

Chilled beam heating and cooling

DESCRIPTION

Chilled beam heating and cooling is a hydronic HVAC system designed for large buildings. Pipes of water pass through a “beam” that is either integrated into standard suspended ceiling systems or suspended a short distance from the ceiling of a room. Because water is a better carrier of thermal energy than air, chilled beam systems offer energy savings as well as provide maintenance costs advantages due to the beam’s design. These systems provide a high level of occupant comfort as well.

Chilled beam systems can be either passive or active. Both systems use water to transport energy to heat and cool a building. A passive system relies on natural convection with warm air in the space rising and circulating around the chilled beam, cooling, and then descending to cool the space. An active beam system includes an integral air supply that induces air from the space up through the cooling coil and provides greater cooling capacity.

DEMONSTRATING THE TECHNOLOGY

This technology is applicable to commercial building for both new construction and retrofit applications. Condensation on the chilled beam can be an issue that can be mitigated with dehumidification but a careful analysis should be undertaken as to its applicability.

Participant to test and demonstrate this technology can be recruited through commercial new construction programs.



Credit: Brucker Company

CRITERIA	VALUE
Electricity savings	0.41 kWh/ft ²
Gas savings	0.14 therm/ft ²
Measure life	20 years
Carbon emissions avoided	1.20E-03 MT equivalent CO ₂
How it saves energy	Convection system saves fan energy, higher chiller efficiency, and less reheat
Non-energy benefits	Comfort
Barriers to adoption	Upfront costs and detail engineering analysis

FOR MORE INFORMATION

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