

Agricultural Engineering Sciences Bldg #8



Building Gross Sq.Ft.: 102,589

Simple Payback: 5.4 YRS

Retrocommissioned: Nov 10- Jan 11

Annual Energy Avoidance: 11%
(Based on one year's non-normalized data)

Principal Building Use: Offices, Classrooms, and Labs

Facility Contacts: Ronda Sullivan & Greg Knott

Building & Occupant Overview

The building was built in 1982 and since then multiple lab remodels have taken place. Approximately 30 labs are housed in this facility. The building occupants typically work a full day but go home during the night hours. There are five cooling only air handling units that are connected to a common header system providing air conditioning to the spaces and 43 exhaust fans. There are two department units with steam reheats that provide conditioned air to three spaces. The heating source for the building is a hot water perimeter system and fan coil unit heaters located throughout the building. Cooling is provided by campus chilled water. The heat in the building is provided by a combination steam and hydronic system. There are six heating only air handling units in the shop bays. Building controls are a combination of Siemens Compacts, a modular and a MEC.

The facility's total metered energy during the previous year was 16,882 MMBTU.

Post RCx Energy Use Intensity (EUI) & Cost Index (ECI)		
E.U.I.	E.C.I. #1	E.C.I. #2*
146.7 kBtu / Sq.Ft.	\$2.28 / Sq.Ft.	\$239.21 / person

* - 978 PEOPLE OCCUPY BUILDING AT ONE TIME.

Retrocommissioning Specifics & Results

The air handling units (AHUs) providing air conditioning were maintaining space conditions 24/7/365. The primary energy conservation method was scheduling the AHUs and bathroom exhaust to shut down for 12 hours a day. This was possible due to steam radiation on the perimeter and hot water fan coil heaters.

To maintain comfort conditions, approximately 44 VAV boxes were reviewed, calibrated and balanced. Various VAV cross-flow sensors were found non-operational and were replaced, restoring thermal comfort and improving air flow control.

It was found that the steam valve on the heat exchanger was leaking through. It was bad enough that the circulation pump was running 24/7/365 to help dissipate heat build up in the heat exchanger. A new valve as well as full DDC control was installed on the heat exchanger.

New DDC web graphics were added to the controls system allowing the facility manager to observe the AHU systems from their desktop.



Project Highlights

- Wasted steam was valved off to five (5) abandoned AHUs. This in turn allowed three (3) exhaust fans which ran 24/7 due to excess heat to be shut down
- Economizer sequences were restored on the DDC controlled AHUs
- Cross-flow sensors were replaced on 40+ VAV boxes improving air control
- DDC controls were upgraded on five AHUs for improved sequences of operation, scheduling, and comfort control
- Two 5-ton departmental AHUs are scheduled to be removed with department funding