



Fascia



Suspended Ceiling

What is it?

Cool-phase is an award winning, low energy cooling and ventilation system that creates a comfortable, fresh and healthy indoor environment that can significantly reduce the running costs of buildings.

How does it work ?

Cool-phase uses a thermal energy store which utilises a **Phase Change Material (PCM)** combined with an intelligently controlled Air Handling Unit to actively ventilate and cool the building.

The Cool-phase system can maintain temperatures within a comfortable zone, while **radically reducing energy consumption by up to 90% compared with a conventional cooling system.**

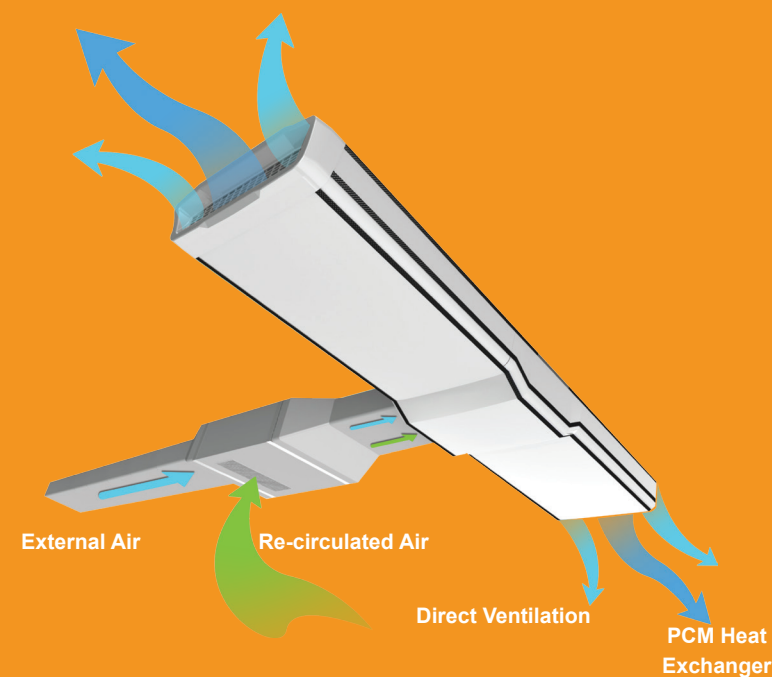
Unlike conventional cooling approaches, **Cool-phase uses no refrigerants**, making it an environmentally sound solution to cooling our buildings.

The effect of adding thermal mass to a building combined with measures to control internal and external heat loading, can be a very effective method of ensuring that the building meets requirements for thermal comfort. However during a period of hot weather, temperatures will invariably rise over time, as there is no method of actively dissipating the build-up of heat. Therefore the effect of adding thermal mass can diminish over a warm spell, although the building takes longer to heat up during the day, it will also take longer to cool down at night time and therefore not all of that heat may be dissipated by the following day.

Unlike passive applications where thermal mass is simply added to a building, the **Cool-phase system is able to intelligently control how energy is stored and released from the thermal store, by using a heat exchanger and mechanical ventilation.** The heat built up during the day can therefore be released at night and the thermal energy store recharged. When this is combined with the effects of free cooling and night time ventilation, the result is a system that can reliably maintain temperatures within comfort zones while **radically reducing energy consumption by as much as 90% compared to a conventional cooling system.**

Benefits

- Very low running costs - energy costs are pence per week per unit.
- Highly energy efficient system.
- Long Life and a warranty of 5 years.
- Modular, scalable and adaptable design.
- Creates a healthy and productive environment.
- Emission savings and carbon reductions offering BREEAM credits.
- Demand control ventilation enhances energy efficiency.
- Environmentally friendly and sustainable solution that uses no refrigerants.



Total Cooling

=

Free Cooling
(Ventilation)

+

Night time Cooling
(Building + flush)

+

Thermal Batteries
(Energy stored)



Anglia Ruskin University Case Study

- Location: Cambridge
- Contact: Andy Lefley, Assistant Director Building Services
- Systems: [Cool-phase® system](#)
- Sector: Education



In January 2013 a computer room used by the Faculty of Science and Technology at [Anglia Ruskin University](#) in Cambridge had its aging air conditioning system replaced with two Cool-phase low energy cooling and ventilation systems. The units were fitted discreetly within the existing ceiling void.

'I am very excited by this technology and the opportunity to improve student comfort without increasing the energy burden to Anglia Ruskin', said **Andy Lefley**, Assistant Director of Building Services, Estates & Facilities.

Each Cool-phase system continually monitors and records temperature, CO₂ concentration and energy usage. The results displayed are based on data collected by the units installed in Room 016 from 25th January 2013 to 2nd September 2013.

Results in this case study also show that the solution has complied with the overheating and air quality criteria, keeping temperatures and CO₂ concentrations within acceptable levels. This has been achieved with very low energy usage and equally low running and maintenance costs.

Table 1 : Daily Temperatures (°C) 25/01/13 - 01/09/13

Average	Min Average	Max Average
22.7 °C	20.9 °C	23.8 °C

Table 2: Max Temperatures (%) 25/01/13 - 01/09/13

>25°C	>28°C	>32°C
3%	0%	0%

Table 3: CO₂ Levels 25th Jan 13 to 2nd Sep 13

> 1000 ppm	> 1200 ppm	> 1500 ppm
11%	3%	0%

Table 4: Energy Used 25th Jan 13 to 2nd Sep 13

Master Unit	100.2 KWhs
Slave Unit	97.4 KWhs
Combined Units	197.6 KWhs
Cost in £'s (Assumed 0.11£/KWh)	£21.74

Bournemouth University Case Study

- Location: Bournemouth
- Contact: Steve Cox, Bournemouth University
- Systems: [Cool-phase® system](#)
- Sector: Education



The Science Lecture Room at [Bournemouth University](#) was fitted with two new Cool-phase® units discreetly positioned within the ceiling void to provide natural cooling within the room.

The Cool-phase system monitors and records temperatures, CO₂ levels and energy use. The results are based on data collected by the units installed in the room between 20th April 2012 and 24th June 2013.

The Monodraught Cool-phase system has shown that it meets the design criteria and specification that the client requested. A requirement for fresh air and to ensure that CO₂ levels remain within acceptable boundaries, which the results above have proven is the case. The solution has also been shown to meet the overheating criteria, keeping temperatures within an acceptable level. This has been achieved with very low energy use and equally low running costs.

Daily Temperatures (°C) Science Lecture Room

Average	Min Average	Max Average
20.6 °C	19.0 °C	21.9 °C

Max Temperatures (%) Science Lecture Room

>25°C	>28°C	>32°C
0.01%	0%	0%

CO₂ Levels Science Lecture Room

> 1000 ppm	> 1200 ppm	> 1500 ppm
0%	0%	0%

Energy Used Science Lecture Room - 61 Weeks

Cost in £'s (Assumed 0.11£/kWh)	138.5 KWhs	£15.24 Total	£0.25p Wk
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