[Education]

University of North Texas (UNT)

CUSTOMER BENEFITS

- Guaranteed savings
- Reduced energy consumption and costs
- Improved comfort levels
- Local and remote system access
- Flexibility to expand

PROJECT AT A GLANCE

Project Type:
Energy Performance Contract

Location:
Denton, Texas, USA

Number of Buildings:
54 (5.4 M sq. ft.)

Funding Source:
Texas Public Finance Authority – Master Equipment Lease Purchase Program

Installation:
First Project – completed in 1999
Second Project – completion scheduled for 2013

A longtime proponent of energy efficiency, UNT leverages performance contracts to achieve its goal of becoming a "climate neutral" campus, as well as a good steward of state taxpayer money and the Earth's natural resources.

Schneider Electric is an experienced energy expert and "green" partner. We offer a portfolio of respected heritage brands that enable governmental entities like UNT to make their facilities more efficient, productive and sustainable. Our streamlined procurement vehicles minimize the time and costs associated with delivering energy projects. We assist customers regardless of the drivers of change – from aging systems and legislative mandates (e.g., Energy Independence and Security Act of 2007, Executive Order 13423, Executive Order 13514) ... to the need for more reliable energy sources and making the most of limited funds.

Working closely with governmental entities such as UNT, Schneider Electric helps them develop and implement a strategic, life-cycle approach to energy management. Ultimately, this tactic helps maximize savings and ROI while reducing degradation of savings over time.

Energy efficiency is the foundation of Schneider Electric's approach, representing the most cost-effective way to meet energy needs while reducing costs and lowering CO_2 emissions. And UNT strives to do just that.

Make the most of your energy℠

Schneider Electric™

Energy Conservation Measures – First Project:

- Central plant chiller replacements
- Boiler replacements
- Expansion of energy management system
- DDC for air handlers
- Lighting control for the library
- VFDs added to existing VAV systems
- Variable flow pumping
- Variable speed drive control of cooling tower fans
- Power factor correction
- High-efficiency rooftop HVAC equipment
- Central plant optimization

Energy Conservation Measures – Second Project:

- Campuswide chilled water loop to serve 39 buildings
- Lighting control with motion sensors for 50 buildings
- Water conservation measures
- Electrical power monitoring and upgrades for four substations
- Electronic building automation controls (DDC)
- HVAC upgrades

Environmental Facts:

Enhanced system performance has also had a positive environmental impact over the 10-year performance contract that translated into …

- Releasing 206,939 fewer tons of carbon dioxide (CO_2) into the atmosphere
- Removing 41,387 cars from the roads annually
- Planting 56,287 acres of trees to help restore the ecosystem balance

The Challenge

By 1995, the 105-year-old university had a patchwork quilt of lighting and HVAC controls, as well as energy management systems. Aging controls had become unreliable and required constant maintenance and repair.

Chipping away at inefficiencies on limited funding over the years, UNT had clearly achieved energy savings. Without a comprehensive overhaul, however, the university would continue to struggle with systems that degraded the overall effectiveness of its incremental achievements.

To further complicate matters, legislation in place at the time diverted any energy savings from institutions such as UNT into state coffers. Universities were then doubly penalized for their energy conservation measures because the state reduced funding to reflect each school's lowered utility expenses. Eventually, the law was changed, paving the way for the sweeping changes UNT wanted to make.

UNT issued a Request for Qualifications (RFQ) to a short list of vendors deemed capable of providing the renovations and strategic energy upgrades the school wanted. Ultimately, UNT selected Schneider Electric's Buildings group and entered into a performance contract. (A performance contract is a turnkey solution that incorporates system design, construction and commissioning along with guaranteed energy savings. In the event UNT did not realize those savings, Schneider Electric agreed to pay the difference.)

The Solution

For its first performance contract, Schneider Electric committed to 15 separate retrofit projects designed, first and foremost, to improve UNT's learning environment. Schneider Electric began by replacing outdated pneumatic temperature controls with direct digital controls (DDC) to achieve faster, more precise responses to comfort needs.

Variable frequency drives (VFDs) were added to existing variable air volume (VAV) handling systems to deliver the amount of air flow necessary to meet the demand while drawing minimal energy. Variable flow pumping provided precise amounts of heated or chilled water as needed to warm or cool rooms without overshooting settings.

Schneider Electric's lighting improvements decreased energy drain while enhancing the overall lighting quality throughout the campus. And new lighting controls enabled selective zone lighting management that responded to activity in a facility.

High-efficiency motors, chillers and other equipment – along with appropriately sized replacement boilers and optimized central plant functions – worked in concert to reduce energy consumption. Power factor correction capacitors provided an unparalleled 99 percent efficiency, getting the most out of every kilowatt of electricity delivered to the campus.

"After partnering with Schneider Electric for over a decade and experiencing a 30 percent decrease in energy costs and an unprecedented reduction in our carbon footprint, we look forward to building on that relationship and achieving our sustainability goals."
Charles Jackson
Associate V.P., Facilities

UNT achieved enduring performance improvements through Schneider Electric's Performance Assurance Support Services (PASS) offering. PASS provided remote monitoring and technical support, as well as a complete analysis and reporting of energy use. This annually renewable contract also guaranteed energy savings and project performance after the initial installation.

The Bottom Line

UNT quickly realized just how far its budget could go with the right energy management partner. From renovation projects to new construction and a comprehensive performance contract, UNT's energy savings surpassed expectations.

Schneider Electric performed upgrades throughout 54 campus facilities. Newer, more accurate systems led to maintenance personnel receiving fewer calls, indicating a consistently higher level of comfort throughout campus facilities.

With centrally monitored and streamlined digital controls, troubleshooting and problem resolution became faster and easier than ever before. Connecting a laptop to the new system from any location provided easy access to isolate, test and diagnose problems.

As an added benefit outside the scope of the initial contract, UNT and Schneider Electric established an onsite training facility for maintenance staff to upgrade their skills.

The first performance contract that UNT signed ran for 10 years and ended in 2009. Guaranteed savings exceeded expectations by 5 percent, and the university reduced its carbon footprint.

Postscripts

In 2010 UNT signed another performance contract with Schneider Electric, expecting additional improvements to cut energy costs by 17 percent and reduce water use by 15 percent on campus. As with all performance contracts, Schneider Electric will pay the difference in the event guaranteed savings are not achieved.

With the new performance contract as part of its climate action plan, the university expects to move closer to its goal for carbon neutrality.

UNT is taking environmental accountability to a new level by posting performance contract results on the Web, enabling students, faculty and the surrounding community to track the university's energy and dollar savings as the project proceeds. In addition, UNT has adopted the U.S. Green Building Council's LEED® Silver standard for all new facilities.

Schneider Electric encourages the use of both passive and active measures to achieve significant savings and sustainability. (Examples of passive measures include efficient devices for lighting, motors and the building envelope whereas active measures address automation, device controls, building automation systems, continuous monitoring and regulation.)

As a global specialist in energy management, Schneider Electric leverages its technology, expertise and experience to assist governmental entities in meeting legislative mandates and making the most of their energy resources in five areas – power, process, building automation, white space and security.

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