



Breathing Life Into Your Building

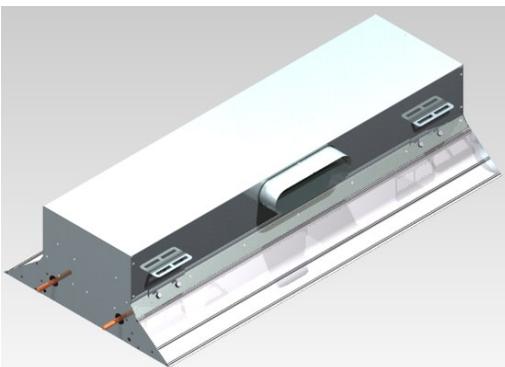
Case Study : GLR Law Firm HQ—Missoula, MT Holistic Integration of Active Chilled Beams

Overview

Placing Active Chilled Beams (ACBs) into a building can provide significant savings in energy through fan-power reduction but to maximize the system benefit the design should consider all the mechanical components holistically as they will integrate into the system. ACBs require a fundamentally different approach to system design due to the conditions by which they operate. Often these design conditions promote the efficiency of the other equipment in the HVAC system. The design team on the GLR Law Firm Headquarters project located in downtown Missoula, MT was able to take advantage of this by integrating the system via a number of innovative methods, new technologies and local resources.

The best way to reduce energy consumption in a building is to reduce the design loads the HVAC system handles. The design team on this project selected a high performance façade which includes low-E glass, solar controls, and Sun Shades on the western and southern exposures. These were used to decrease the cooling load in the space thereby decreasing the system cooling demand and energy consumption.

Typical ACB design requires moderate chilled water temperatures. A number of efficient methods can be utilized to deliver chilled water to the units at this temperature but due to the location of the project and access to a suitable supply of water at a consistent temperature from the Missoula aquifer the design team opted to install an open loop geothermal well to handle the full cooling load of the building. This configuration allows the system to operate during peak cooling season without the use of a chiller to serve the HVAC system.



Many of the ACBs were sized based on the sensible cooling capacity requirement. To further minimize the primary air flow rate radiant ceiling panels were installed in parallel with the ACBs. These added increased capacity but also a radiant cooling component and therefore improved the indoor environment quality (IEQ) and occupant comfort level.

The ACBs are also the primary heating system in the building. Utilizing relatively low heating hot water temperatures the ACBs are fed by heat pumps or condensing boilers which both maximize their efficiencies at low temperatures.

Each of the system components utilized on this project are innovative and highly energy efficient. The ACB design conditions allowed for each to be sized for maximum efficiency then integrated to optimize the performance of the system as a whole. DADANCO worked closely with the design team on the GLR project to approach the building's system as a cooperative network which resulted in a practical and efficient design solution.

Active Chilled Beams