



Press Release

Are Chilled beams losing the battle against fan coil?

The May issue of the ACR Today's E news looks at the future of the chilled beam. Geoff Lockwood, Technical Director of ebm-papst answers a variety of questions on the subject.

Chilled beams seem to be losing the battle against the more popular fan coils. What do you think might stop the decline of the chilled beam market in the UK?

If what I hear is correct that EC motor based fan coil units have a similar overall energy consumption to that of chilled beams then I cannot see what could stop the decline of the chilled beam market. Fan coil units offer a flexible heating and cooling solution especially with a changing occupancy use.

With the almost universal application of the highly energy efficient EC fan motor, do you agree that active chilled beams can no longer be seen as the low carbon option?

From an engineering perspective the environmental dilemma and concerns regarding resource efficiency offer an exciting opportunity to find solutions. The past 10 years of driving towards a Green economy has shown that there is not one solution. Considering our need to move away from fossil fuels we do not have one answer but an array of solutions such as nuclear, wind, solar, biomass, wave and tidal. It is the same with the need to heat and cool our indoor environment, there is more than one way. Active chilled beams cannot be seen as the only low carbon option because EC motor based fan coils offer an equal, if not lower, carbon solution when the overall energy consumption of the system is considered. There can be other ways of delivering similar low carbon levels, but it is features and benefits and how they interact with other services and the occupants that determine the most suitable solution.

Fan coils are half the cost of even passive chilled beams, are easier to fit, even in retrofit applications and can be relocated if the use or occupancy of the space is changed. Is the flexibility and cost of the fan coil more persuasive than the aesthetic design of chilled beams?

The ease of retrofit and upgrade is, in retrospect, a significant advantage of fan coil units. The old units with AC induction motors have a worse carbon footprint than chilled beams. However upgrading existing units by replacing the old AC motor based fans with EC fans is an easy win in both carbon reduction and savings in energy bills. At the same time the modern fan coil controls can also be easily changed and integrated into the latest build control systems to bring the system up to the requirements of the current building regulations.

Are fan coils, fan decks in particular, able to offer better control of chilled and heated air volume than chilled beams?

EC motor technology gives the fan coil designer greater scope to deliver high levels of energy savings. Today the volume flow of the fan coil is modulated together with the heating or cooling of water to meet the demand from the zone it is managing. It does this by utilising the simple speed control feature of EC motors, the modulating capabilities of the coil valves, and indirectly the supply pumps. This with careful positioning of sensors, supply and exhaust terminals provides a better control of the zone.



Chilled beams can be manufactured to augment the structural design of the building. Do you believe chilled beams are still the preference of many design consultants?

Chilled beams offer an aesthetic solution to cooling. There are many examples of beautiful buildings incorporating chilled beams and natural ventilation. In such circumstances it is difficult to argue how a mechanical based solution can match such a low carbon solution. But not all buildings can be located in ideal locations with optimum layouts.

Chilled beams, particularly passive chilled beams are quiet, they can be pre-fitted with lighting, PIR sensors and other services and deliver a better air distribution within the space. Can fan coils ever offer the flexibility of multi-service chilled beams?

Although fan coil units are not pre-fitted with lights and PIR sensors they can be fitted with control technology that interfaces with PIR to operate in a set back position when the room is unoccupied, such as a meeting room, to reduce running costs. It is a challenge for fan coil units to meet the acoustics of a passive chilled beam; EC motors are available that are a lot quieter than AC induction motors and careful application of fans can minimise air noise. Whilst fan coils may not be as quiet as passive chilled beams noisy EC fan coil units should not exist.

Many architects try to avoid mechanical air conditioning systems, are passive chilled beams not the obvious solution for naturally ventilated buildings?

Passive chilled beams are often the first choice for naturally ventilated buildings, but there are situations where mechanical means are required to overcome the location and weather conditions that can result in poor ventilation. Fan assisted passive stacks and active chilled beams are examples where mechanical ventilation has been added to overcome natural problems. It is only a small step from here to the EC fan coil unit.

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