EVAPORATIVE COOLING FOR AIR HANDLING UNITS

Low energy and low cost cooling with adiabatic humidifiers

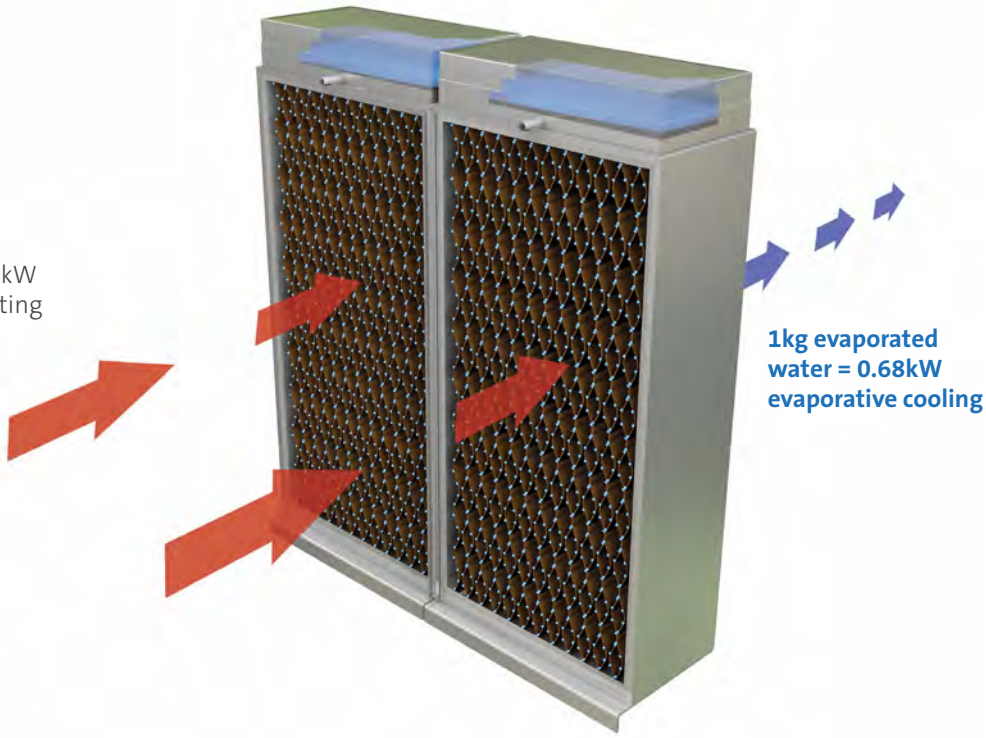
Humidification and Evaporative Cooling

condair

THE POTENTIAL OF EVAPORATIVE COOLING

For every kilo of humidification delivered from an adiabatic humidifier 0.68kW of evaporative cooling is achieved.

As a single adiabatic humidifier can provide up to 1,000kg/h of humidification and a resultant 680kW of evaporative cooling, while operating on as little as 0.3kW of electricity, their potential for delivering low cost, low energy cooling to an air handling unit is great.

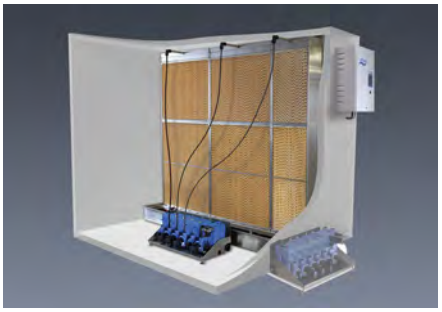


1kg evaporated water = 0.68kW evaporative cooling

EVAPORATIVE COOLING SOLUTIONS

Condair manufactures a comprehensive range of evaporative cooling systems for all types of air handling unit.

This specialist range is combined with extensive expertise in the industry to ensure Condair always recommends and provides the most appropriate solution for any air handling unit evaporative cooling project.



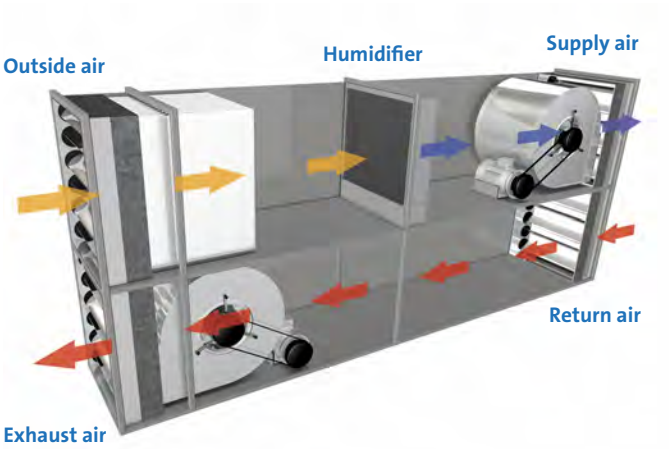
Condair ME evaporative humidifier

Condair HP high pressure humidifier

Condair DL hybrid humidifier

EVAPORATIVE COOLING STRATEGIES

There are three main strategies for evaporative cooling in air handling units.



Direct evaporative cooling

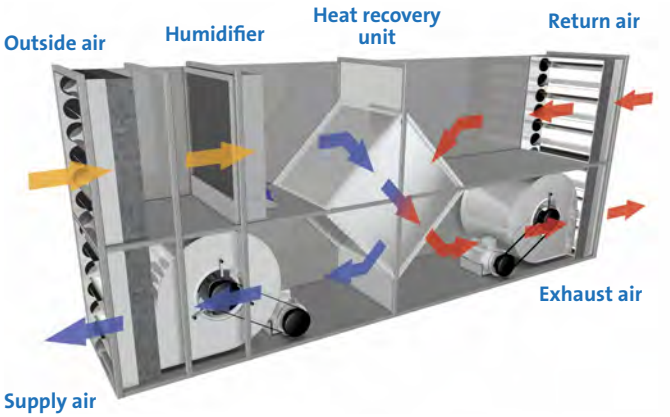
Humidity is added to the incoming fresh air stream, reducing its temperature whilst increasing its humidity. This conditioned air is supplied directly to the room with a high percentage of the room air being exhausted, rather than re-circulated, to maintain an appropriate humidity level in the room.

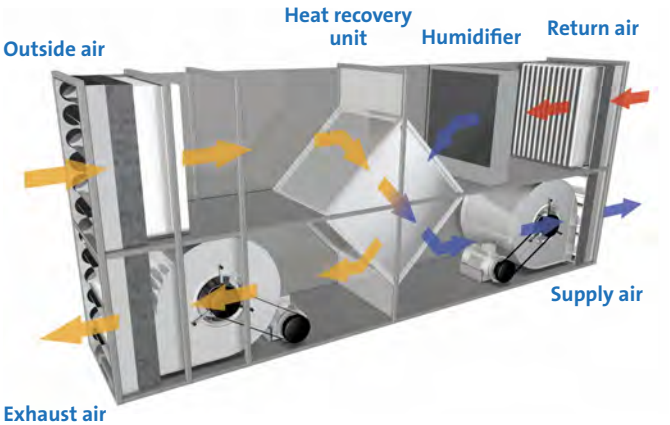
The amount of cooling that can be achieved depends upon the humidity level of the incoming air stream. Air with a lower humidity will absorb more moisture, resulting in a greater evaporative cooling effect.

Indirect evaporative cooling

Outside air is used to cool an internal environment without any mixing of the internal and external air streams. Outside air is run through a heat recovery (HR) unit and is then exhausted. The return air from the room is cooled by the HR unit before being reintroduced to the room.

By humidifying the external air stream prior to the HR unit, its temperature is reduced, enhancing the cooling capacity of the system. This enables indirect evaporative cooling to be used when the outside temperature is higher than the desired room supply condition. A higher velocity on the external air stream than the internal further increases the cooling capacity of the system.





Exhaust air evaporative cooling

The return air extracted from the room is cooled by the humidifier before being run through a HR unit and then exhausted outside. The cool thermal energy provided by the humidifier is transferred to the incoming air stream by the HR unit, cooling it and reducing the required load on DX air conditioning systems.

As there is no mixing of the humidified exhaust air and the incoming fresh air, there is no moisture added, so cooling occurs irrespective of the incoming air's humidity level.

ASK FOR A FREE
EXPERT CONSULTATION

Global expertise, local solutions

Condair adiabatic humidifiers are providing economic cooling for clients across the world. From data centres and offices in the US to railway stations and mosques in Saudi Arabia.

Condair has the experience and comprehensive product range to deliver the most appropriate solution for any air handling unit's evaporative cooling strategy.

Condair has the widest range of adiabatic humidifiers available with manufacturing facilities in Asia, Europe and North America, sales operations in 16 countries and distributors in over 50 more.

Evaporative cooling systems are designed for each individual application by Condair's experts to create the most effective and energy efficient solution. If required, Condair's regional R&D departments can work with a design consultant or an AHU manufacturer's design team to deliver custom systems.

Alongside this product range and expertise, Condair's specialist humidifier engineering teams offer installation, commissioning and maintenance support. This provides the manufacturer's knowledge directly on-site and ensures the equipment operates efficiently and effectively for many years.

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