

Heat wheels keep on turning, proud Mylar keeps on earning

Australia's Mylar heat wheel, developed by the CSIRO and Monash University together with Rotary Heat Exchangers (RHE) in the '70s, is still the byword in state-of-the-art indoor air quality (IAQ).

That's the story according to RHE and energy consultants Ecopower managing director Bill Ellul.

RHE is a member of the Australian Technology Showcase (ATS), a federal government initiative to promote Australian innovation such as the Mylar heat wheel worldwide.

Ellul, who has three Australian Energy Awards, said the heat wheel remained the most simple, lowest energy, cost and greenhouse gas emission solution for introducing fresh air into a building, especially indoor pools that require 100 per cent fresh air systems for heating.

This was primarily due to its high energy recovery efficiency and low airflow pressure drop characteristics that enable up to 90 per cent of the energy from the exhaust of a building to be recovered for both cooling and heating all year round, Ellul said.

This minimised greenhouse gas emissions and energy consumption while providing maximum fresh air to an air conditioned building or heated pool hall.

The technology's 25-year proven life span in aggressive chlorinated pool environments is thanks to the robust nature of the Mylar wheel, he said.

"It is the reason for the clean, dry-air



Clean, dry and warm...The Don Tatnell Leisure Centre has experienced 26 years with Rotary Heat Exchangers' Mylar heat wheel.

environment of over 100 Australian pools and buildings using this technology."

Eminent facilities to have had the Mylar touch include the Melbourne City Baths for the past 24 years, the Kingston City Council Don Tatnell Leisure Centre for the past 26 years and Melbourne's iconic new centre-piece; Federation Square.

In a recent Melbourne City Council

commissioned maintenance inspection of Melbourne City Baths, the Mylar heat wheel was given a clean bill of health.

"Its performance after 24 years of operation is still as good as the day it was installed," Ellul said.

A recent major refurbishment of the Don Tatnell Centre, undertaken by the City of Kingston, resulted in the replacement of the existing Mylar heat wheel with a later, newly designed Mylar model which gives even higher energy efficiencies.

The decision was made as a result of recommendations from an extensive consultant study commissioned by the City of Kingston that stipulated the lowest energy use solution for maintaining the highest of fresh air requirements for a clean, dry and warm pool environment.

The simplicity of design and low installation, running and maintenance costs of the Mylar wheel solution can be attributed to it having, essentially, just the one moving part – its rotor.

Such a simple configuration is attainable because of the very low energy required to rotate the wheel at 18 rpm for optimum heat transferred by the several kilometres of thin Mylar film wound to form the rotor matrix.

Typically, this is equivalent to the amount of electricity required to run a couple of light globes.

The result is a low electrical power consumption installation, which does not require complex heavy usage electrical

Maximum thermal gain with minimum airflow pressure loss

Rotary Heat Exchangers (RHE) is a growing Melbourne company established in 1968. It is the only Australian company that manufactures and distributes rotary heat exchangers (or heat wheels).

RHE recover the waste energy from the exhaust air produced by air conditioned buildings, hospitals and aquatic centres, reducing energy usage and cost as well as substantially reducing greenhouse gas emissions.

The initial design of the heat exchanger was developed and performance-tested in a joint venture between the CSIRO and Monash University.

The technology has undergone continual refinement over the years to extract maximum thermal performance with minimum airflow pressure loss.

Dimensionally, it is the narrowest high performance air heat exchanger of its type in the world boasting an energy recovery of up to 90 per cent.

This is achieved by using a thin Mylar film 100mm wide to construct smooth parallel passages which allow the transfer of the energy from the

exhaust to the fresh air of the buildings.

Each heat wheel utilises several kilometres of Mylar film that range in diameter from 600mm to 2.75m and is specifically designed to cater for airflow of up to 15,000 litres/second.

The Mylar is also particularly corrosion-resistant which makes it an ideal choice for aggressive environments such as aquatic centres and coastal areas.

The reversal in flow from the rotation motion of the wheel at approximately 18 revolutions per minute, as well as the short 100mm length of the heat exchanger ensures that dust and air born particles do not collect, making it perfect for use in all types of air conditioned or heated buildings.

RHE Mylar heat wheels have been successfully operating in buildings and aquatic centres around Australia for 35 years and have a proven record of low maintenance and longevity often outliving the air conditioning installation.

Bill Ellul has been the company's managing director for eight years and also manages Ecopower, which is the Energy Consulting arm of RHE.