

Better business: technical

Chilled beams/ceilings, mobile technology, refrigerants

BUILDINGS

Chilled beams and ceilings cover all bases

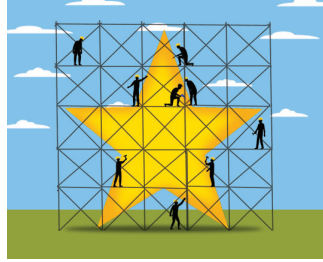
Energy consumption is a fundamental part of any engineered solution in the provision of comfortable working environments. In the current economic climate saving energy means saving money. This holds as true for a brand new state-of-the-art, low-energy BREEAM or LEED accredited building as it does for a refurbished building, particularly if that building is subject to environmental legislation such as the Carbon Reduction Commitment.

The introduction of these environmental assessment methods has dramatically changed the way that commercial offices are designed and constructed. Construction projects demand long-term value and can include environmental credentials and design flexibility to meet the demands of occupants over a 50 to 60 year building life cycle.

The number of projects being stipulated as being built to BREEAM and LEED standards has grown, with over 200,000 buildings around the world now certified under BREEAM. LEED, Leadership in Energy and Environmental Design, has accredited over 14,000 projects in 30 different countries. Architects, designers and engineers are working together to strive to higher ratings to help to achieve these goals.

All buildings have different requirements and it is the role of a design engineer to select the most cost effective and energy efficient solution for a particular application to achieve criteria for accreditation. Specification of chilled beam and ceiling technology is becoming an increasingly popular choice to answer these demands.

Chilled ceilings incorporate a



single piece copper or aluminium element into the rear of a standard suspended metal ceiling tile. Flow and return temperatures are typically between 14 and 17°C, making them ideal for linking with ground source heating and cooling systems and meeting environmental efficiency demands. Building zones can be individually controlled, allowing unoccupied areas to be isolated and shut down.

Chilled beams can also be installed in conjunction with chilled ceilings. The two main types of chilled beam, active and passive, can be applied to a range of projects. Passive beams use natural convection. As warm air rises in the occupied space, it is drawn through the beam, which is fitted with pipes carrying cooled water. The warm air is therefore cooled before returning downwards into the space. Fresh air can be introduced to the space via floor-based ventilation system, or ceiling diffusers.

Passive chilled beams were installed at the newly built operations centre for Essex & Suffolk Water, which received an 'Excellent' BREEAM environmental rating. The three-storey building incorporates a range of innovative sustainable features, boasting a water source heat pump, which utilises water from the nearby Hanningfield reservoir to provide heating and cooling throughout the building. Working with the client and the water treatment team, the design team has been able to use reservoir water to help cool and heat the building, resulting in substantial savings in running costs and demonstrating

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Essex & Suffolk Water's commitment to the environment.

Refurbishment and new-build projects are challenging in different ways. However, for both types of scheme the use of chilled beams or ceilings shows that engineers can satisfy the comfort of occupants at the same time as providing a cost effective, energy-efficient solution.



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MOBILE TECHNOLOGY

Improving field operations with technology

The single greatest change to the HVAC landscape has been the introduction of operational technology that enables constant business improvements.

Field operations often represent the greatest cost to the business and therefore have a significant bearing on profitability and prices. Their performance also has a considerable impact on customer satisfaction; deploying engineers to the right customer at the right time with the right knowledge and parts to get the job done is critical. One could conclude that the success or failure of a business is dependent on its success or failure in the field.

Given the dynamic nature of industry, trying to manually manage field operations is both time consuming and ultimately inefficient. Optimised workforce management, the challenge of delivering or improving on SLAs at minimum cost, has come of age and is available to companies with 20 to 100,000 field engineers.

A case in point is Direct Energy. Owned by Centrica and with 900 engineers servicing heat-