable living with beautiful unapologetic design.”

The Good Design Awards July 2022



SMARTAIR SYSTEM PRODUCT DESCRIPTION

Product Overview

The SmartAir System developed by Safetyline Jalousie and Blue Squared Window Automation provides a pre-programmable, fully automated, tried and tested complete turnkey air quality solution that enables all spaces to monitor temperature, CO2 and humidity. This will inform, cue and operate Safetyline Jalousie's motorised, high performance louvre windows that provide up to 86% free air coupled with superior sealing capabilities that block wind, water, air and noise.

This will:

- Naturally ventilate spaces
- Remove smoke exhaust
- Deliver safety via fire indicator panel trip
- Enable stair pressurisation to exhaust smoke in a fire event
- Reduce air conditioning costs supporting energy savings and reduction of greenhouse gas emissions
- Control CO2 and ambient temperatures for comfortability.

Additionally, the system is adapted to recognise morning or night purges, interlock air conditioning, automatically close louvres due to rain or wind and also automatically lock for security without the need for human input.



Usage Benefits and Key Performance Indicators

When using the SmartAir System coupled with high performance motorised Safetyline Jalousie louvre windows, will be pre-programmed to specifically designed parameters to automate the control of the environment.

All SmartAir Systems will produce each of the following benefits to the environment in which they are installed:

- Monitor and automate reduction in CO₂ levels
- Natural ventilation
- The monitoring, control and improvement of air quality
- Controlled thermal comfort
- Reduction in external sound distractions
- Safe and secure spaces
- The ability to meet requirements for air infiltration in an air conditioned space
- Improvements in health of occupants
- Increasing longevity and life cycle of spaces through quality products
- A sustainable and future proof solution

The fitting and installation of the SmartAir System will also generate reductions in:

- Air conditioning costs, inturn power consumption
- Carbon footprint
- The occurrence of maintenance problems and their associated costs
- The reliance on human intervention and operate air quality systems

SAFETYLINE JALOUSIE

Safetyline Jalousie's unique louvre windows will bring added value and offer unrivalled flexibility in design options through unmatched performance ratings, strength, reliability and versatility.

There are many performance advantages and benefits of Safetyline Jalousie louvre windows. We pride our quality of product on the eight high level Key Performance Ratings.

Key Performance Ratings

Ultimate Limit State (ULS)	Up to 9525pa - conventional glass on glass louvre is approx. 3000pa
Water Penetration Resistance	800pa - conventional glass on glass louvre is approx. 300pa
Serviceability Limit State (Sls)	Up to 4000pa - conventional glass on glass louvre is approx. 1500pa
Acoustics	CSIRO lab tested to 35 Rw - conventional glass on glass louvre is approx. 26 Rw
Air Infiltration	0.12 L/Sqm/S - this is 12 times better than a conventional glass on glass louvre window
Safety & Security	Impact Load tested up to 550kg - conventional glass on glass louvre is approx. 30kg
Windborne Debris	Impact Load tested up to 550kg - conventional glass on glass louvre is approx. 30kg
Span	Up to 1400mm - larger windows reduce perimeter framing and install time - hugely cost effective - conventional louvres are limited to 900mm

Advantages and Benefits

- Prefabricated and delivered to site as a complete unit fully framed and fully glazed, assembled and ready to insert into the openings.
- Ability to use any type of commercially available glass as the louvre blades from 6mm to 6.76mm
- Meets fall prevention requirements with no need for added options
- Meets the requirements for use as balustrade with no added options
- Made in factories based in Sydney, Australia



Smartair System Functionality

Product functionality is imperative for products to become sustainable for long term use. The SmartAir System drives significant features which enable strong functionality and capabilities for facilities management, the users, key stakeholders and the streamlining for operational management of buildings.

Key Product Features

that identify Safetyline Jalousie's SmartAir System as the industry leader are:



Out of Hours

All louvres remain closed with user interface and external signals locked out for security.



Early Morning

All louvres open for a predetermined period then automatically close returning to out of hours lock out.

In the event of rain during the purge cycle, the louvres will close only reopening upon the rain ceasing (a maximum opening on rain from 0-100% is achievable on a zone by zone basis).



Day Mode

Louvres are controlled via local CO₂ inputs. Upon reaching the activation CO₂ PPM level, the louvres will open and the AC will be locked out.

In the event of rain sensor activation, the louvres will close, and the AC will be reactivated (a maximum opening on rain from 0-100% is achievable on a zone by zone basis).

Upon the deactivation of the rain sensor, the louvres will reopen and the AC will be locked out, providing that the CO₂ PPM is still in the activation band.

If a local day to day switch is installed, activation of this will override and lock out all other inputs with exception to the rain sensor and end of day closing signals. This lock out period is programmable from 5-600 minutes on a zone by zone basis. Upon the pre-set time lapsing, the system will return to standard day mode controlled primarily by the CO₂ sensor.



End of Day

Upon reaching the end of the working day, all louvres will return to the fully closed position with full lock out of all other inputs. Timers are fully programmable to suit the required activities and project specifics for the building.

Sensor Controls Delivering Efficiencies

The SmartAir system consists of equipment developed specifically for façade window automation. The main control panel was designed in the United Kingdom for use in the second wave of the Building Schools for the Future (BSF) program, which heavily relied on BB101, guideline for ventilation, thermal comfort and indoor air quality.

The wall mounted display incorporates a state-of-the-art CO₂ sensor which is self-calibrating, along with temperature and humidity sensors. The LED display indicates the current levels in numerical format along with a traffic-light backlit system indicating when measured levels are rising, AMBER - mid range, RED - high range. The display is fully programmable with setpoints for activation to achieve optimal performance for the specific space/project.

The louvre motor/drive has been developed specifically for the Safetyline Jalousie louvre system, with the final installation environment being taken into consideration. All cabling is concealed within the louvre and the drives have anti-vandal end caps.

All componentry offered within this scheme is designed with compatibility in mind to offer seamless installation and operational functionality.



10,000+ control panels installed globally over more than 10 years.

7,000,000 units of CO₂ sensors used in projects globally.

BUILDINGS THAT BREATHE

Motorised and Automated

Windows and motors are fully compliant as part of complete failsafe solution for fire mode / smoke exhaust / relief air / stair pressurisation purposes.

Alternatively can be a stand-alone mechanical ventilation system utilising sensors for wind / rain / temperature / timers / humidity / laser presence sensors etc.

The associated / required wiring and controls are fully compatible / able to interface with any BMS / Cbus system.

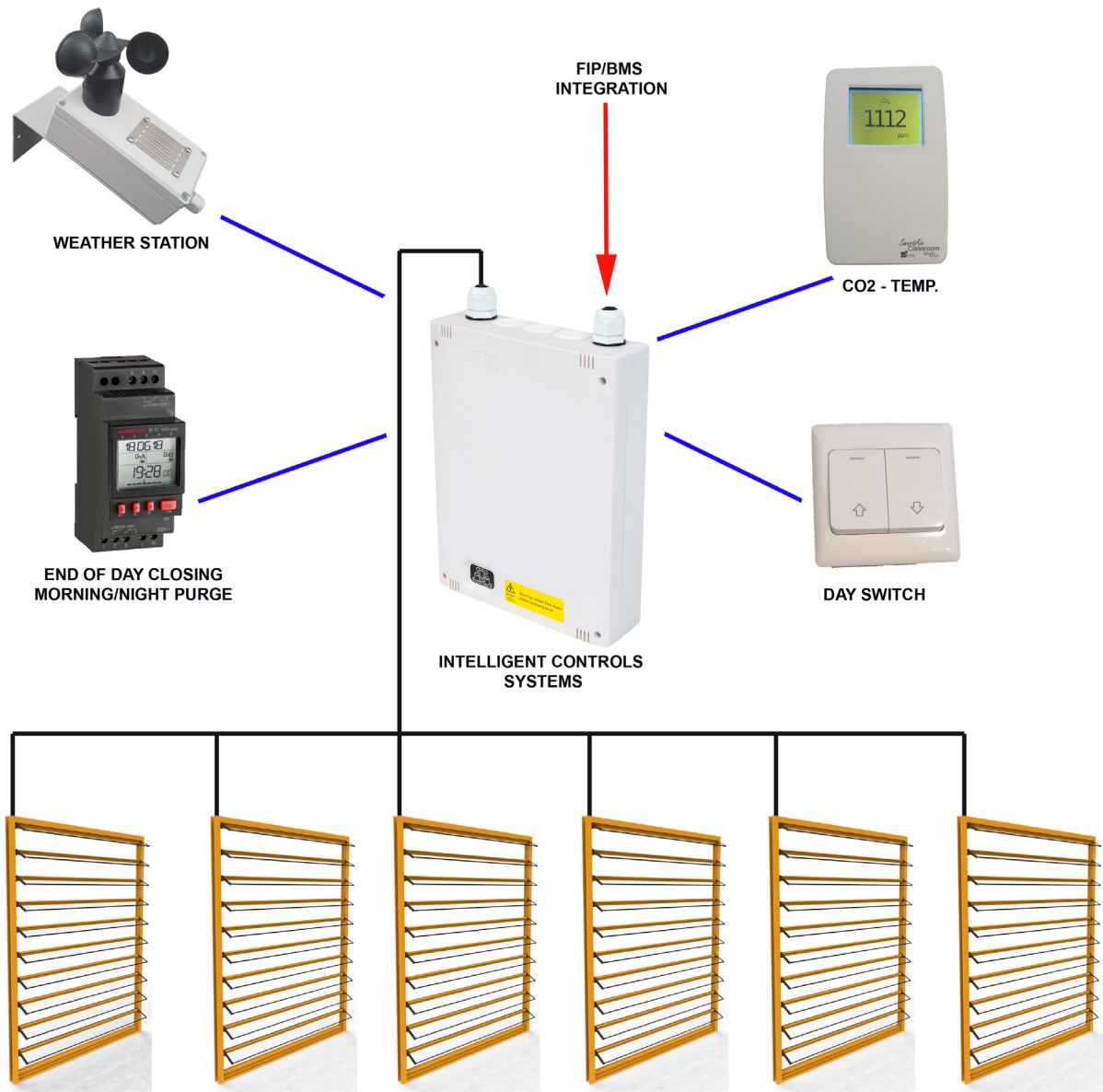
Trap Hazard Risk Assessment

A project-specific trap hazard risk assessment is offered on every project as part of our package.

The trap hazard risk assessment is to be carried out on a project and location basis. The risk assessment highlights trap hazards, and what preventative measures are required to mitigate risks, if any exist. The recommendations are submitted at the design stages of a project and the full risk assessment is included within the O&M manuals at the project handover stage.



Product Install Specification



LOUVRE PERFORMANCE ANALYSIS OF LEARNING SPACES

Insights Report of Safetyline Jalousie Louvre

An energy modelling analysis of Jalousie louvres used in a school classroom application was conducted. Both a generic modular classroom building and a case study (Alexandria Park Primary school) were considered in Sydney, Brisbane, and Melbourne climates. The airtightness of Jalousie louvres when compared to other products, and the effectiveness of natural ventilation using Jalousie louvres, was studied.

The generic modular classroom formed the crux of the study and is present in identical or similar forms across both NSW and Australia. The case study model was used to provide further evidence of the trends identified and to test the applicability of the modelling approach in a real project.

Initial energy modelling results were mixed, due to the apparent conflict between airtightness and natural ventilation in each climate. The key findings of the initial energy modelling conclude that:

- Using Jalousie louvres can significantly increase the airtightness of a building, by between 7% and 20% for the cases tested.
- Using louvres for natural ventilation provides more outside air to learning spaces than required by minimum standards. For the cases tested, 9%, 24% and 12% more outside air was provided to learning spaces in Sydney, Brisbane, and Melbourne respectively.

Following the initial modelling, a revised louvre control strategy was developed as follows:

- Louvres are fully opened when the temperature outside is within a suitable (comfort) band and wind speed is sufficient to deliver the required outside air rate to the learning area
- Louvres are partially opened at the 10% or 20% position for a wider band of temperatures to assist in removing heat from the learning areas. The required outside air rate is provided by mechanical ventilation. Air conditioning or heating is not operating (as the outside air + internal heat gains result in a suitable learning space temperature). We anticipate this wider temperature band to be 3°C to 5°C lower than the natural ventilation setpoint, however this wider band will be project specific.
- Louvres are closed (such that they achieve a high degree of airtightness) outside this wider setpoint band (i.e. when it is too hot or too cold outside). The required outside air rate is provided by mechanical ventilation. Air conditioning or heating is operating.

Through consideration of the revised control strategy, the following results were determined for the generic classroom level and case study respectively. For both cooling and heating dominated climates, a project specific analysis is recommended to optimise the louvre control systems and maximise benefits beyond the figures presented herein.



Table 1 Summary of case study results for revised controls scenario

Data modelling by Inhabit Group of our Case Study Project using Safetyline Jalousie louvre windows utilising the Smart Air System proves that our system can increase thermal comfort levels for occupants, reduce ongoing energy usage and therefore costs and ultimately reduce greenhouse gas emissions for the operating life of the project.

Metric	Sydney (scenario CSJ)	Brisbane (scenario CBJ)	Melbourne (scenario CMJ)
Annual Annual thermal energy use, % saving	=4% to 5%	=4% to 5%	=3.5%
Annual GHG emission savings, kgCO ₂ e per classroom	=30 per classroom	=50 per classroom	=25 per classroom
Annual electricity savings, \$ per classroom	=\$10 per classroom	=\$17 per classroom	=\$7 per classroom
Additional ventilation supplied, % above requirement	=11% to 14%	=22% to 28%	=4% to 10%

Based on a review of both the generic classroom level façade and the case study learning space facades, it was determined that approximately 15% of the façade consisted of louvres. NCC 2019 sets a façade air infiltration limit of 10 m³/m².h @ 50 Pa.

This figure was used for all façade elements other than the elements replaced by the Jalousie louvres. The airtightness of the façade area occupied by louvres was varied as per Table 1, which also shows the resultant whole of façade airtightness figure. It is worth noting that the airtightness benefit of Jalousie louvres increases as the percentage façade area increases.



Table 2 Summary of generic classroom level results for revised controls scenario

Data modelling by Inhabit Group of Generic Learning Spaces using Safetyline Jalousie louvre windows utilising the Smart Air System proves that our system can increase thermal comfort levels for occupants, reduce ongoing energy usage and therefore costs and ultimately reduce greenhouse gas emissions for the operating life of the project.

Metric	Sydney (scenario GSJ)	Brisbane (scenario GBJ)	Melbourne (scenario GMJ)
Annual Annual thermal energy use, % saving	1.5%	1.7%	3.4%
Annual GHG emission savings, kgCO ₂ e	167 24 per classroom	340 49 per classroom	478 68 per classroom
Annual electricity savings, \$	\$54 \$8 per classroom	\$111 \$16 per classroom	\$123 \$18 per classroom
Additional ventilation supplied, % above requirement	9%	24%	12%

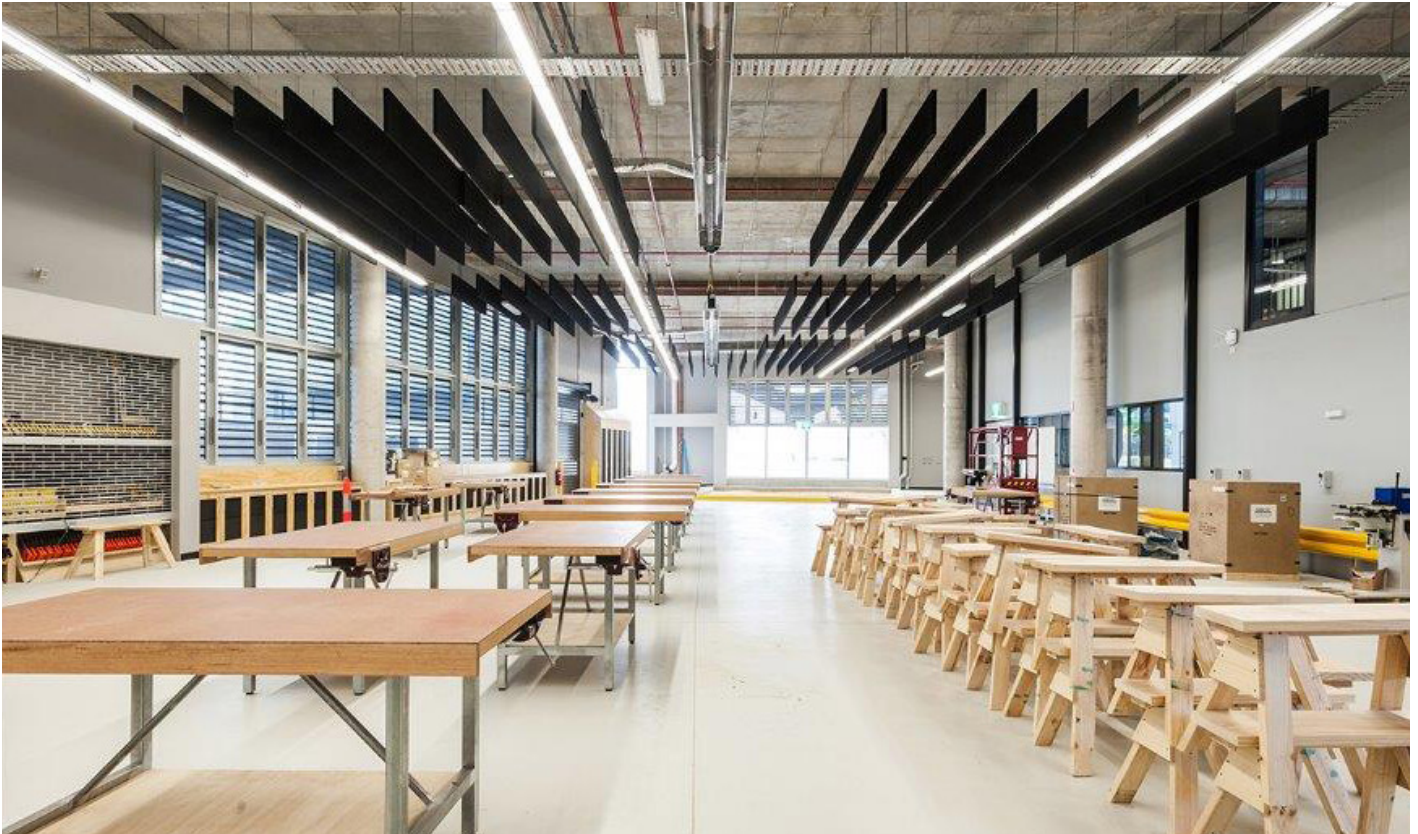
Table 3 Facade Airtightness Data

Data modelling by Inhabit Group proved that Safetyline Jalousie louvres have a much higher airtightness figure than the generic louvres tested or indeed the requirements of NCC 2019 and therefore increased the tested buildings overall air tightness by up to 20% and reduced the number of air changes per hour allowing for a much tighter control of the indoor air quality.

Louvre type	Airtightness, L/m ² .s @ 75 Pa as per AS 2047	Calculated* (scenario GBJ) m ³ /m ² .h @ 50 Pa	Resultant whole-of-facade airtightness, m ³ /m ² .h @ 50 Pa	Relative benefit of Jalousie louvres
Jalousie louvre	0.12	0.10	8.55	-
Generic louvre A	1.5	1.23	9.16	7%
Generic louvre B	1.9	1.55	9.34	8%
Generic louvre C	5	4.08	10.70	20%
All other facade elements (as per NCC 2019)	3.4	2.78	10.00	-

*Note: The façade industry standard metric of L/m².s @ 75 Pa was converted to the building energy industry standard metric of m³/m².h @ 50 Pa using a standard flow exponent of 0.5.

It is noted that Jalousie louvres have a much higher airtightness figure than the generic louvres tested, or indeed the requirements of NCC 2019.



A further scenario was created in an effort to address the control-related drawbacks of the initial scenario. The key outcomes of this revised scenario are that:

- Jalousie louvres are airtight, therefore they provide benefit during heating months
- Jalousie louvres can be automatically operated so they are partially open during favourable conditions, providing benefit during cooling months. The partial opening of the louvres mimics the airtightness performance of the less airtight scenarios, however this is reproduced in a controllable fashion. A calculation of louvre opening position to mimic a lower level of airtightness resulted in an opening position of 10% to 20%.
- Louvres are fully opened when the temperature outside is within a suitable (comfort) band and wind speed is sufficient to deliver the required outside air rate to the learning area.
- Louvres are partially opened at the 10% or 20% position for a wider band of temperatures to assist in removing heat from

the learning areas. The required outside air rate is provided by mechanical ventilation. Air conditioning or heating are not operating (as the outside air + internal heat gains result in a suitable learning space temperature). We anticipate this wider temperature band to be 3°C to 5°C lower than the natural ventilation setpoint, however this setpoint will be project specific.

- Louvres are closed (such that they achieve a high degree of airtightness) outside this wider setpoint band (i.e. when it is too hot or too cold outside). The required outside air rate is provided by mechanical ventilation. Air conditioning or heating are operating.

Note that the results of this scenario are considered conservative. A control system that is project specific and considers specific climate and heat gains will result in better performance.

TESTIMONIALS

“The Jalousie product has a unique offering in terms of performance, aesthetics, reducing noise, whilst maintaining natural ventilation.

They have been incredibly easy to work with. I have recommended them to architects and have confidence in their solutions.”

Simon Kean, Director – Spoke Acoustics, NSW

“I think where Safetyline Jalousie is great from my point of view is that they are actually looking at all of the performance requirements for their product. So that's waterproofing, that's thermal performance as well as cost and functionality.

I recommend Safetyline Jalousie because I know that they have good designs, the test results, the performance, and when I specify for a project, I know that I have a compliant product.”

Neil McClelland, Technical Director – TTW, NSW

“Working with Safetyline Jalousie has a really strong benefit and advantage in that you are dealing with a local company, you're dealing with the people that own the company, who make the decisions and follow through with what they say.

It's testament to their ethic, their culture and the way that they run their business.

Kevin Hartin, Owner & Director – Ausrise Aluminium, NSW

As a company, they are dynamic, open to ideas, they adapt quickly and are proactive at solving design problems.



“From aged-care homes to sports halls, from schools to skyscrapers, Safetyline Jalousie’s louvres have been installed in hundreds of commercial projects nationwide, which is testimony to the value of their products.

Over 10 years, the thousands of architects our national team have worked with assure us, that when it comes to improving natural ventilation and enhancing indoor air quality, no other louvres compete with Safetyline’s.

Time and time again, architects across the country have attested, Safetyline’s louvres are superior in reliability and ease of use.

They love the way they look in all settings and trust them above all other products because of their quality and proven track record of safety, security and longevity.”

Elsie Attoh, CEO – The Arc Agency, NSW

“We specify Safetyline Jalousie louvres because of their water-tightness, louvre bearer rod (which provides security from break-ins as well as decreased chance of damage from inside from balls or other objects), and the inner channel which allows easy installation of the flyscreen.

Is the investment worthwhile? Yes, because we don’t have issues with them once they are installed and the process of working with Safetyline Jalousie is easy plus their service is excellent..”

Gerard McCurry, Director – Brand Architects, Vic

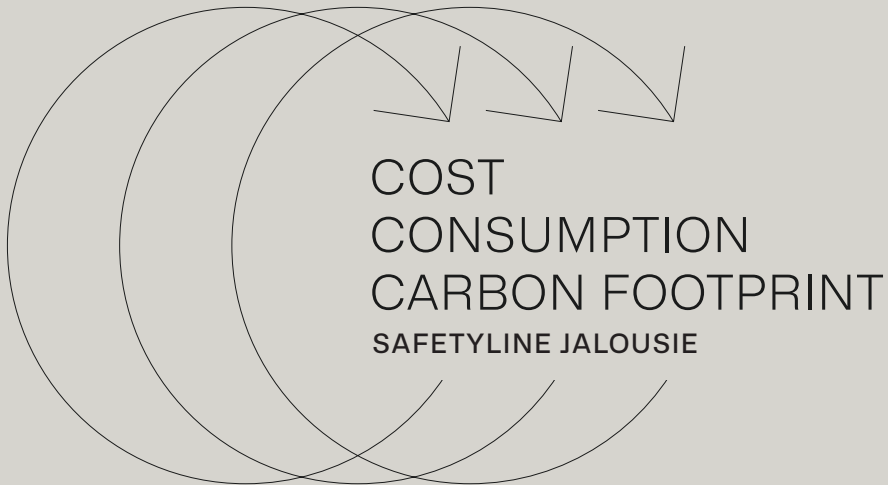
“A lot of the project work we do is essentially education, commercial, retail, some aged care and childcare. In the last 10 or 11 years I would say that we have specified and used Safetyline Jalousie louvres on over 50 projects. Second to none, there is no product on the market like it.

Light and ventilation are the first things you learn in design and it just opens up so many opportunities because of its flexibility, its spanning capabilities, its weather tightness, security and overall strength of the window, it just opens up a new realm for us..”

Dario Dell’Anniziata, Director – Architectural Collaborative, Qld

SAFETYLINE JALOUSIE





Leigh Rust,
Founder & Director
Safetyline Jalousie

Our purpose is to provide economically viable, energy efficient solutions for indoor air environments that improve health, wellbeing and productivity.



