



Prototype combines evaporative cooling with Mylar heat wheel

ROTARY HEAT EXCHANGERS Pty Ltd has developed an Indirect Evaporative Cooler (IEC) which utilises a Mylar heat wheel.

The Mylar heat wheel technology was originally developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Rotary Heat Exchangers CEO, Bill Ellul, said prototype tests of the IEC dewpoint cooler shows how much the product excels when it comes to energy efficient cooling.

"It is particularly effective in extreme heat conditions especially in low to moderate humidity climates, producing Coefficient of Per-

formance (COP) results in the range of 10 to 20," he said.

"This is up to a four times reduction in energy use compared to conventional heat pumps."

Typically an efficient direct evaporative cooler will cool to near wet bulb temperature by wetting and humidifying the supply air.

"With the addition of a sensible heat exchanger between the evaporatively cooled and ambient building supply fresh air streams, the IE provides dry (in absolute terms) cooling without the addition of water to the building supply air. The building also benefits from 100% fresh air," Ellul explained.

"This dry cooled fresh air will approach the much cooler and dryer than wet bulb dew point temperature, when the efficiencies of the EC and the sensible HE are maximised.

"In other words, on a psychrometric chart, the cooled air moves towards the cooler saturation line while maintaining its low absolute humidity; so we can describe this as a dew point rather than a wet bulb cooler."

Ellul said dew-point cooling is normally only achieved by compressing refrigerants which pass through condenser and evaporator finned tube heat exchangers, where the evaporative cooling of the refrigerant occurs inside the tubes.



A typical AHU with a Mylar wheel installed at the Oakridge Estate Winery in the Yarra Valley, Victoria.

COMPETITION HEATS UP

There has been plenty of activity in the heat exchanger systems market.

Recent announcements include the sale of Alfa Laval's business for district heating/cooling systems and hot water systems to the NIBE Group.

The products will continue to be sold under the Cetetherm and Uranus brands.

The acquisition was consolidated into the NIBE Climate Solutions business last month.

Meanwhile, Bitzer acquired the shell and tube heat exchanger business of Alfa Laval, making it the largest independent manufacturer of shell and tube worldwide.

As part of the deal, Bitzer is building a state of the art laboratory with highly skilled staff to ensure it is the technology leader in this segment of the market.

Databridge Market Research has released a report on the global plate and frame heat exchangers market which is projected to grow at a Compound Annual Growth Rate (CAGR) of 9.5 per cent from 2017 through to 2024. This is from a base that was valued at \$US3.75 billion in 2016.



"Our cooler has three simple low energy use components - HE, EC and fans - plus the refrigerant is simply water."

Established in 1968, Rotary Heat Exchangers is the sole manufacturer of Mylar Heat Wheels in Australia.

The Mylar Heat Wheel recycles an unprecedented 90% of thermal energy (hot or cold) from one air or gas stream to another. The technology has generated huge energy savings in commercial buildings and aquatic centres across Australia.

The wheels also have an exceptionally long life often outliving the life of the building.

Recent examples of this include the Box Hill City Aquatic Centre in Victoria and the Belmont City Aquatic Centre in Western Australia. ✪