
# VET MED ENERGY EFFICIENCY

COMMUNICATIONS BULLETIN – OCTOBER 2012

## CONSTRUCTION UPDATES

The Vet Med ESCO Project is approximately **80% complete**. The following is an update on various retrofits and improvements:

### 100% Completed

- Lighting and Occupancy Sensors
- Sterilizing – Condensate Tempering Kits (Water Conservation)
- Steam Trap Replacement
- Cleaning of Heat Recovery and Chilled Water Coils
- LAC and SAC Ventilation Duct Cleaning
- Replacing/Refurbishing Doors in BSB, SAC, LAC and CSLC

### Building Key

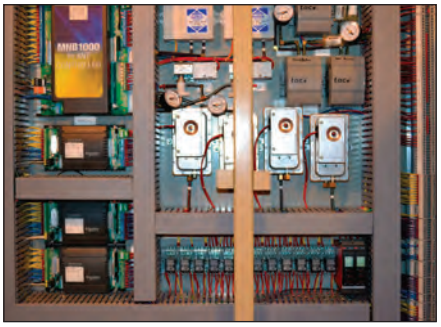
Basic Sciences Building (BSB)
Large Animal Clinic (LAC)
Small Animal Clinic (SAC)
Clinical Skills Learning Center (CSLC)

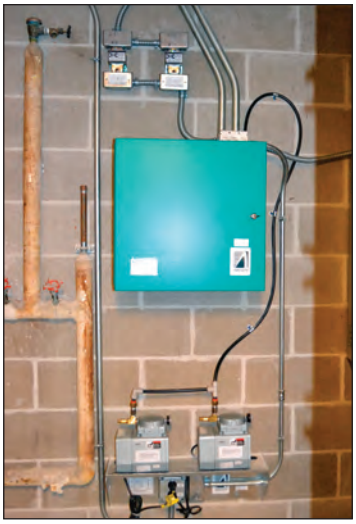
For more information, please contact:
**Joshua Whitson**
Energy Performance Contracting (ESPC)
University of Illinois, Facilities & Services
Tel: (217) 333-9073
E-mail: whitson@illinois.edu

## ENERGY CONSERVATION MEASURE (ECM) SPOTLIGHT
# DEMAND CONTROL VENTILATION

All buildings require outside or "fresh air" in order to maintain an acceptable indoor air quality. Engineering standards have differing amounts of outside air requirements depending on the space utilization and occupancy. Traditionally, spaces are designed and operated to ensure that the ventilation rates are met at all times regardless of whether the spaces are occupied. Existing technologies allow for ventilation rates to be adjusted based on occupancy and/or air quality. This ensures acceptable air quality during occupied periods while maximizing energy efficiency, especially at times of low or no occupancy.

The concept of varying ventilation based on occupancy is called demand control ventilation. This strategy was implemented as part of the Vet Med ESCO project. Many areas with varying occupancies are operating with demand control ventilation in the BSB, LAC, SAC and CSLC for human and animal occupants. Carbon dioxide and/or occupancy sensors are used in offices and lecture centers to vary ventilation rates throughout the campus. Large animal wards in the LAC have air quality sensors monitoring multiple parameters to vary the ventilation rates. These demand control ventilation improvements are expected to save approximately $50,000 annually in energy costs while ensuring acceptable air quality is met at all times.





# VET MED ENERGY EFFICIENCY

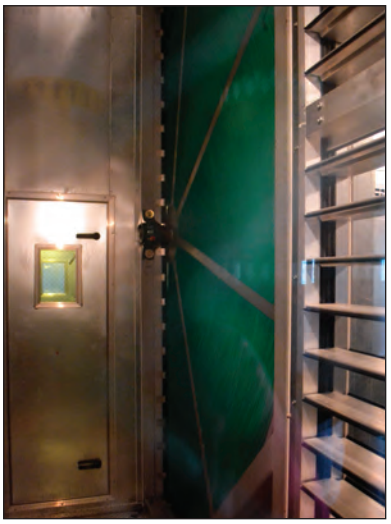
COMMUNICATIONS BULLETIN – OCTOBER 2012

## ENERGY CONSERVATION MEASURE (ECM) SPOTLIGHT
## AIR HANDLING UNIT REPLACEMENTS

The Vet Med complex is heated, cooled and ventilated with air handling units located throughout the buildings. These units represent a significant portion of the total energy utilized in the complex. Most of the units in the Large and Small Animal Clinics are original to the construction of the building and have exceeded their useful lives. Because of their age, the units required excessive maintenance and were not as efficient as newer units.

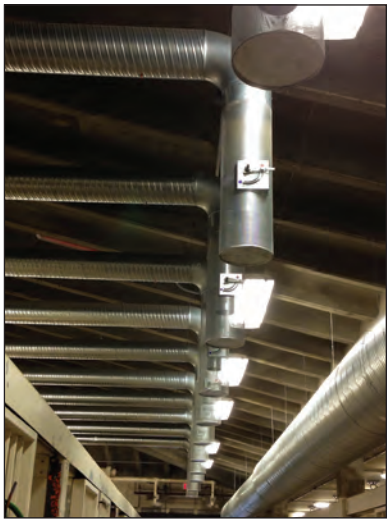
New units were installed as part of the Vet Med ESCO project to reduce maintenance and energy costs. The new units are installed in centralized locations and are sized to serve multiple areas, which has reduced the total number of air handling units needed from 10 to 4. The new units utilize enthalpy wheel heat recovery. This allows the waste heat to be recovered by as much as 75%, thereby significantly reducing the energy costs.

Additional energy efficient technologies were utilized in the new units including variable frequency drives, pressure independent control valves, and direct digital controls. All units were installed while the facility was fully functional in a manner that minimized inconvenience to students, faculty, staff and patients.



Heat Recovery Wheel

## ENERGY CONSERVATION MEASURE (ECM) SPOTLIGHT
## DISPLACEMENT VENTILATION



Most heating and cooling in buildings is done by mixing air to maintain a predetermined temperature. This requires large amounts of air to be mixed at high velocities. Although effective, this type of ventilation is energy intensive. An alternate mode of ventilation called "displacement ventilation" allows for energy efficient temperature control. This concept has been successfully utilized in Europe for decades.

The principle of displacement ventilation involves air supply and distribution in a room in an upward motion. The air flow is supplied at the bottom of a room at lower velocity and at a temperature just slightly below the room temperature. As the air rises it cools the occupant and the room.

Because lower volumes of air are required at a higher temperature to maintain the same temperature as a traditional system, lower energy consumption is achieved.

The concept of displacement ventilation was implemented in the Vet Med ESCO project for the animal wards in the Large Animal Clinic (LAC). The displacement ventilation system is expected to save approximately $46,000 annually in energy costs and will maintain quality comfort for building occupants.