

# Fläkt Woods Energy Saving Technology

## Twin Wheel System

The Fläkt Woods Twin Wheels and Controls package is helping specifiers gain significant energy savings from air handling units providing fresh air to active chilled beams.

In any application with a high density of occupation within rooms, dew-point temperature control can now be achieved using the Fläkt Woods Wheels and Controls package to maintain room conditions. This has the dual effect of reducing the cooling load on the cooling coil and eliminating the requirement for reheat on the heater battery during the summer cycle, thus contributing to significant energy savings.

## How it works

This system uses both a hygroscopic thermal wheel and a non-hygroscopic thermal wheel with a cooling coil in between. The non-hygroscopic wheel reheats the air from the cooling coil, eliminating the need for a reheater. At the same time, it cools the extract air. This cooled extract air goes onto the hygroscopic wheel and this provides enough cooling recovery to reduce a typical cooling load by half.

The package does not require a regeneration heater or adiabatic humidifiers.

## Conclusions

Calculations show considerable energy savings over systems without any form of heat recovery. In practice, with today's emphasis on energy recovery, most systems will include some method of heat recovery. Nevertheless, this system shows a marked efficiency improvement in the summer cycle and is better in the winter cycle than most systems with some form of heat recovery.

The Fläkt Woods Wheels and Controls package should also be considered for applications such as:

**Chilled Beam Systems** – the system dehumidifies the fresh air so that there is no risk of 'rain' in the zones served by three chilled beams. The system halves the fresh air cooling load and eliminates the need for a reheater.

**Fan Coil Systems** – the dehumidification of the fresh air to the fan coils will result in reduced moisture drop-out on the fan coils, reducing energy costs.

**Displacement Ventilation Systems** – full fresh air systems without humidifiers reduce the maintenance liability usually associated with humidifier systems, with energy savings.

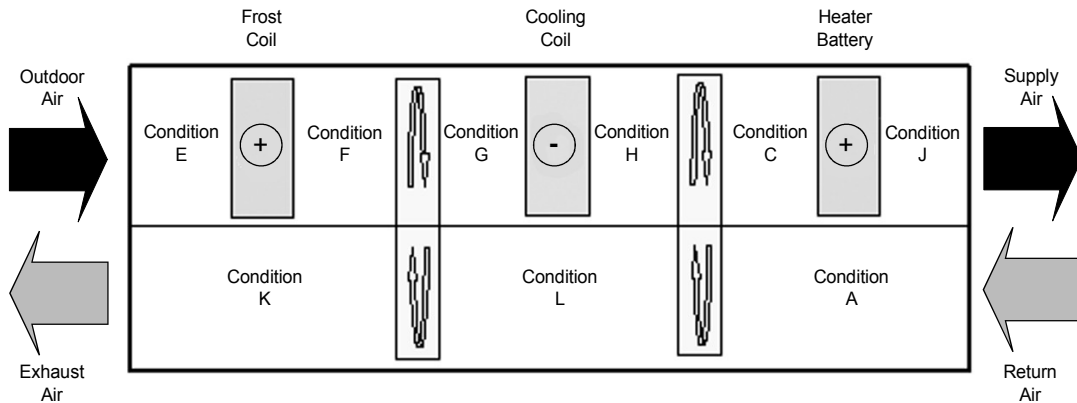


Fig 1: Air Handling Unit

**Operation:** The operation of the system is as follows : (refer to fig. 1)

### Summer

- E-G Outdoor air is initially cooled by the Fläkt Woods Wheels and Controls package.
- G-H It is further cooled and dehumidified, using the cooling coil, to the required dew-point temperature.
- H-C The supply air is then reheated to the required supply condition using the Fläkt Woods Wheels and Controls package, which extracts heat from the return air.

### Winter

- E-F Outdoor air heated by frost coil to 2°C (only if required).
- F-G Outdoor air heated and humidified by the Fläkt Woods Wheels and Controls package.
- G-C Supply air further heated by the Fläkt Woods Wheels and Controls package.
- C-J Heated to design condition by the heater battery.

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