## Controlling the sun

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**AUSTRALIAN blind manufacturer Horiso's goal is to not just block out the sun, but to control it. Horiso has developed the first 'proactive' facade controller for commercial buildings, which tracks and calculates the sun's angle of incidence (SAI) and can significantly reduce a building's energy and carbon footprint.**


Horiso Sun louvers

The only alternative before Horiso's controller was a system which relied on an astronomical clock that used Australian sunlight statistics over the past 10-years and set the sunshade monitor to rotate at the same time of the day, every day.

However every facade, level and angle of a property – north, east, south and west – is subject to different aspects of the sun and clouds every minute of the day.

As well as expenditure, there were also issues with heat, glare, and recycling. Lack of light control also led to inflated air-conditioning and energy usage levels.

Horiso's system seeks to cancel out all of these issues.

The building's geographical location, characteristics and position are overlayed with the architect's drawings and satellite data, factoring in the SAI, and streamed continuously to each individual blind, sunshade and venetian.

This process then interacts with the air conditioning and lighting systems to achieve maximum energy efficiency and optimal light around the clock.

The external venetian blinds and louvers are typically constructed of aluminium and marine-grade stainless steel.

Horiso uses a highly-elastic special alloy, which is bend-proof, scratch-proof and shock-proof.

This also creates a barrier to stop the cold entering the building, maintaining a comfortable temperature and saving on heating costs.

By integrating intelligent control of the facade's louvers and sun-shades into the building management system, microprocessors ensure each single shade and individual louver adjusts according to the angle of the sun, ensuring the exact position required to achieve maximum heat and light control.

Horiso managing director Bruno Seguin told *Construction Industry News*, "we started developing a control system that basically makes sure that the position of the blinds and the time and angle that they are positioned are always going to optimise the quantity of heat in summer, maximise the number of natural light and manage glare going into buildings".

"With the shades automatically adjusted by the SAI software and with the right shading device, this equates to a 93% reduction in solar transmission and a cooling cost reduction of up to 69%, depending on the configuration of the building. Sydney has more than 300 days of sun per year, so it's our job to control that large amount of sunlight as much as we can.

"By controlling the solar heat gain and controlling the glare we developed a system with the capacity to interact with other mechanisms inside the building such as air conditioning and artificial light.

"If, for example, you take a standard window of 8 metre square with single glazing, to cool down that room you will use 6400 watts per square metre, if you use an external blind you will only use 880 watts per metre square, that's a reduction in energy consumption of 86%."

The idea was to have a system that was 'proactive' rather than 'reactive' and could always calculate the right angle of the sun on any facade and also make sure that other aspects of the building would interact with it, and through that save energy and cut greenhouse emissions.

The company has been developing the technology for the last seven years and the first building to install the technology was the Bond building at Hickson road at the Bovis Lend Lease offices.

With the system in place it became the first building to achieve a 5 star green rating.

The main reason why Horiso decided to manufacture in Australia and not overseas is due to the carbon emissions that would have been huge due to international transport.

By manufacturing them locally they have saved thousands of tonnes of greenhouse emissions.

Horiso's latest commercial developments include:

- 1 Bligh Street, Sydney: The first double-skin facade building in Sydney;
- Darling Walk, Darling Harbour, Sydney: Set to deliver an international excellence benchmark in sustainability;
- ANZ Building, Docklands, Melbourne: The largest, greenest commercial office building in Australia; and
- Christchurch Civic Centre, Christchurch: New Zealand's greenest building.

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