PACT[SM] Case Study University of Bridgeport

Bridgeport, Connecticut

UNIVERSITY USES PACT TO TRANSFORM LEARNING ENVIRONMENT

Customer Profile
The University of Bridgeport (UB) is a private, medium-sized university located 55 miles from New York City in Bridgeport, Connecticut.

Customer Issues
- Humidity and temperature problems in the library
- Escalating operating costs
- Aging infrastructure
- Limited up-front capital

Project Objective
Addressing the deteriorating facilities, decreased energy efficiency and "fix on fail" approach to maintenance while revitalizing the mechanical systems to ensure industry standard and building code ventilation rates are maintained.

UB realized the need to eliminate the distractions of poor learning environments in the Magnus Wahlstrom Library, Mandeville Hall, Cox Student Center, Dana Hall and the Engineering and Technology Building.

Results
$1,560,000 of capital improvements including:

Lighting Upgrades in all five buildings
- New T-8 lamps for 12-20% energy savings and improved color rendition
- New compact fluorescent and halogen lamps

Magnus Wahlstrom Library
- New Direct Digital Controls (DDC) on centrifugal chillers
- Conversion to variable flow chilled water configuration
- Installation of variable speed drives (VSDs) and DDC to properly control air handling units and make-up air equipment
- Conversion of existing air handlers to variable air volume (VAV) systems
- New airflow measuring devices for improved indoor air quality (IAQ)

EXISTING WAHLSTROM MAKE-UP AIR HANDLERS BEFORE RENOVATIONS

CREATING A BETTER LEARNING ENVIRONMENT

The goal of the university was to address the aging infrastructure of the facilities and provide the highest quality learning environment for the more than 2,600 students who attend classes at the university.

Trane assembled a team of building system experts to analyze facility needs and potential operating cost reductions. Utilizing actual utility data and hours of operation for the various mechanical systems, several projects were identified as part of the PACT (**P**erformance **A**greement for **C**omfort from **T**rane) solution. PACT was presented to the university as a way to improve the learning environment with limited up-front capital.

"Trane's solid working relationship with UI was key to our qualifying for $539,000 in energy incentives. This amount was more than 30% of our $1.5 million project, making it possible for us to secure the financing we needed to realize our goal."

Tyler Kelsch
UB Vice President for Administration and Finance

In terms of energy consumption, constant air volume air conditioning systems are costly. To improve energy efficiency and solve the temperature issues in Wahlstrom, Trane converted all 20 air handlers to vary the amount of conditioned air supplied to the building.

To solve humidity problems, Trane reconfigured the existing chilled water-piping configuration at each air handler to improve coil flow.

New VSDs the DDC system allow proper control of the ventilation make-up air units. In addition, a new heat-recovery loop was installed to precondition the ventilation air before it reaches the floor air handlers. The heat-recovery loop provides chilled water-free cooling in the winter and dehumidifies the ventilated air in the summer.

One of UB's two centrifugal chillers was overhauled as part of the project to keep the chiller operating optimally (the other chiller was overhauled in 1999).

Outdated pneumatic controls on the chillers were replaced with DDC panels to improve safety and efficiency. The new control panels interface with the new Trane Tracer Summit™ central energy management system to provide instantaneous operating information for diagnostics and system efficiency improvements.

On Time and On Budget

Trane succeeded in completing the turnkey project on time and on budget and assisted in securing rebates from United Illuminating (UI), UB's utility provider. "Trane's solid working relationship with UI was key to our qualifying for $539,000 in energy incentives," said UB Vice President for Administration and Finance Tyler Kelsch. "This amount was more than 30% of our $1.5 million project, making it possible for us to secure the financing we needed to realize our goal."

The Magnus Wahlstrom Library is the academic & physical heart of the campus

PACT Agreement

Trane conducted building and energy audits to determine the potential for saving energy through high-efficiency mechanical and electrical systems replacement or upgrades. Trane made recommendations that generated enough energy and cost savings to pay for a substantial portion of the project over the term of the contract.

Existing Wahlstrom Chillers with New DDC Panel

"A lot of teamwork and careful planning made the project a success, said Kelsch. "It was a collaborative effort between UB and Trane."

Once completed, this project resulted in $134,000 per year guaranteed savings for a 10-year term. A PACT guarantee is in place to provide long-term assurance of project results.

Future Maintenance

Local Trane service technicians and engineers monitor the project's performance and provide ongoing consultations to the university.

The results from these regular visits allow UB to make further improvements to their buildings' performance.

Regular maintenance will prolong the useful life of a facility's comfort system and reduce or eliminate costly repairs. In an effort to realize the greatest energy savings and performance improvements from the project, a maintenance agreement was included.

Automatic controls calibration, chiller and coil cleaning, cooling tower maintenance, water treatment and seasonal adjustments are all included in the maintenance agreement to ensure top performance from the comfort systems.

"Thanks to the Trane PACT program, we've accomplished what we set out to do with this project," stated Kelsch. "Our HVAC system is more efficient. We have equipment with longer life expectancy and more importantly an improved environment for our students and staff."

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