



CRC Winn Center, Sacramento, CA

Energy efficient building design must balance energy consumption with optimized human comfort. LEED (Leadership in Energy and Environmental Design) certification objectives present additional design challenges.

With this in mind, and from previous experience, the design/build contractor for the Winn Center for Construction and Architecture, Lawson Mechanical of Sacramento CA, decided to include “chilled beams” in the facility’s heating and cooling system.

The Winn Center was designed to be the first certified LEED Platinum - status building in the Los Rios California Community College District. The LEED Green Building Rating System is used nationally to evaluate high performance green buildings in the areas of design, construction and operational efficiency. According to the U.S. Green Building Council, “LEED Platinum is the highest status level that can be awarded for buildings designed to meet demanding energy-efficiency and sustainability requirements.”



Dedicated on August 27, 2013, the beautiful and inspiring new 41,500 square foot addition to the Cosumnes River College (CRC) campus in Sacramento houses classrooms, laboratories, studios and general purpose space for the college’s architecture, construction, photography and pharmacy programs. Chilled beams play a major role in the air handling system that delivers temperature controlled air to all areas of the building: classrooms, laboratories, common areas, etc.



In a traditional forced air HVAC system, air for breathing and for temperature control is centrally heated or cooled and blown by an air handler through ducts to individual rooms. In an HVAC system that incorporates chilled beams, only breathing air is distributed through ducts. Water is chilled or heated and then pumped through pipes to the chilled beams, usually located directly above spaces that require temperature-controlled air (in this case, classrooms). Because water can carry more energy than air, chilled beams can deliver the same air cooling or heating result as a conventional HVAC system while using less energy and occupying less space ... all very important factors when pursuing LEED Platinum status.

Doug Miller of the George Yardley Company, Sacramento CA, introduced Swegon to Lawson Mechanical early in the design phase of the Winn Center project. Mr. Miller states that, while other chilled beam manufacturers were being considered by Lawson, the advantages of model diversity (to facilitate architectural and engineering design objectives) and the enhanced comfort and adaptability features offered by Swegon were deciding factors. Also driving the decision was Swegon's ProSelect software which proved to be very useful in selecting chilled beams to meet Winn Center's cooling and heating requirements.

Nick Davis, Project Manager for Lawson, explains: Chilled beams are used throughout the building, except for the entry lobby. The installation tasks were coordinated with the ceiling contractor so that, with the ceiling T-bar framing in place, the chilled beam modules could be "dropped into" the ceiling grid system. Flexible connectors join the supply water piping to the chilled beams.

The Winn Center system is divided into zones. Within each zone, chilled or heated water from the central plant is mixed with water returning from the chilled beams within that zone. Thermostatically-controlled two-way valves regulate the mixture of centrally heated or chilled water with returned water to adjust the temperature of water to be sent back to the chilled beams within each zone. (The use of two-way valves simplifies the design of the system and reduces complexity at the beams.) Outside air is cooled to 55 degrees in the central air handling system. That air is then pushed from the central system through ducts to each room in the building. The ducted air blends with air induced over the coil, resulting in a discharge temperature into the room of 60-65 degrees.

Two Swegon chilled beam models were included in the design which gave the engineers and architects greater flexibility while pursuing mechanical and aesthetic objectives. The PARASOL model was used in rooms having enclosed ceilings. The ADRIATIC model was used in classrooms without enclosed ceilings.

Quick Facts

Country: USA
City: Sacramento
Building year: 2013
End User: CRC Winn Center

With the Swegon chilled beam system, the air handler only needs to provide one-third the amount of ducted air of the forced air system. This reduced need for air volume has resulted in a much smaller than normal air handling system which has, in turn, reduced energy consumption and sound generation. Also, there are no moving parts in the beams that could create noise. All these chilled beam system advantages help keep the classroom environment as efficient and quiet as possible.



The college will use the extensive examples of Green Building technology within the Winn Center for teaching purposes. First impressions by CRC faculty and students is positive.