

ROTARY HEAT EXCHANGERS PTY LTD

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ROTARY HEAT EXCHANGER - TECHNICAL FEATURES

Construction of All Rotary Heat Exchangers, With Rotor Sizes 600mm Dia to 2750mm Dia

General Design

Rotary Regenerative Air to Air Heat Exchangers known as Australian Mylar heat wheels have been manufactured by Rotary Heat Exchangers Pty Ltd since 1968. They are used to make air conditioned buildings more energy sustainable by efficiently, recycling the energy from the exhaust air to condition the replacement fresh air. This sensible heat or cooling transfer continuous all year round providing substantial energy cost reductions and often a reduction in the required maximum capacity of the air conditioning installation. These wheels have also proved to have an unprecedented longevity of several decades even in chlorinated indoor pool and coastal salt air environments.

The rotary heat exchangers manufactured by Rotary Heat Exchangers Pty Ltd are of the Sensible (Non-Hygroscopic) type and were developed by CSIRO and Monash University to give the highest performance characteristics in the world. They consist of a rotor containing the heat exchanger matrix medium which is housed inside a frame. All rotors are 100mm wide and use a smooth parallel passage construction designed specifically to reduce air flow pressure drop resistance as well as render the carryover component of leakage flow from exhaust to fresh air as negligible. High true heat transfer efficiency at lowest air flow pressure drop is achieved.

Carryover leakage which may be more significant in rotary heat exchangers constructed with much wider rotors causes contamination of fresh air as well as falsely increasing performance efficiency. Carryover has the detrimental effect of falsely increasing thermal efficiency due to direct mixing of air streams.

Specific Design

The HEAT EXCHANGER MEDIUM is constructed from 100mm wide, 0.076mm thick polyethylene terephthalate (PET) heat exchange film sold by Dupont as Mylar or Melinex. It has a high tensile strength, is tear resistant and does not support combustion. Additionally it is waterproof, smooth and does not readily collect dust. Many km of Mylar film is wound continuously onto a double spoked wheel with each layer separated by thin spacers. The aluminium spokes of the wheel are fixed to each side of an aluminium hub and finished at the circumference with an aluminium rim. The wheel is mounted on a stainless steel shaft which rotates in sealed ball bearings set in spherical housings which require greasing bi-annually.

The BEARINGS are mounted on the diametral supports frame which also supports the drive unit.

The ELECTRIC DRIVE UNIT consists of a small NORD electrical motor driven gear reduction unit and a final Veebelt bolted with a bracket to the side of one of the two dividing central rotor support beams. The V belt drives the rotor through a pulley fitted to the wheel hub shaft. Provision is made to allow this drive to be fitted to either side of the wheel. The size of motor ranges from 100W to 370W for the full range of wheels sizes. On board NORD VSD drive is provided for wheel sizes 2235mm and above for smooth start up.

The frame and diametral supports are flanged for attachment of ductwork and plenum dividing walls. All steel fabrication and sheet steel parts of the units are galvanised to provide maximum corrosion protection. Wheels must be installed in accordance with our instructions.

Bill Ellul BE(Hons), FIEAust, MAIRAH
Managing Director