Water Survey Research #289, 1104-1112, 1139

Building Gross Sq.Ft.: 71,550

Simple Payback: 2.5

Retrocommissioned: June—Aug 2012

Annual Energy Avoidance: 20%
(Based on oneyear's non-normalized data)

Principal Building Use: Offices and Labs

Facility Contacts: Lisa Young

Building & Occupant Overview

The complex started out in 1964 as a mental health clinic. A $1.25M building was designed to house: psychology, speech pathology, audiology, and remedial educational programs. In 1984, Water Survey moved into the complex. The building is opened Monday—Friday, 8-5 P.M. and closed on weekends. There are 8 main buildings in the complex that house labs and offices spaces. Each building has at least two AHU's for conditioning of the spaces. All the units are constant volume AHUs, except buildings 3 and 11, which are VAV systems. Building heat is provided by 4 Aerco condensing gas fired boilers. All four boilers serve the reheat, radiation and preheat systems. The building controls consist of a series of Siemens controllers.

The facility's total metered energy during the previous year was 19,526 MMBTU.

Post RCx Energy Use Intensity (EUI) & Cost Index (ECI)

E.U.I.	E.C.I. #1	E.C.I. #2*
218.0 kBTU / Sq.Ft.	$3.42 / Sq.Ft.	$1,314/ person

**~186 PEOPLE OCCUPY BUILDING ON A GIVEN DAY*

Retrocommissioning Specifics & Results

The air handling units (AHUs) providing air conditioning were maintaining space conditions in offices and labs 24/7/365. The primary energy conservation method was scheduling the AHU's off during non-occupied hours.

The existing pneumatic controls on the air handlers were replaced with a Siemens DDC system. Humidity sensors were installed in the return air on majority of the AHU's. These can be utilized in the sequence of operation to achieve better operating and comfort conditions.

The chilled water coils in the AHU's were not sized for humidity control. They were designed for 60F discharge air set point. On warm humid days the chilled water valves are at 100% open and not meeting the 60F set point. The hot water radiation valves in Building 11 and Room 224 were operating backwards so the valves were opening when they should have been closing, which resulted in simultaneously heating and cooling. All the valves were inspected and changed for proper operation.

The existing outside air dampers for buildings 1,4, 5 and 6 were in poor condition and leaking through. As a result, excessive unconditioned outside air is allowed which adds to the utility cost.

Project Highlights

- A Siemens DDC system was installed to replace the old pneumatic controls. There were additional sensors installed to improve sequences of operation and comfort.
- A differential pressure transmitter was installed on the hot water system to control the building's hot water pumps.
- AHUs and a few of the restroom exhaust fans are scheduled off during unoccupied conditions.
- The AHUs bypass and exhaust dampers were capped off.
- Perimeter radiation valves were found operating backwards which resulted in heating and cooling simultaneously.