

Daikin Helps Electrical Distributor “Walk the Talk”



The Challenge:

Committed to delivering energy saving strategies, Western Extralite sets out to set an example by selecting an HVAC system that would “walk the talk” and help gain LEED certification.

Daikin’s Solution:

Daikin’s VRV8 heat recovery system met the necessary LEED requirements, provided the efficiency, and was less expensive than a geothermal system.

Application:

Commercial

Location:

Lawrence, Kansas

Founded in 1938, Western Extralite is a family owned and managed full-line, full-service distributor of electrical and datacomm products. The company is committed to delivering cost effective, leading-edge energy saving strategies. The Lawrence, Kansas business owns over a million cubic feet of warehouse space spread across 17 locations throughout Missouri and Kansas.

The company offers energy audits and turnkey solutions designed to save costs and energy, therefore, when its design

team was planning a new 20,000 square foot building for office, sales counter, and warehouse use, energy efficiency was critical. “We wanted to walk the talk,” said Western Extralite vice president of operations Mike Higgins, who added that seeking USGBC LEED[®] certification was also a definite goal.

While a litany of eco-friendly initiatives contributed to the new metal building’s environmental friendliness, the HVAC system employed in the non-warehouse space was one of the most essential. The warehouse space



The Daikin system installed in Western Extralite’s Lawrence facility was named the city’s first LEED certified private business, and was awarded LEED Silver certification in January 2010. Owners cite the energy consumption of the 20,000-square-foot space is similar to the energy used in their old 12,000-square-foot building.

is not air conditioned and is heated using a gas-fired heater. Western Extralite also constructed another 18,000 square foot space for future expansion to rent or lease.

The project was originally designed using a geothermal system with water-to-air heat pumps serving the administrative area and water-to-water heat pumps for domestic hot water. However, the first costs associated with drilling were higher than budgeted and finding an alternative option became necessary.

The Overland Park, Kansas office of Pearson Kent McKinley Raaf Engineers, LLC (PKMR) was responsible for general project coordination, assisting on the project's mechanical design, energy modeling the HVAC system, and LEED registration. According to PKMR project engineer Bryan Leinwetter, once the geothermal option had been dismissed, the HVAC design team (including the local Daikin AC sales Representative, Associated Air Products, Inc. of Lenexa, Kansas) weighed other options.



Architects determined that Daikin's pricing compared favorably to a geothermal system.



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*Shauna R. Schauf-Allen
Pearson Kent McKinley Raaf
Engineers, LLC*

Since the owner wanted high efficiency and flexible temperature control in the different areas of the building, residential split systems were considered for part of the building. However, Chris Bartlett with Associated Air Products (AAP) said the split systems were unable to meet the necessary LEED requirements in this particular application. Additionally, rooftop units were ruled out since the roof couldn't support them.

A WELL RECEIVED OPTION

Leinwetter explained that Daikin's Heat Recovery VRVIII (#REYQ216PYDN) allowed the team to simplify the design by reducing the amount of outdoor equipment due to its ability to simultaneously heat and cool multiple zones. The Daikin system handles both the lower (5,100 square feet) and upper (1,725 square feet) office areas, which also include a conference room, bathrooms, a break room, and an exercise room.

Shauna R. Schauf-Allen, senior engineer with PKMR, recalled seeing one of Daikin's ceiling mounted cassettes in the conference room when the team visited the AAP office. "We saw the cassette up in the ceiling, and I remember thinking, 'that's going to be loud,' but they turned it on and you couldn't hear it at all. The business owner was very impressed with that, and so were we," said Schauf-Allen, who had never previously specified a Daikin system.

Additionally, she added, the pricing compared favorably to the geothermal system and offered superior individual control while

being more energy efficient. PKMR and AAP worked together to design a Daikin heating and cooling system that would meet all of the owner's individual temperature control demands. After finalizing the building zoning and determining which fan coils to use, AAP provided a piping diagram and layout.

The system employs several varieties of Daikin fan coils and a R-410A heat recovery (heat pump with the ability to heat and cool various zones simultaneously) to vary and control the refrigerant flow through the system via the branch selector units (#BSVQ36PVJU and

#BSVQ60PVJU). This equipment is supplemented by an Energy Recovery Ventilation (ERV). Additionally, Daikin's inverter compressor self-adjusts to meet the exact load of the building, resulting in much greater efficiency than systems with a simple on/off control.

Fresh outside air is brought in and exhausted through an energy recovery ventilator with an enthalpy plate. Rather than discard used building air, the enthalpy plate salvages sensible and latent energy and transfers it to incoming fresh air, which saves energy by reducing the need for cooling in summer and heating in

Other LEED Initiatives at Western Extralite

 90% of construction debris – more than 109 tons of material – was hauled directly to recycling locations, diverting 10 dump truck loads from the landfill.

 Lawrence's first bioswale system, a flower- and plant-filled drainage system that returns rainwater to the soil, diverts 675,000 gallons of water annually from the city's storm water system.

 Bright, low wattage parking lot lights, also used by NASA, prevent light from bleeding into the night sky and bordering areas.

 The roof is made of reflective materials.

 VOC-free adhesives, sealants, carpets, and paints were used.

 Several amenities to encourage environmentally friendly transportation were included.

 In the warehouse, skylights allow enough natural light so that on sunny days no additional lighting is needed, saving thousands of dollars annually in energy costs.

 Occupancy sensors in the offices automatically turn on lights to half bright when a person enters. If full light is needed, the occupant flips on the switch. After a set period with no activity, the lights automatically turn off.

 Almost every vendor and subcontractor who worked on the project provided some products that were recycled and produced regionally. Many of the products used for construction contained recycled materials.

 Low flow toilets urinals and lavatory faucets were incorporated to conserve water.

winter. This reuse of energy is essentially free conditioning of the outside air. The system also reduces energy use in areas with reduced demand for heating or cooling.

In March 2009, the systems were started up smoothly. The Daikin Intelligent Touch Controller (#DCS601C71) was commissioned, and all fan coils were tested in heating and cooling. All systems operated normally and the owner was trained on how to use their new Daikin control system.

While Western Extralite occupies 20,000 square feet of the 38,000 square foot building, the company has plenty of room for expansion and it also expects to take on two or three additional tenants. With its LEED silver certification, the building is ideal for a business seeking an environmentally responsible setting. Daikin systems will likely be installed in the unfinished portions of the building, as they are specified in the LEED application and the owner is quite pleased with them.

NEARLY 50% SAVINGS

"In typical non-residential buildings, more than 50 percent of electricity is generally used for lighting and HVAC, with 29 percent going to lighting and 24 percent going to HVAC. This project gave us the opportunity to

significantly reduce both numbers. Our building is a showcase for energy saving solutions. It allows us to educate customers about the products we offer so we can help them replicate our energy savings. The energy consumption in our new 20,000-square-foot space is similar to the energy used in our old 12,000-square-foot building," said Higgins, who noted the savings refer to the entire project. Yet the HVAC aspect of the project certainly had an impact.

In fact, Western Extralite's Lawrence facility was named the city's first LEED certified private business, and was awarded LEED Silver certification in January 2010. Allen-Schauf said using Daikin instead of geothermal helped the project to gain five additional LEED points. "We weren't necessarily

shooting for Silver or Gold, but the extra five points helped us to achieve Silver certification."

For his part, Higgins has been extremely pleased: "We are pleased to be the first business in Lawrence to erect a building that sets a new standard for environmentally conscientious construction and reflects our values as a company."



"Daikin's Heat Recovery allowed the team to simplify the design by reducing the amount of outdoor equipment due to its ability to simultaneously heat and cool multiple zones."

*Bryan Leinwetter
Pearson Kent McKinley
Raaf Engineers, LLC*

Daikin's Heat Recovery System uses Branch Selector Boxes to cool or heat various zones simultaneously of both the lower (5,100 square feet) and upper (1,725 square feet) office areas, which include a meeting room, bathrooms, a break room, and an exercise room.

Additional Information

Location

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Daikin Equipment

Qty	Model	Description
1	REYQ216PYDN	Heat Recovery VRVIII
4	BSVQ36PVJU	Branch Selector Unit
2	BSVQ60PVJU	Branch Selector Unit
1	FXMQ48MVJU	M - Concealed Ducted Fan Coil
1	FXSQ12MVJU	S - Concealed Ducted Fan Coil
1	FXSQ24MVJU	S - Concealed Ducted Fan Coil
1	FXSQ30MVJU	S - Concealed Ducted Fan Coil
1	FXSQ36MVJU	S - Concealed Ducted Fan Coil
1	FXSQ48MVJU	S - Concealed Ducted Fan Coil
1	KHRP25A22T	REFNET branch piping kit
1	KHRP25A33T	REFNET branch piping kit
1	KHRP25M72TU	REFNET branch piping kit
2	KHRP25M73TU	REFNET branch piping kit
1	DCS601C71	Intelligent Touch Controller
6	BRC1D71	7 Day Programmable Controller
6	KRCS01-1B	Remote Sensor Kit - All VRV Indoor Units
1	BHFP26P90U	Outdoor Multi Connection Pipe Kit



About Daikin AC

Daikin AC offers North America intelligent heating and cooling solutions with superior energy performance and sophisticated design. These advanced systems fall under the Daikin Altherma™, Quaternity™, VRV®, VRV-S and SkyAir product names. The company located in Carrollton, Texas, is owned by the Japanese-based *Daikin Industries, Ltd.* For more information, call 866-4DAIKIN or visit www.daikinac.com

