

ASHRAE Level 2 Energy Audit - AstraZeneca



Work Scope

In partnership with Facility Analytics Provider, Datakwip, EMAT completed an ASHRAE Level 2 energy audit of a medical facility in the Washington, DC metro area. EMAT's auditing software and services, combined with Datakwip's ongoing operational analytics provides clients the unique ability to both find opportunities to save energy and have the execution and ongoing utilization of these opportunities monitored and measured in a way that maximizes long-term savings.

Facility Description

The facility consisted of eight buildings totaling over 1.2 million square feet. The buildings ranged in size from under 20,000 square feet to nearly 900,000 square feet. There was a combination of office, daycare, lab, and manufacturing space. The facility utilized several solar canopies and a site-wide CHP (combined heat and power) system to reduce total electricity usage and grid dependency.



Lighting was still predominantly linear and compact fluorescent, but several areas have been upgraded to LED. Most buildings were very conservative in their water usage by installing low-flow faucet aerators. HVAC systems varied widely from geothermal heat pumps in the smaller buildings to constant volume packaged rooftop units in the intermediary buildings to chilled water and steam systems in the larger buildings.

Summary of Recommendations

The site had a very proactive and energy conscious staff. EMAT dug deep and was able to identify significant opportunity for energy and cost savings. EMAT observed, in the case with most buildings, that there were determined start and stop times with very conservative setback temperatures. For all buildings, EMAT recommended getting more aggressive with nighttime setback and utilizing an optimal start strategy to determine morning warmup.

EMAT also recommended, for each building, an optimal stop strategy to allow HVAC equipment (not including outside air intake) to shut down between 0-30 minutes prior to the end of occupancy without effecting occupant comfort. Other control strategies included chilled water reset, condenser water reset, supply air reset, static pressure reset, demand control ventilation, and airside/waterside economizing.

EMAT discovered several opportunities for energy recovery, including enthalpy wheels and glycol recovery loops (specifically for lab spaces). One-for-one replacement of existing equipment also resulted in significant savings with compelling paybacks. Other measures included installing roof insulation, plug load timers, and boiler economizers.



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Potential Savings Identified

- 100 Energy Conservation Measures (ECMs).
- Total annual savings of over 18 million kWh, 500,000 therms, 120,000 gallons of water, and \$1.9 million in cost savings
- Overall payback of only 4 years