Small Frame, Big Picture

Melbourne is to inherit its first carbon neutral office building – a well-thought out scheme for the sustainable building scene.

As part of an AUS$1 bil regeneration project in Melbourne, Grocon is developing a sustainable office building that strives for stardom. Pixel Building, a four-storey fenestrated block to house the project office for the site, will be among the first in the nation to achieve 6 Star GreenStar, carbon neutral accreditation. "We believe this building will be a benchmark to show the way forward in terms of carbon neutrality and environmentally sustainable office space," says Daniel Grollo, CEO of Grocon. "We plan to complete this innovative building by March 2010."

The 1.6 hectare parcel was home to the Carlton and United Breweries, which operated from 1854 to 1989. Today, architecture talents Denton Corker Marshall, Ashton Raggatt McDougall, Minfie Nixon, McBride Charles Ryan, NHArchitecture and Studio 505 are busily reshaping the property into 280,000 sqm of commercial, residential, retail and civic space. With a budget of AUS$6 mil, Grocon collaborated with Studio 505 and ESD specialist Umow Lai to conceive and realise Pixel.

Despite its moniker, Pixel does not have a flashy electronic façade. There are no LED billboards, no video screens with news tickers, and no colourful architectural accessories, save the building's vertical louvers. Instead, the relatively unassuming block makes several small gestures to deliver a big statement. The exterior adopts double-glazed windows, Living Edge perimeter plants and an assortment of polygonal fins for shading. Each floor is bordered by shaded gardens to aid solar heat absorption and thus help keep interiors cool. "Any carbon emissions used in the building's ongoing operation will be offset by renewable energy from large photovoltaic panels on the roof, as well as wind turbines," says Grollo.

Like all effective and bona fide green buildings, this project adopts an environmentally sensitive process from the outset. A detailed environmental management plan, tailored to minimise environmental impact during construction, has been drafted. Among other things, it stipulates that over 95 percent of construction waste will be recycled. Furthermore, all building materials were selected for their low embodied energy to avoid the harmful effects of VOCs and off-gassing. "Over time Grocon will offset all of the carbon that was generated in manufacturing and installing the construction materials," adds Grollo.

Much thought has been invested into the building's HVAC systems to ensure that operations are energy efficient. Eco- and ozone-friendly absorption heat pump chillers use ammonia as a refrigerant rather than the typically noxious chemicals employed by air-conditioning units. The building also uses exposed concrete ceiling slabs embedded with cool water pipes – a low-energy option for keeping indoor temperatures down. To maintain healthy indoor air quality (IAQ), the raised floors usher in steady airflow at each workstation in a similar manner to air vents in a car.

In keeping with an eco-conscious envelope, both water and energy have also been factored into the equation. The building has been designed to consume scant potable water; the remaining water supply is provided for by rainwater collected from the rooftop and perimeter gardens. In addition to serving as a water catchment, the turf-covered roof will also insulate the building to minimise solar heat gain. To monitor energy and water usage throughout the premises, metering systems are installed on each floor. RFP