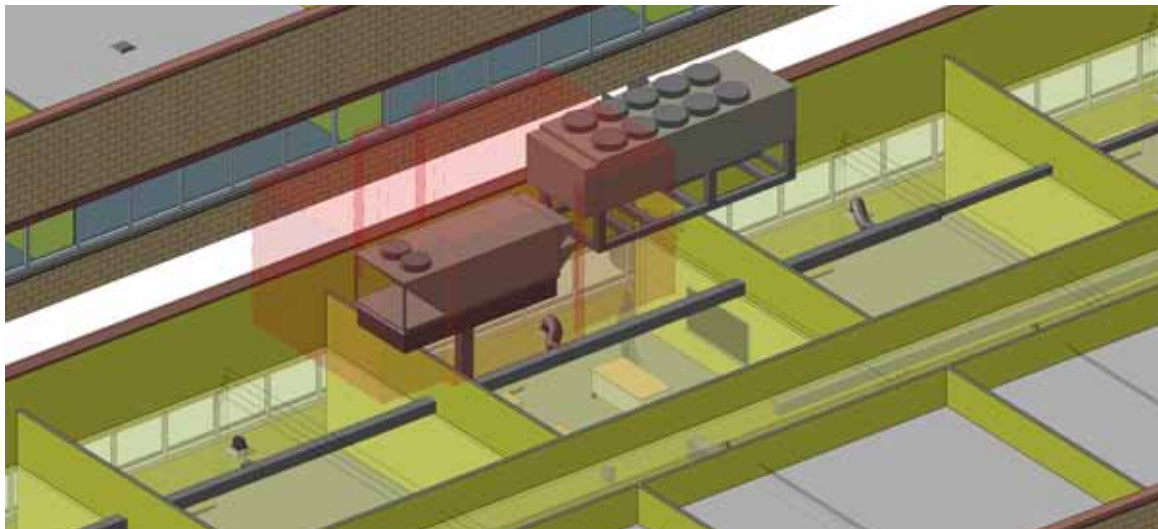


gb&d

GREEN BUILDING & DESIGN
SEPTEMBER 2011

TOWERING AMBITIONS

Three vanguard architects reinvent the skyscraper, grounding the form with Earthly sensibilities, P. 54



LEFT: BIM renderings are used by McQuay International during the design process to determine equipment placement and clearances.

EXPERIENCING ENERGY EFFICIENCY

With its parent company, Daikin Industries, Ltd., McQuay International is the largest heating, ventilating, and air-conditioning company in the world. It offers a range of commercial and industrial products that are among the most efficient on the market. But the company makes sustainable practices part of its culture. Case in point: the Daikin McQuay Applied Development Center (ADC) at McQuay International's world headquarters in Plymouth, Minnesota. The 49,000-square-foot research center, one of the world's most advanced facilities for HVAC research and development, received LEED Gold by the USGBC.

backgrounder/

"We make a lot of chillers, which are devices that make cold water in large buildings," says Don Winter, vice president of marketing for McQuay. "Continuing to design the leading chillers in the marketplace is a core part of our business strategy." According to Winter, McQuay International's customers use the company's chillers throughout the year, not just in the summer. "Even in Chicago in the middle of January, many commercial buildings are cooled as well as heated," he says.

"That's because people and computers and lighting generate a lot of heat."

As a result, McQuay International needs to test its chillers in cold temperatures and warm temperatures, something that's difficult given the size of the devices (30,000 cubic feet is not unusual, Winter says).

challenge/

Winter explains: "We needed a research and development center where we could, as we were designing new products, test those products [in] all kinds of conditions."

solution/

The Daikin McQuay ADC, completed in May of 2009, features a number of chiller testing chambers, which are, essentially, large rooms where chillers can be placed and tested under varying environmental conditions and voltage requirements. "Having a facility like this lets us develop products that meet our customers' requirements at all locations around the world," Winter says.

“Not only is the ADC designed to build and test energy-efficient products, but it is an efficient building itself.”

— Ryan Fleser, Corporate Environmental Systems Manager

One such requirement is energy efficiency, which has been one of McQuay International’s core principles since its founding, and it gained steam when Daikin Industries acquired the company in 2006. “There are minimum standards for energy efficiency that vary by state, but as a company we have always offered many options that are much more efficient than required,” Winter says. “This is a decades-long initiative.”

Just like McQuay International’s products, its efforts in making facilities sustainable have been in existence for decades.

“We seek to increase the efficiency of our operations; reduce the use of energy, water, and waste; and increase recycling,” says corporate environmental systems manager Ryan Fleser. “To that end, in 2008 we created an environmental department to help focus the company’s environmental efforts and measure improvements in a more consistent manner than had been done in the past.”

The ADC is a good example of the company’s environmental efforts. “LEED Gold certification was just an example of taking the sustainability of the building to the next level,” Fleser says. “We first established what a normal building of that size would draw in energy usage then sought to beat that to whatever extent possible.”

The ADC’s testing chambers also feature a heat-recovery system. “As we’re running all of these tests, the chillers create heated water, which normally has to be expelled, so instead of expelling it outside the building, we developed systems to use it in our testing process,” he says.

“Recycling heat, recycling water, reducing electricity—all of that was incorporated into the design concept of the building,” Fleser says. “So not only is the ADC designed to build and test energy-efficient products, but it is an efficient building itself.” —Julie Schaeffer

RIGHT: McQuay’s geothermal water-source heat pumps add and reject heat from a continuous loop using geoexchange from natural sources such as the ground, a pond, or a well. Each unit responds only to the heating or cooling load of the individual zone it serves, providing greater comfort and control and lower operating costs.



Creating responsive,
innovative and sustainable design
FOR OUR CLIENTS AND THEIR COMMUNITIES.

hga. HGA ARCHITECTS AND ENGINEERS
701 Washington Avenue North, Minneapolis, MN
612.758.4000 | hga.com