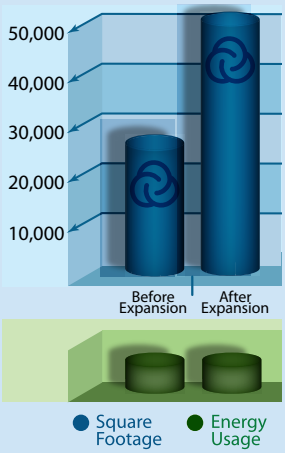
CASE STUDY

WPPI Energy

INTEGRATED BACNET® CONTROL SYSTEM HELPS WPPI ENERGY FACILITY MAXIMIZE EFFICIENCY AND OBTAIN LEED® GOLD CERTIFICATION

BUILDING ENERGY USAGE: BEFORE AND AFTER EXPANSION



Through sustainable design and the maximization of HVAC efficiency via integrated digital controls, WPPI Energy was able to double the size of their almost completely electric-powered headquarters without increasing energy usage.

Project Objectives

WPPI Energy is a regional power company serving 51 customer-owned utilities that provide electricity to more than 195,000 homes and businesses in Wisconsin, Upper Michigan and Iowa. The company had outgrown their Office and Operations Facility in Sun Prairie, WI, and planned to expand the original building. The new facility needed to be comfortable in order to maximize employee productivity. It also required flexible, easy to use digital controls for the heating, ventilation and cooling system in order to operate the facility at greatest efficiency. WPPI Energy also hoped to obtain a LEED® (Leadership in Energy and Environmental Design) Gold Certification for the new building, with full points for energy efficiency.

"Some other controls are like learning to program a rocketship, but the i-Vu® is simple and flexible."

– Mary Beth Weidenfeller, Manager of Administrative Services, WPPI

The Solution

The new WPPI Energy headquarters facility incorporated many elements of sustainable design, including a geothermal heating and cooling system and heat recovery ventilation. Temperature Systems, Inc. (TSI) designed a BACnet® control system of approximately 2,300 points for the heating, ventilation and air conditioning (HVAC) equipment, accessible to WPPI Energy employees through an i-Vu® web-based user interface. In resulting facility, WPPI Energy employees enjoy a bright, comfortable new workspace, and facilities staff can track and control the super-efficient heating and cooling system from any web-enabled location. WPPI Energy's efforts were rewarded with a LEED Gold Certification, with full points for energy efficiency. The company doubled the size of the almost completely electric-powered facility while electric usage remained at pre-expansion levels.

Synopsis

WPPI Energy is a regional power company serving 51 customer-owned utilities that provide electricity to more than 195,000 homes and businesses in Wisconsin, Upper Michigan and Iowa. The company had outgrown their 25,000 square foot Office and Operations Facility in Sun Prairie, WI, and planned to expand the existing building to twice its original size in anticipation of space needs over the next 20 years. The new facility needed to be comfortable in order to maximize employee productivity. It also required flexible, easy to use digital controls for the heating, ventilation and cooling system in order to operate the facility at greatest efficiency. WPPI Energy hoped to obtain a LEED® (Leadership in Energy and Environmental Design) Gold Certification for the new building, with full points for energy efficiency.

The new WPPI Energy headquarters facility provides additional conference rooms and workspace, plus an employee fitness center and break room. The expansion incorporated many elements of sustainable design, including solar tubes and daylighting, high performance light fixtures, energy efficient plumbing, photovoltaic panels and a geothermal heating and cooling system with heat recovery ventilation. Temperature Systems, Inc. (TSI) designed a BACnet® control system of approximately 2,300 points for the HVAC equipment, re-using numerous existing controls to conserve materials and costs.

These controls are accessible through the i-Vu® web-based user interface, so facilities staff can track and control the super-efficient heating and cooling system from any web-enabled location. Jake Oelke, Assistant Vice President, Energy Services at WPPI Energy said, "Being able to check the geothermal system online from home via the i-Vu interface has enabled us to find and correct equipment that was running on weekends or holidays. We also like that we've been able to experiment with settings without re-programming each piece of equipment individually, which has allowed us to tweak our set-points for greatest efficiency."

Mary Beth Weidenfeller, Manager of Administrative Services for WPPI Energy, hailed the i-Vu's user-friendly interface. "The i-Vu system is easy to learn and easy to use. Some other controls are like learning to program a rocketship, but the i-Vu is simple and flexible."

Shane Lyle, Controls Manager at TSI and the designer of the WPPI Energy control package, further remarked, "There is equipment from several manufacturers installed at the WPPI facility, and thanks to the integration capabilities of BACnet and i-Vu, they all work great together." Because of this high level of functionality, WPPI Energy is considering the future integration of their lighting system into the controls network.

WPPI Energy's sustainability efforts resulted in a LEED Gold Certification for the Sun Prairie facility, with full points for energy efficiency. What's more, the company doubled the size of their almost completely electric-powered headquarters without increasing their electrical usage. As Roy Thilly, then-President and CEO of WPPI Energy, said, "We are telling our customers every day that the most important thing they can do is to conserve electricity and eliminate waste. But it's hard to convince people if you don't do it yourself!"

Project Summary

LOCATION: Sun Prairie, WI

PROJECT TYPE: Renovation/expansion

BUILDING SIZE: 50,000 ft^2

BUILDING USAGE: Office and operations facility

UNIQUE FEATURES: Original facility expanded to twice the size without increasing energy usage. Sustainable design features and digital controls for geothermal heating and cooling system maximize energy efficiency. Some controls were re-used to conserve materials and costs.

MAJOR DECISION DRIVERS: Newly expanded facility had to be comfortable to promote employee productivity. Digital controls were required for heating and cooling system to maximize efficiency.

OBJECTIVES: Facility large enough to accommodate WPPI offices for 20 years; LEED® Gold Certification.

EQUIPMENT: (52) water source heat pumps (Carrier & ClimateMaster), (1) domestic hot water heater (Florida Heat Pump), (1) heat recovery unit (AON), (1) UPS (Liebert), (5) kWh electric meters (Veris), (1) BTU meter (Onicon), (2) unit heaters, (12) air flow monitoring stations for heat pumps (Control Solutions of Minnesota), (2) PCO3 plant controllers (Carel), lighting zones (Leviton)

CONTROLS: i-Vu® Integrators; i-Vu® CCN Pro user interface.

SYSTEMS INTEGRATED: HVAC, geothermal WSHP system, domestic hot water, heat recovery, data center backup power (UPS), power monitoring, energy monitoring, unit heaters, central plant, air flow monitoring. Lighting to be integrated in next phase.

INSTALLATION DATE: 2009

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