

Direct Evaporative Cooling and Air Handling Solutions

EcoCooling provide direct evaporative coolers which can be used as part of air handling solutions. The EcoCooling CREC control system automatically runs in different modes throughout the year to ensure a constant supply temperature:

- **Ventilation:** Energy efficient EC fans move fresh air through the area being cooled to transport heat away.
- **Attemperation:** The EcoCooling control system automatically mixes hot exhaust air with cold external air to supply air at a constant temperature.
- **Evaporative Cooling:** Air is moved over a wetted cooling pad, the air temperature is reduced as the water evaporates

This maximises the EcoCoolers' efficiency and performance and is a particularly attractive solution for buildings which have high internal heat loads and high usage. (e.g gyms, and restaurants).

Example AHU Set-Up

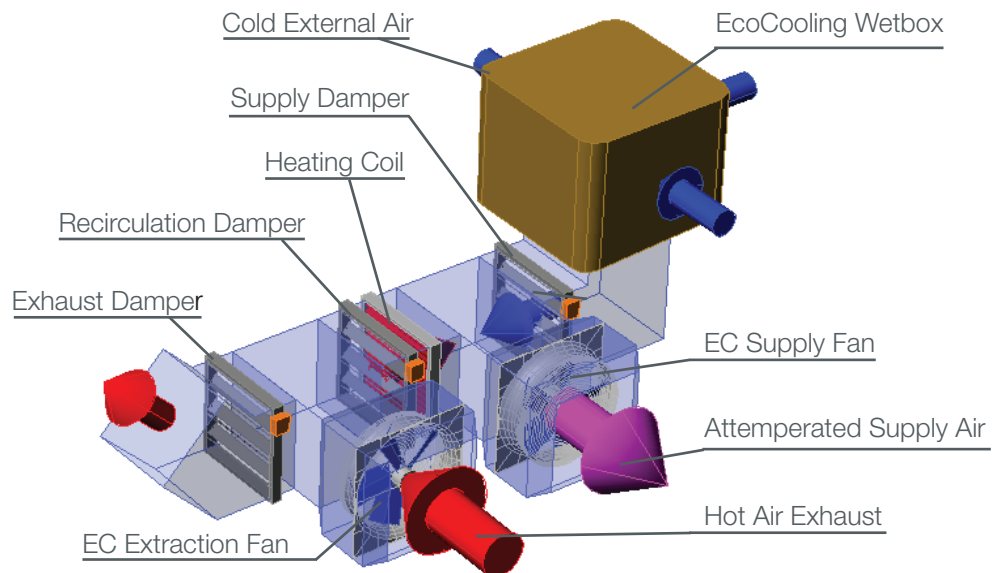
Product Ranges

ECP 60-02: 12,800m³phr

With over 3000 installations worldwide, the ECP range of coolers and wet boxes can be installed externally or inside a plant room. The standard unit is down flow however top and side discharge configurations are available.

ECP 60-01: 18,000m³phr

The ECP60-01 is only available as a wet box. Standard and EC fans and control systems can be purchased from EcoCooling to supplement the wet box as part of a mechanical ventilation system.



Cardiff Met Gym Uses EcoCooling AHU System

Cardiff Met is one of the leading universities for student sport in the UK offering excellent sports facilities and an extensive range of activities to cater for everyone from elite athletes to students, staff and the wider community.

This building like all gyms needed to be kept cool in hot weather, warm in cold weather and ventilated correctly to prevent the buildup of CO₂. In normal conditions where CO₂ levels are not measured, building regulation guide lines state that there must be 10 litres per second of air per person entering the building. This equates to over 1000 litres per second in a gym this size which, can cater for 100 people. At a required design temperature of 20°C inside when the outside temperature is 0°C it takes 2kW of central heating to heat the air that is coming in, to get it to the correct temperature.

The EcoCooling system minimises the heating energy by measuring the CO₂ in the building at all times, bringing in air only when the CO₂ levels rise over 1000ppm. This avoids unnecessary heating. External air is heated using a radiator system at the point of entry inside the gym and this air is then re-circulated to keep the chill off the building when there are only a few occupants. 2 large fabric ducts stretching the length of the gym distribute the air draft free into the gym maintaining consistent conditions.



As occupancy increases CO₂ levels rise with the rate of the rise dependent upon occupancy. Only when the level reaches 1000ppm is fresh air brought into the building by opening the dampers. This air is mixed with the hot air to provide air at the correct temperature to enter the gym. By using this method the minimum amount of energy is used on heating. When the air no longer requires heating the radiator is switched off automatically and the hot air is extracted through the extract fans on the side wall of the gym again saving energy.

As occupancy increases the heat load in the building goes up along with the cooling requirement. The introduction of fresh or evaporatively cooled air therefore coincides with the need to increase CO₂ levels making the system even more efficient.

Refrigerant free and using only 50/60W of electricity, the system is controlled using a Crouzet/Schneider PLC designed by EcoCooling. An added advantage of this system is that during busy times odours are expelled out of the building with the hot air.

Subway Uses Bespoke Control System to Cool Store

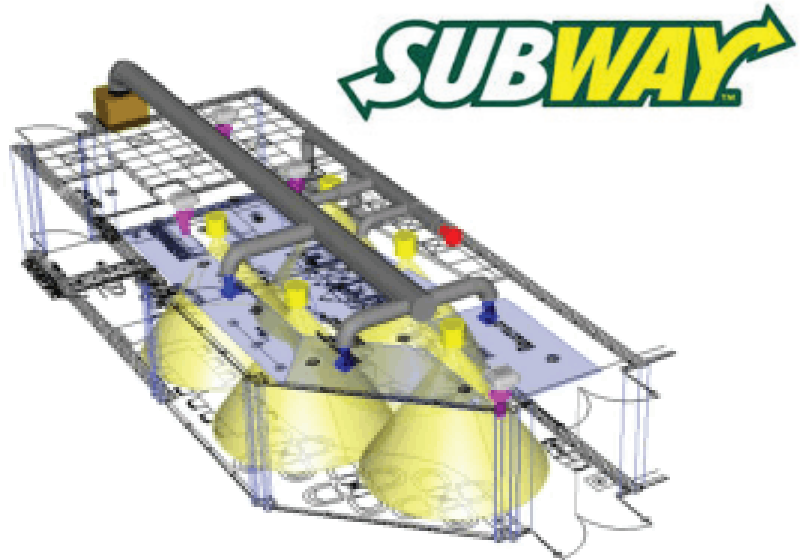
The SUBWAY® system is committed to providing a wide range of great tasting, healthier food choices while reducing their environmental footprint and creating a positive influence in the communities we serve around the world”.

The Brief - The Subway at the Beehive centre in Cambridge was designated by the management as a test site to trial the

provision of the most environmentally friendly retail site possible. The brief was to create as near as is possible a carbon neutral outlet employing the latest technologies.

EcoCooling were invited to look at the cooling of the unit. After careful analysis of the existing environment taking into account, heat generated, airflow and the comfort of both staff and customers, a complete air handling system was designed to provide both heating and cooling.

The Cambridge franchisee installed power usage monitors at both this site and a similar site. The Beehive site is now using 75% less power than the equivalent site and is being held up as a flag ship example of green technology for the whole of the Subway chain.



Subway stores bake bread three to four times each day so the EcoCooling system was designed to capture the surplus heat generated by both the ovens and the walk in fridges to provide heating for the whole shop and not just specific hot spots. This was done by redirecting the hot air into the shop to provide heating in the winter months. Evaporative cooling is then used to cool the store during the summer when the hot air from the ovens is extracted outside the building.

The temperature is maintained within the unit by thermostats. A bespoke control system provides a fresh environment at all times by continually circulating air. This also eliminates any condensation issues and prevents the formation of hot spots which previously caused uncomfortable conditions when the ovens were in use.

Cellbond - Project Engineer Oke Anosike says “the shop floor used to get up to 40°C in the summer: now you can have windows and doors open and the temperature stays at 22°C inside. Its amazing: the hotter the temperature the more efficient the system is.”

What did it cost?

It was cheaper than air conditioning by a factor of 4 to 1, with maintenance almost double that. Conventional AC would have cost about £80k but this was £22.5k. Installation was pretty easy too; we just had to work out where to position the extractor fans to get good air circulation.”