

# Going the full circle

Developed as a spin-off from CSIRO research, Rotary Heat Exchangers and Bill Ellul have been serving Australian industry for over 40 years. CCN takes a look at some new – and old – installations.

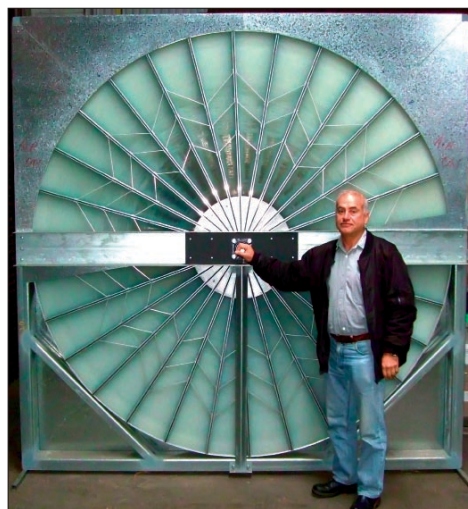
For over 40 years, Australia's unique Mylar rotary heat exchangers have serviced a variety of industrial and commercial sites across the country. Heading the company and involved in the development of its products since 1969 is Bill Ellul, who worked for CSIRO on the development of the wheels during the 70s and 80s with its Division of Mechanical Engineering.

Ellul has headed Rotary Heat Exchangers since 1997 and Ecopower since 1989, and along the way has won three Australian Energy Awards.

"Our company product started as a research project with CSIRO and Monash University aimed at solving the energy/oil crisis that emerged over 40 years ago," Ellul says. "The pendulum has now swung back which gives us a good head start in this industry."

He has also introduced air handling units, combining the benefits of the rotary heat exchanger with exhaust and fresh air fans; as well as hot water and refrigerant coils. The company has installed projects, including indoor pools, in Victoria, NSW and Tasmania.

"We have been in the business of greening



ABOVE: Bill Ellul of Rotary Heat Exchangers.

buildings and improving their health longer than any other Australian company," Ellul says. "We provide the means for cost effective 100 per cent fresh air systems with energy recycling using high performance waste energy recovery systems with efficiencies over 90 per cent and low fan power usage."

## SIR CHARLES GARDINER HOSPITAL

One such site is a Western Australian hospital of Nobel Prize fame. Ellul proudly claims that eight of his company's 2.5m heat wheels continue to play a substantial part in air conditioning the Sir Charles Gardiner Hospital (SCGH) in WA, having been installed in 1969.

Even after refurbishment of the hospital, the installed wheels continued to operate satisfactorily and did not need replacement.

SCGH is home to one of Australia's best known Nobel Prize winners, Professor Barry Marshall. Marshall, along with his now-retired colleague Dr Robin Warren, carried out the famous work demonstrating that stomach ulcers are caused by the bacteria *Helicobacter pylori* and not stress, as had long been thought.

The unique high performance and long life Mylar heat wheel design was developed by CSIRO and Monash University during the sixties and has been manufactured and continually improved by Rotary Heat Exchangers in Melbourne for over 40 years.

The heat wheels are highly recommended by the hospital's former engineer, John King, who now works at the maintenance department of the University of WA. King has recommended the use of the Australian RHEs for the university, which are now being used for energy recycling of the campus building.

"Our RHEs typically outlast the HVAC equipment they were originally installed with," Ellul says. "Even after a refurbishment or overhaul, the original RHEs continue to operate satisfactorily, decades after their installation, when properly maintained."

## INDIRECT EVAPORATIVE COOLING

More recent installations include the Sandersons Consultants-designed waste energy recycling system for the Geelong Bellarine Aquatic Centre. It includes indirect evaporative cooling using three of the high efficiency Mylar matrix rotary heat exchangers.

The cooling the wheels provide is an added bonus, used on high ambient temperature days to avoid excessive pool hall air temperatures.

"We pass 15,000 litres per second through two Mylar 2540mm diameter wheels for the pool hall air so that we can achieve 81 per cent energy recycling at a low 190Pa air flow pressure drop, to minimise fan electrical energy usage," consultant Bruce Sanderson says.

"We also bypass the air flow when heat exchange or evaporative cooling is not required."

## CROWN METROPOL HOTEL

Crown Casino's third luxury hotel in Melbourne, the \$300 million Crown Metropol, situated at Melbourne's South Bank, was built over 27 months and is expected to accommodate 250,000 guests in its first year.

The rooftop pool is serviced by a 2.75m rotor diameter providing high performance and long-life energy recycling along with dry fresh air for a comfortable pool environment. The air handling unit the wheel sits in was manufactured by Paragon Air.



ABOVE: Geelong Bellarine Aquatic Centre to include indirect evaporative cooling.

### 150 YEARS OF MELBOURNE BATHS

This year is the 150th anniversary of the historic Melbourne City Baths, which are located in a National Trust classified building at the top end of the CBD, and were built in 1860.

After a series of redevelopments, a \$4m upgrade in 1983 included a 2.5m diameter heat wheel for the air heating system. "The wheel recycles and saves approximately 3000 gigajoules of water annually plus corresponding greenhouse gas reductions," Ellul says. "Today, after 27 years, the heat wheel continues to service the baths with the same performance as when it was first installed."

This represents a total savings of 81,000gJ and a massive reduction in greenhouse gas emissions of 4000 tons of carbon dioxide.

### ST JAMES REDEVELOPMENT

The St James building in Melbourne's CBD is a six-level office building comprising ground level retail and five levels of offices, with a total area 11,000m<sup>2</sup>. Its stage one building redevelopment is an upgrade involving the refurbishment of the existing office levels and the addition of three new office floors, increasing the office area to 18,500m<sup>2</sup>.

The air handling plant will be replaced with 100



per cent outside air low temperature units with RHE rotary heat exchange energy recovery units.

The redevelopment will include 10 wheels of 2.5m rotor diameter delivering 90,000l/s of 100 per cent fresh air to the building, recycling up to 96 per cent of the waste exhaust energy.

Consultants Lincolne Scott and Contractor AllStaff have designed the building to achieve a high green star rating.

[www.rotaryheatexchangers.com](http://www.rotaryheatexchangers.com).



**ABOVE LEFT: Mylar rotary heat exchanger for Melbourne's Crown Metropol Hotel.**

**ABOVE: Forty years on, growing stronger and stronger.**

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