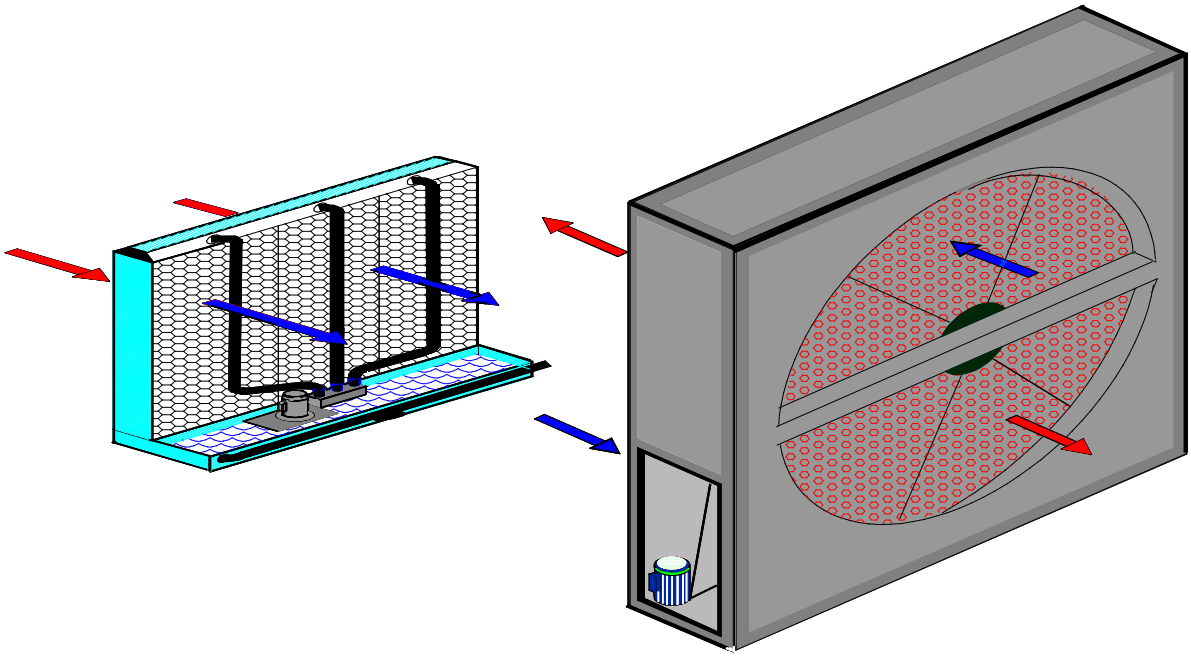
A C P AIRCONDITIONING

ECO - THERM



COOLING

WITHOUT USING REFRIGERANTS

HEATING

UTILISING UP TO 85% MAX OF WASTE HEAT ENERGY

NECESSITY IS THE MOTHER OF ADAPTATION

Technology changes, but the basic principles of Physics remain, we must therefore utilise these principles in far more effective ways, tailoring them to meet our needs, in order to create more efficient and effective methods of saving energy. As we come face to face with our future that so heavily relies on it's past, we must start the change today. Cooling and heating IS required, therefore let's make it happen in an ecologically responsible way which is kind to the planet and bank balance alike.

HOW?

Using fundamental principles of cooling handed down from the Egyptians, in conjunction with state of the art modern materials and technology, we can treat exhaust air and transfer its cooling energy to the supply air. This process can be achieved without supply air contamination, the addition of humidity, or refrigeration plant being required.

In addition, by disabling one component, this very same unit will heat the space, in some cases negating the use for a re-heat coil.

WHAT ARE THE ADVANTAGES ?

1. Cost effective; reducing capital cost and maintenance expenditure.
2. Utilises up to 85 % of waste heat.
3. Space saving; these units are relatively shorter than other similar concepts.
4. The space can benefit from full fresh air thus promoting a healthy environment,

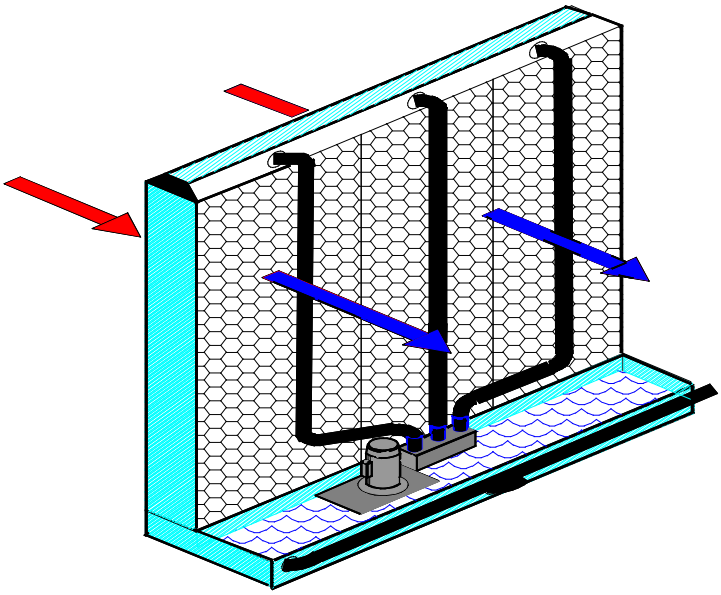
   purged of pollutants and avoiding 'sick building syndrome' and associated illness.
5. Infinitely variable heating and cooling control.
6. Cooling that utilises latent and sensible energies.
7. Refrigerant free cooling.
8. If refrigeration is required, the plant size will be dramatically reduced.

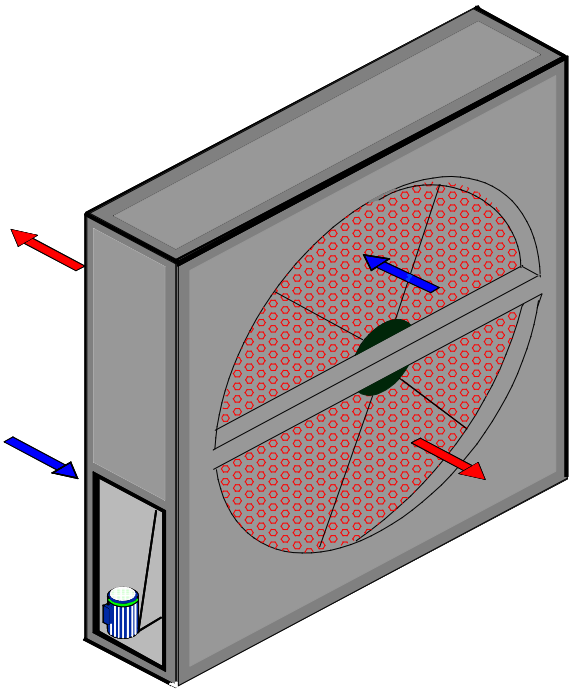
THE TWO HEARTS THAT BEAT AS ONE`

The Evaporative Cooler

An essential component of the unit. Offering a cooling efficiency of circa 85% maximum, the section will consist of a wetted, absorbent, labyrinth mat , sprayed with direct mains or re-circulated water. The humidifier contains a drain tray, circulating pump and the spray pipework system, necessary for certain duties and applications.

A droplet separator can be fitted and all components will be designed to minimise corrosion. We recommend an ultra violet disinfection system is also incorporated .

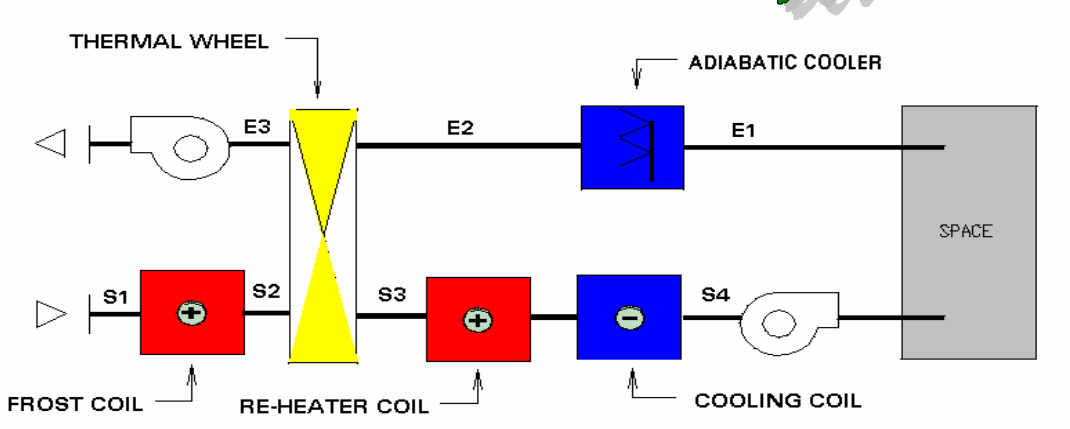




The Thermal Wheel

This component provides the means of transferring heat energy between the extract and supply air streams.

The thermal wheel is a variable speed rotary device with partitioned laminar flow air streams consisting of aluminium corrugated matrix giving circa 85% maximum heat transfer. An adjustable purge sector is incorporated to prevent cross contamination.



How Does It Cool ?

The frost coil is not in operation

Supply side

Ambient air enters at S1 and passes through the thermal wheel, where it gives up its heat to the cooled rotating wheel, and reaches S3.

The supply air can then be further cooled if required to S4.

Exhaust side

Air returns from the space at E1 and passing through the evap cooler which significantly cools the air along the constant enthalpy, to reach E2.

The exhaust air then passes through the thermal wheel picking up heat (transferred from the supply air, by the rotating wheel), to be exhausted at E3

How Does It Heat ?

The Evaporative Cooler is not in operation

Supply side

Ambient air enters at S1 and passes through the frost coil to S2, from there it is passed through the thermal wheel, at this point it absorbs heat from the wheel matrix and reaches S3.

The supply air can then be heated further if required, and supplied to the conditioned space S4.

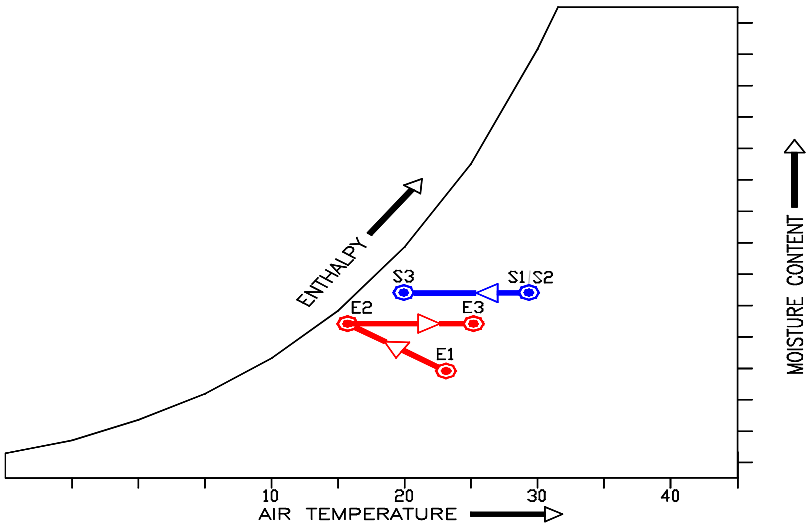
Exhaust side

Air returns from the space at E1 and passes through to E2 without any change in temperature. The air is then passed through the wheel giving up its heat. It is then exhausted at E3 .

EXAMPLE OF PSYCHROMETRIC DATA
TAKING THE ADIABATIC COOLER AT 85% EFFICIENCY
AND THE THERMAL WHEEL AT 75% EFFICIENCY

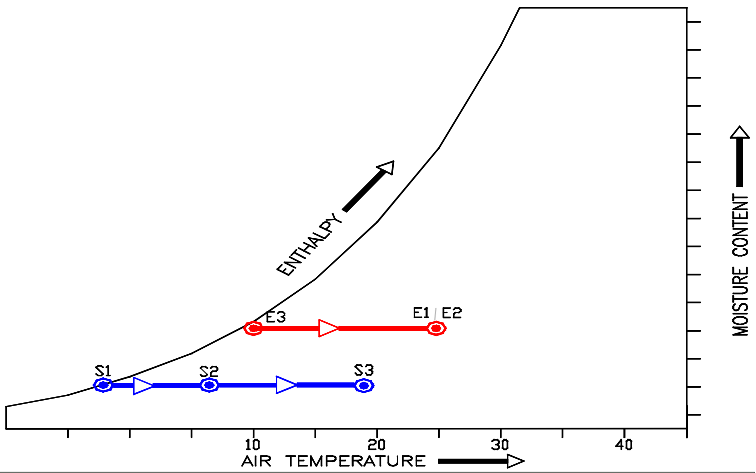
COOLING MODE

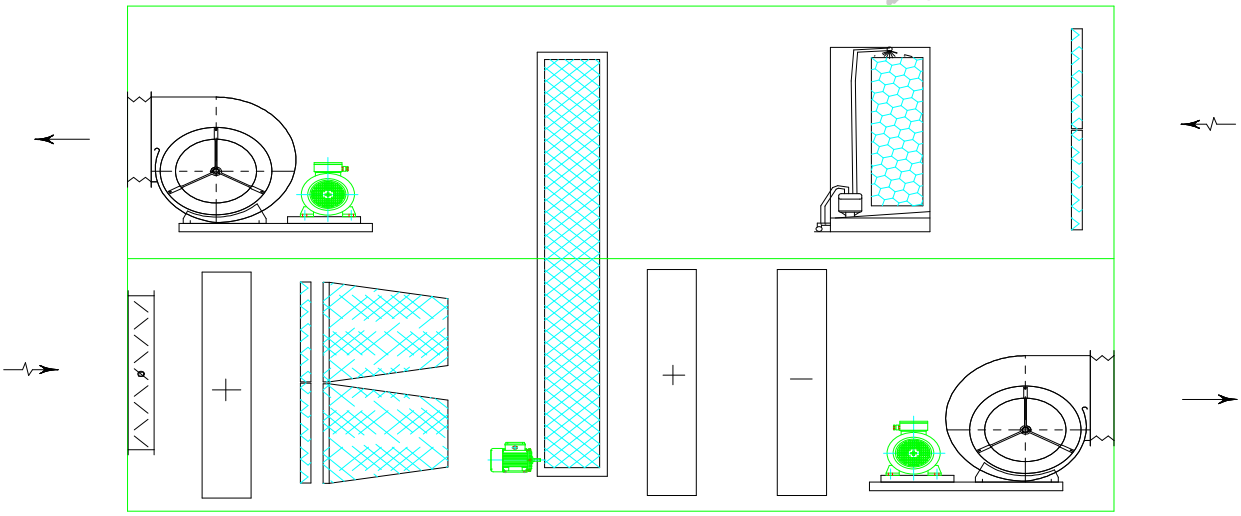
E1 Exhaust air entering AHU	23deg C @ 6.8g/Kg
E2 Exhaust air leaving the evaporative cooler	15.86deg C @ 9.81g/Kg
E3 Exhaust air leaving the thermal wheel	25deg C
S1 Supply air entering the AHU	28deg C
S2 Supply air entering the thermal wheel	28deg C
S3 Supply air leaving the thermal wheel	18.9deg C



HEATING MODE

E1 Exhaust air entering AHU	23deg C @ 6.8g/Kg
E2 Exhaust air entering the thermal wheel	23deg C @ 6.8g/Kg
E3 Exhaust air leaving the thermal wheel	9.5deg C
S1 Supply air entering the AHU	-5deg C
S2 Supply air leaving the frost coil	5deg C





DIMENSIONS

The following table shows the approximate sectional size and length of a thermal wheel unit. For the lengths of other ancillary component parts, refer to our "CONSORT 2000" publication.

MODEL	MIN UNIT HEIGHT INC RSC BASE	WIDTH	TYPICAL UNIT LENGTH	MAX AIR VOLUME at 75% efficiency m3/h
ET 600	750	700	3840	1700
ET 800	950	900	3840	2300
ET 950	1375	1300	3840	3400
ET 1100	1475	1400	4190	4500
ET 1200	1575	1500	4190	5500
ET 1350	1700	1600	4340	7000
ET 1500	1800	1700	4340	9000
ET 1700	2000	1900	4590	11500
ET 1900	2200	2100	4690	14000
ET 2000	2350	2200	4730	16000
ET 2150	2550	2400	4830	18000
ET 2400	2790	2640	5030	23000
ET 2650	3050	2900	5230	28000
ET 2900	3250	3100	5530	33000
ET 3200	3600	3400	5830	41000
ET 3500	3860	3660	6130	49000

For corrosive environments we can offer epoxy coated wheel matrix.
For latent heat recovery a hygroscopic thermal wheel is available.
Additional cooling available; Chilled Water or DX.
Regenerative heat source options; LPHW, Steam, Electric, Gas or Oil.
Filtration options; EU3 to EU14.
Controls options; Full air side and power controls, built in packages available.
Control types: Full Direct Digital Control or Electro-mechanical.

CABINET SPECIFICATION.

FRAMEWORK:

Each AHU or AHU section is fabricated with a framework of 50mm extruded aluminium boxed section with die cast aluminium or nylon corner joints and accessories.

OPTIONS: Anodised finish, nylon corners and accessories, extensions for valves, bulkhead lights wired to outside switch, enclosures for control panel, enclosure with internal walkway (on larger units).

PANELS:

The frame is clad with 25mm thick double skinned insulated panels, which fit into the rebated edges of the corner or intermediate section, to form a continuous flush surface.

Minimum metal thickness is 0.9mm and outer skin is plasticised steel sheet. Inner skin is self-finish galvanised steel sheet. Standard colour finishes are available.

All access panels are sealed against framework with "rubber" gasket.

On 50mm framing, a tubular rubber gasket can be mechanically fitted to a preformed groove in the section for extra quality seal.

OPTIONS: 50mm panel thickness, increased metal skin thickness, range of alternative colour finishes, range of acoustic constructions - high density board, perforated inner skin, septum plates, thicker panel skins, etc.

ACCESS PANELS: Panels secured in place by hand operated compressive locks.

Complete with pull-off grips or grab handles (depending on panel size).

OPTIONS: Lift off doors, hinged doors, tool operated lockable handle, key operated lockable handle, hand operated single half turn compressive latches, double handle with internal release, inspection windows, electrical interlock switches fitted.

INSULATION:

25mm thick mineral wool slab, minimum density 45 Kg/m3

EXTRAS: High density acoustic infill.

BASES:

Each AHU (or AHU section) is normally fitted underneath with a base frame.

After fabrication the base is cleaned, primed and finished in black hammerite paint or anodised on aluminium bases.

EXTERNAL AHU: Fitted with pitched weather roof overhung all round as standard. All fixed panels mastic sealed in place and additional gaskets used on removable panels.

PRESENTED BY

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* Our sales office must be advised of your requirements prior to preparation of a quotation