

Introduction

Chilled Beams are an energy efficient space conditioning system and compared to constant speed AC fan coils the saving in carbon emissions is around 15%. This in itself is a great reason to select Chilled Beam Technology. However there are many other features which are making this system so popular.

Sustainability is now an important influence in the selection of space conditioning systems. With chilled beams the chilled water temperatures are elevated at 14°C flows and 17°C return. Therefore, this means renewable energy such as ground water can be more effectively used. Also with sustainability you have the life of the building and system to consider.

Therefore Chilled Ceilings and Chilled Beams are increasingly being used to provide comfort cooling in both new and refurbished buildings. Using well proven technology, they are flexible, simple to install and maintain, and can provide energy efficient, cost effective alternative to traditional cooling systems

Reduced Energy Consumption

Chilled beam systems do not require highly chilled water, compared to alternative fan coil cooling systems, therefore reducing the load on the local district cooling system, thus offering a reduction on the buildings energy consumptions. In addition the absence of a secondary fan makes the unit very quiet, low on maintenance and more energy efficient than fan coil units Chilled Beam system can also be set up to provide free cooling when external air temperatures are suitable. The chilled water is also distributed by variable-speed pumps, to suit demand and therefore can provide further reductions in electricity consumption

This can offer significant benefits when constructing or refurbishing a building for obtaining an Energy Performance Certificate (EPC). An EPC is part of a series of measures being introduced across Europe to reflect legislation which will help cut buildings carbon emissions and tackles climate change.

Legislation

With the introduction of new legislation such as Part L of the building regulations in England and Wales in means Chilled Beams help to offer a reduction in the buildings energy usage and thus reduce the carbon foot print. The impact of Part L is in itself significant but other targets are being sought, for example as previously mentioned EPC's are proposed for commercial buildings across Europe therefore, Chilled Beams can help investors and developers be certain their building will remain up-to-date and marketable.

Building Energy Performance Certificates are going to make energy use more clear and will strengthen the case with building owners and developers to employ Chilled Beams.

Whole Life Costs

The main materials used for the Chilled Beams construction is Aluminum and Copper which are both fully recyclable. With Chilled Beams there are no moving parts, no fans, no filters, and as such the life of the unit is much longer than with a traditional air conditioning system. Typically fan coils have a life of 15-20 years, whereas with Chilled Beams it is in excess of 30 years. Product or system life is an important and often ignored factor in the sustainability argument.

As Chilled Beams have no moving parts this equates to reduced maintenance costs than that of traditional AC Fan Coil units. This also reduces traffic emissions of maintenance vehicles, plant and equipment which are otherwise required for regular maintenance of AC fan coil units, thus again better for the environment.

Additional Benefits;

Chilled Beam offsite pre-assembly reduces installation times and increases fastrack programming. Our Chilled Beams are also designed as plug and play units which further reduces commissioning times and costs.

Hence, both of the above benefits help reduce the carbon foot print as plant, equipment and labor resource on-site are minimized and therefore helps to reduce traffic movements.

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BREEAM

A raft of new regulations related to energy saving in Part L of the Building Regulations has placed severe limits on the amount of air that can be pumped around a building and this has led to a significant push to find new ways of increasing induction on active chilled beams. Indeed, because of Part L, consultants are far more prepared to look at new ideas to save energy and chilled beams have benefited from this.

Chilled beams do not require a secondary fan so they are inherently more energy efficient than fan coil units, their main air terminal device rivals. On top of this, chilled beams use higher chilled water flow temperatures than fan coil units (around 14°C), which means there is a significant part of the year when chillers do not need to be working and free cooling is available.

Chilled Beams improve the energy efficiency and environmental performance of buildings and contribute towards a Building Research Establishment Environmental Assessment Model (BREEAM) rating.

Off-site prefabrication of the beams is another significant benefit which firstly provides consistent a high quality product to be achieved within a controlled environment. Prefabricating Chilled Beams in the factory also has a dramatic positive impact on waste materials as there are recycled more easily in the factory, and traffic movements can be lessened, which is better for the environment.

Another advantage with Chilled Beams is that they produce very high comfort levels. This is because the air enters the room at relatively low velocity levels and the supply air temperature is higher than with fan coil systems. This eliminates any complaints concerning cold spots or draughts. The noise levels are also low since there is no terminal fan.

Corporate Responsibility:

More businesses are becoming increasingly aware that they have duties to help cut carbon emissions. However, some businesses still find it hard to take environmental concerns seriously. Since people have begun to recognize the reality (and the consequent dangers) of climate change, and have therefore changed their attitudes to the way the environment is treated, the ecosystem and energy conservation has become a competitive issue among businesses.

The image of major businesses has been strengthened because they have taken an enlightened and progressive stance on the issue and this is leading to the greening of industry in general. This also applies to many property developers who want to market up to date low energy buildings.

Therefore, building Energy Performance Certificates are going to make energy use more clear and will strengthen the case with building owners and developers to employ Chilled Beams.

Therefore the chilled beam market is set to continue to grow and will very soon become the leading terminal space conditioning system. The arguments are compelling and the progressive reduced carbon emission limitations will make this a formality.

Summary of Benefits of Chilled Beams

- Significant energy savings (around 15% compared to constant speed AC fan coil units) due to the use of free cooling.
- Reduced building height reducing construction costs or providing the ability to recycle old buildings.
- Virtually maintenance free since there are no moving parts or filters and requires occasional cleaning once every 5 years.
- Lower whole life costs compared with traditional air conditioning system.
- Reduced installation times since most or all of the Chilled Beams are pre-fabricated in the factory.
- Can be styled by the architect so they are aesthetically pleasing and can form a feature in offices.
- Increased quality and safety due to the large pre-fabrication element.

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