

Reinventing the wheel at the Monash Aquatic Centre

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Heating

The Monash Aquatic and Recreation Centre (MARC) in Melbourne has replaced its 14 year old refrigerated heat pump energy recycling system with two 3m Mylar heat wheels.

The heat wheel was provided by Rotary Heat Exchangers Pty Ltd (RHE Pty Ltd), a wholly Australian private company, established in 1968 as a result of world leading research on solar air conditioning by CSIRO and Monash University. The project involved the removal of the refrigeration coils inside two air handling units (AHU) originally built by GJ Walker and retrofitting the heat wheels.

The refurbishment was specified by Andrew Pang & Associates. The mechanical contractor Inter-Chillers craned the wheels, each weighing a relatively small 500 kg, through the roof of the building.

RHE managing director, Bill Ellul, said these wheels will substantially reduce the consumption of natural gas at the centre and deliver large annual cost savings for the local council for several decades.

As the sole manufacturer of RHEs in Australia, the unique Australian "thin" Mylar matrix heat wheel has exceptionally high energy recycling performance and well proven longevity, used to recycle cooling and heating energy in air conditioned buildings and indoor pools, all year round.

RHE Pty Ltd has further improved design and performance of the products over time. The concept is simple, the wheel rotates slowly in a frame which is divided into two.

A cold air stream flows through one half of the wheel and a hot air stream flows in counterflow through the other half. The large surface area inside the matrix of the rotor simply transfers the heat from the hot to the cold stream during rotation.

The "thin" (10cm) unique Australian rotor design and smooth Mylar plastic film matrix construction, ensures minimum fan air pressure loss and negligible carryover of exhaust air transfer. Only a small 200W energy usage is required to rotate the wheel.

Air conditioned exhaust air from a building can be used to freely air condition the incoming fresh air by recycling this wasted energy, if both air streams are passed through the rotating wheel.

As over 90 per cent energy transfer can be achieved there is a considerable saving in reducing the fresh air conditioning load.

"Our products' competitive advantages include better quality, higher true performance and proven longevity, resulting in higher cost effectiveness and substantially lower life cycle costs for our customers," Ellul said.

"This has been well proven over the five decades since our formation with over 500 heat wheels installed in aquatic centres, indoor pools, commercial buildings and hospitals around the country.

"Most of these wheels are still operational today with some wheels, used in aquatic centres, even outlasting the useful life of their building and reinstalled in multi-decade refurbishments or complete rebuild of the aquatic centre. Two examples include the Belmont Aquatic in Western Australia and the new Box Hill Aqualink in



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Victoria."

Ellul said the wheels demand a premium price compared to cheaper imported products because they deliver a very short payback period and have a lower life cycle cost. "The superior energy cost benefits for our customers is also considerably enhanced by the fact that the replacement costs far out way the equipment costs," he said.

Several high profile projects where these unique heating and cooling recycling wheels have been installed over the past two decades and are still operating today include the Parliament House indoor pool in Canberra and the Australian Institute of Sport Pool in Canberra.

They are also being used at the Crown Casino and three Crown Hotel pools, City Baths and Bourke St James commercial and residential green building complex in Melbourne's CBD.

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