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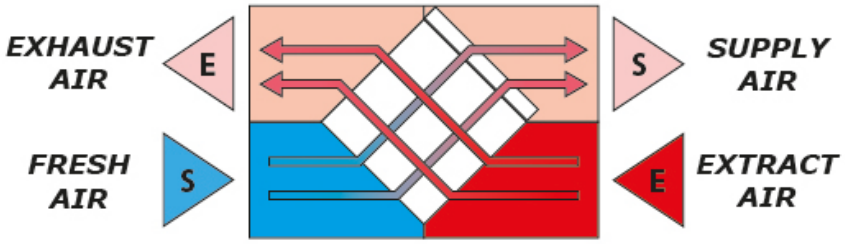
Technical Bulletin – AHU Heat Recovery Styles

25th November 2024

Heat recovery is becoming more relevant as we move towards the next levels of energy conservation, not only in general air conditioning but more in Kitchen Extract systems, or process air, where energy can be recovered and used in a restaurant or in the offices of a factory space.

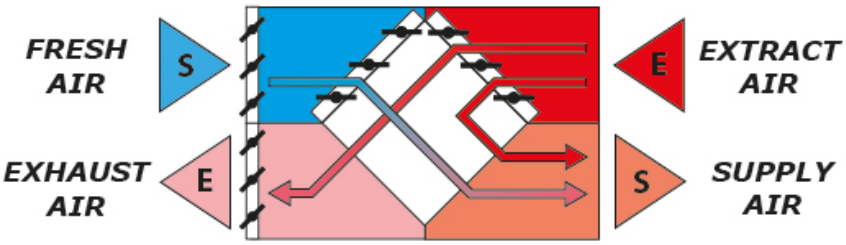
1. Plate Heat Recovery



Supply and extract air flow in opposite directions through thermally conductive plates. As the warm extract air heats the plates, the cooler supply air absorbs this heat from the plates, achieving efficient heat exchange between the two air streams without them mixing. Heat transfer of 78% efficiency is attainable.

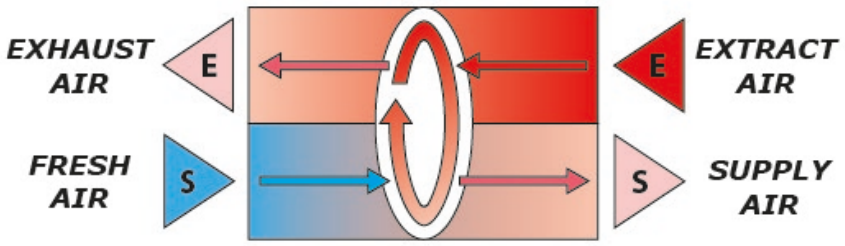
As standard fitted with face & bypass dampers, providing free cooling & closer control of Plate Heat Recovery Off temperature.

2. Recirculation Bypass



As an addition, the Plate Heat exchanger can be fitted with a recirculation damper arrangement, which allows a quantity of extract air to mix with the supply air. This configuration enhances energy efficiency by adjusting airflow as needed to maximize heat recovery, at early morning start up. This only works for applications where exhaust stream is suitable for mixing.

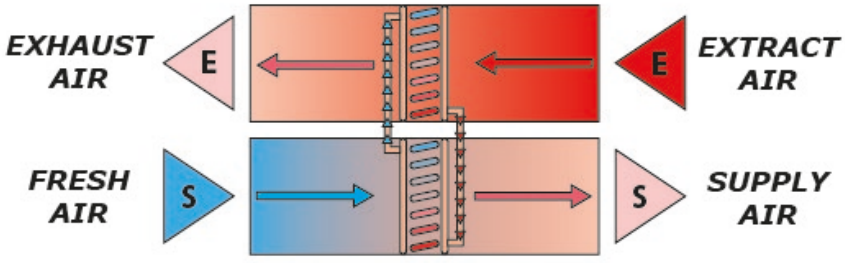
3. Heat Wheel



A slowly rotating wheel is constructed from thermally conductive materials, positioned between two air streams. One half of the wheel absorbs heat from the warm exhaust air, while the other half transfers that stored heat to the cooler incoming supply air.

The wheel continuously rotates, absorbing heat from the exhaust and releasing it into the supply, enabling efficient heat recovery. Heat transfer of 78% efficiency is attainable.

4. Run-around Coils



Run-around coils use the heat from the extracted air to preheat the supply air through a closed-loop heating coil system. While this method is less efficient in terms of heat recovery compared to other systems, it prevents any possible leakage between the incoming and outgoing air streams, making it ideal for settings where fully fresh air is critical, such as hospital operating theatres & where supply & extract units need to be remote from each other.

This approach helps reduce the energy required to reach the desired temperature without compromising air purity. Heat transfer of 67% efficiency is attainable.