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Maker's mark

A manufacturer stakes a Green Star first.

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Not only is the new Kingspan Insulation factory one of the most advanced manufacturing facilities of its kind, it's also the first in Australia to seek out a Green Star rating. **Matthew Dillon** reports on the new space in Melbourne's outer northern suburbs.

If you were to start your journey to the new Kingspan Insulation factory in Somerton in Melbourne's north at the city end of Sydney Rd (not that you would, it would take forever that way), you would receive a snapshot of the changing face of the city's built environment.

The last piece of the Kingpsan Insulation factory's sustainability puzzle will be a 750kW solar array across the vast roof space.

At that end, where Royal Parade becomes Sydney Rd, the historic Sarah Hands Hotel, which was built in 1854 at the height of the Gold Rush and has operated continuously as a pub since then, is no more.

Well, the façade will stay, but at the base of a mixed-use development, comprising multi-unit housing and commercial initiatives – a victim of the apartment mania ("boom" just doesn't seem like strong enough word to describe how the city is being transformed) gripping Melbourne.

Continue along Sydney Rd to Bell St, Coburg, and you'll traverse Melbourne's longest set of strip shopping, gaining a glimpse along the way of the north's multiculturalism, but also its gentrification.

Then if you stay the course, the shops thin out, giving way to light, and then heavy industry as you cross into the City of Hume.

Yet this too is changing inexorably. Last year international auto manufacturer Ford ceased local production, with considerable run-on consequences to the local economy.

In its place, with the assistance of government funding, the Kingspan Group, manufacturer of high-performance insulation – has erected a $40 million 14,000 m^2 manufacturing site.

With a concept designed by architect Tone Wheeler (and documented by Watson Young Architects), the facility, which also includes an office and warehouse components, boasts a suite of sustainable design elements.

There's an energy-saving smart lighting system in place and high-performance

Energy is one of the major inputs into the process of making rigid phenolic insulation boards.

The facility was built using sustainably sourced or manufactured building materials.

insulation products throughout – the manufacturer's own kit.

The facility was built using sustainably sourced or manufactured building materials. It also uses energy-renewing ventilators, which provide occupants with 100 per cent more fresh air than required by the building code, and harvests rainwater for bathroom and landscape use. Energy recovery from process heat is used to heat hot water onsite.

The last piece of the sustainability puzzle is a 750kW solar system designed into its roof structure. When installed later this year, conservative estimates suggest it will provide at least most of the facility's daytime-shift energy requirements.

The Kingspan plant at Somerton is on track to be Australia's first Green Star-rated manufacturing facility.

IT'S HOW THEY ROLL

Kingspan managing director Scott Gibson says the new plant's construction is in line with the company's overall ethos.

> "The facility was built using sustainably sourced or manufactured building materials"

"We believe it is imperative as a global supplier to the built environment to walk the talk and take a leadership position in respect to sustainable manufacturing practices," Gibson says. "Our commitment to sustainability is instilled in every part of our business. With a global commitment to have our manufacturing facilities net-zero energy by 2020, we champion clean air and water conservation initiatives and low-energy smart lighting systems. Operationally, in Somerton you will find the best Kingspan can offer in respect to this."

With a few options on the table to build the fourth-generation plant, Melbourne was chosen for several reasons, but certainly a $3 million grant from Melbourne's North Innovation and Investment Fund, set up by the Victorian government in partnership with the federal government and Ford Australia, sweetened the deal.

The idea to make the manufacturing plant the first to earn a Green Star rating was in place from early on.

Kingspan set out to benchmark and design a Green Star-rated manufacturing facility.

"Right from the start, we set out to set a benchmark and design a Green Star-rated manufacturing facility," Gibson says. "This required a partnered approach between our consulting ESD architects, Environa Studio, and the Green Building Council of Australia, who embraced the project from the start. In all honesty, they did most of the work, and it was a surprisingly cost-efficient process."

GBCA CEO Romilly Madew says one of the strengths of the rating system is its flexibility. The Kingspan facility is registered under the Green Star – Design & As Built v1.1 rating tool.

"The rating tool can assess the design and completed construction of any building type," she says, "with the exception of free-standing homes."

The Green Star framework provided a useful tool to guide the design, procurement and construction process.

THE FIRST OF A NEW BREED

Kingspan's new Australian manufacturing facility and Victorian distribution centre is registered to achieve a Green Star rating, and is on target to be the first Green Star manufacturing facility in the country.

"This is a very important commitment," GBCA CEO Romilly Madew says. "Companies are increasingly operating from Green Star buildings not just to build brand and demonstrate corporate social responsibility, but to cut costs, attract and retain staff, boost productivity and retain shareholders and customers.

"In the case of Kingspan, this commitment is important to employees, who will be working in a productive, safe and pleasant working environment, and to customers."

In a recent CBRE report, Matt Haddon, senior managing director for industrial and logistics in the Pacific region, says Green Star industrial buildings – and the "benefits of productivity, operating cost-minimisation and tenant attraction and retention that can be achieved through Green Star construction" – are becoming "better understood" and it's "only a matter of time before this practice becomes standard, and that investors in the industrial and logistics space begin appreciating and paying a premium for assets that have the capacity to deliver these attributes."

Madew says that half of all ASX 200 companies now operate from Green Star buildings.

"While these buildings are offices rather than manufacturing facilities," she says, "the signposts are pointing towards sustainability – and Kingspan is seizing the early-mover advantage."

REACHING FOR THE GREEN STARS

"The Green Star framework gave us a very useful tool to guide the whole design, procurement and construction process," says Kingspan facilities manager Graeme Cliff, who was the Kingspan project manager for the build. "It helped us by ensuring we considered the broader benefits as well as the short-term construction and longer-term operating costs of every decision we made.

"In many cases, the Green Star framework resulted in us making better overall choices than we would have made using a more traditional approach. For example, the HVAC systems installed in our main office area utilise 100 per cent external air, with energy recovered from the exhaust used to prepare the intake air."

Cliff says the project's slightly higher capital cost has provided an excellent working environment, while simultaneously reducing operating costs.

"Our decision to seek the Green Star rating was central to our design process,"

MAKING INSULATION

Without giving away any trade secrets, we asked Kingspan facilities manager Graeme Cliff to explain the insulation manufacturing process.

"Energy is one of the major inputs into the process of manufacturing Kingspan's Kooltherm rigid phenolic insulation boards," Cliff says. "Raw materials, labour and capital costs are the other key considerations."

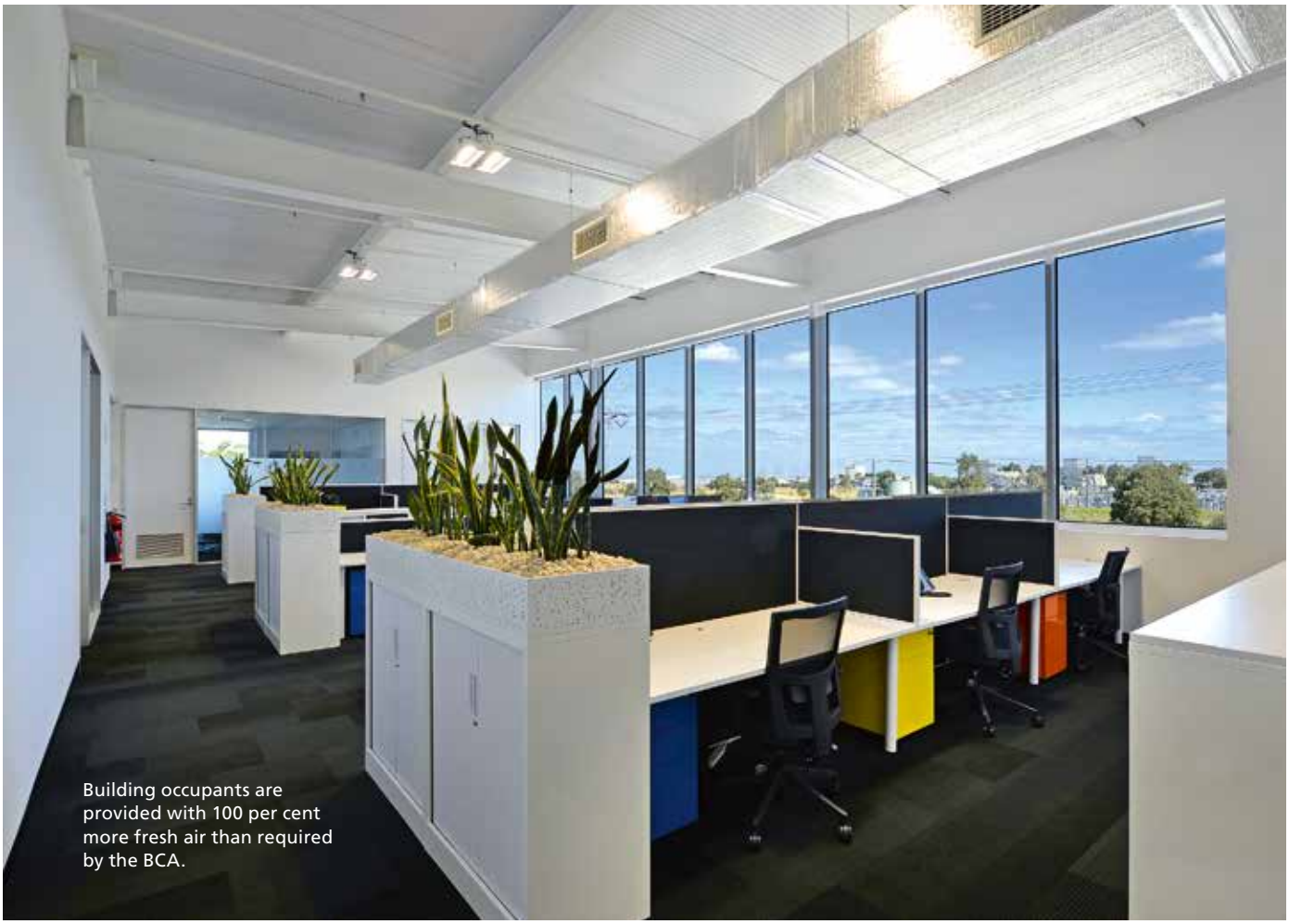
Cliff says a unique blend of chemicals is prepared onsite. Each ingredient is first conditioned, then mixed and extruded to produce the foaming liquid that forms the core of the insulation boards.

The core is auto-adhesively bonded to the facings in a continuous lamination process before being cut into boards that are then cured, trimmed and packed ready for sale.

"The whole process is automated and monitored by a sophisticated computerised system overseen by skilled operators," Cliff says.

"Maintaining the optimum temperatures throughout the process to ensure the chemicals interact and react exactly as required is an energy-intensive process. Obviously, a significant amount of energy is also required to move the product almost 400m as it travels from the start to the end of the production line."

Cliff says a major design consideration was how to operate a highly temperature-sensitive facility and deliver the same high-quality output whether on a cold, wet Melbourne winter's day or a hot, dry summer evening.



Building occupants are provided with 100 per cent more fresh air than required by the BCA.

Cliff says. "And this naturally mounted additional challenges for our architects, builders and our project team, some of whom were new to the process.

"Leading from the front as the first manufacturing facility to seek the holy grail of a 5 star Green Star rating was always going to provide a significant challenge."

The addition of an office and warehouse space to the manufacturing facility only upped the ante.

"Ultimately," Cliff says, "We achieved a better facility with an improved working environment, reduced operating costs, and a far lower environmental footprint as a result of the decision to reach for the Green Stars." ▮