

Optimization Services

Project: Rowan College Cumberland Campus

A comprehensive energy study of 14 buildings resulting in the identification of 354 corrective issues, of which 181 have energy savings potential.

Background

With a student population of +4,000, Rowan College of South Jersey is a regional institution serving Gloucester and Cumberland counties. The college is situated on 100 acres with 14 academic and administration buildings. The Cumberland County Improvement Authority (the Authority) serves as the facility manager for the campus.

CM3 was selected to conduct retro-commissioning (RCx) on each of the 14 buildings. RCx is a universal method of baselining building operating systems (mechanical and building automation) to understand operational status and pathways of improvements. It is also an approved mechanism for identifying and implementing energy savings through various local and national utility programs.

Results

Working with the Cumberland County Improvement Authority, CM3 conducted retro-commissioning on the 14 buildings within Rowan College's Cumberland Campus. These buildings were served by either Atlantic City Electric or Vineland Electric.

For those served by ACE, CM3 helped Rowan apply - and subsequently get approved - for ACE's Strategic Energy Management Program. Under this program, Rowan was able to be reimbursed for the cost of the retro-commissioning project, once the program guidelines were achieved. These guidelines included implemented all energy efficiency opportunities that had a simple payback of 18 months or less.

CM3 completed functional testing procedures on all HVAC equipment interfaced with the existing building automation systems and identified 354 corrective issues, including 181 that have energy savings potential.

Some of the key energy efficiency opportunities identified included:

- Adjust unoccupied operation
- Reset chilled water valve
- Calibrate or replace actuators for proper air flow
- Calibrate or replace return air humidity sensors
- Add or replace insulation from piping
- Repair leaks on valves
- Correct airflow setpoints for VAV boxes
- Troubleshoot and repair or replace controllers
- Correct CFM flow setpoints
- Calibrate or replace thermostats
- Conduct air balancing
- Replace or service hot and chilled water differential pressure sensor

“Retro-commissioning is like a diet; every day decisions dictate a long-term goal. While small deficiencies may seem insignificant, if left untreated then, over time, they will become too burdensome to correct. This is where RCx comes in. It is a cost-efficient measure for baselining the performance and health of a building.

With our seek, find, and identify practices; we rapidly create opportunities for improvement while providing tangible evidence for occupant comfort and savings.

Brad Pappal
CM3 Director of Optimization Services



Common RCx Measures:

- Schedule Lights & Air Handler
- Reduce Outside Air
- Night Setback
- Adjust Unoccupied Operation
- Adjust Dry Bulb Economizer Setpoint
- Implement/Reduce Duct Static Reset
- Implement/Reduce Pump Pressure Reset
- Reset/Adjust Chilled/Condenser Water Supply



CM3's expertise in navigating the Clean Energy programs for incentives and rebates ensured that our shared service and sustainability objectives were met effectively and efficiently. Savings generated from the upgrades can be reallocated to enhance the student experience on campus.

Jerry Velazquez
President/CEO,
Cumberland County Improvement Authority



Examples of Findings

ISSUE-299	Administration Building / AHU	OAdamper commanded to 100% however it only goes to 70%. Recommend correcting damper position on actuator.
ISSUE-302	Administration Building / HW Plant / Controls	Hot water loop bypass valve was overridden to 100% in manual. Recommend removal of override and review of programming and sequence.
ISSUE-310	Administration Building / TU-108	Actuator making a loud audible noise when moving past 50%. Recommend replacement of actuator.
ISSUE-010	Alampi Science / AHU-1	Chilled water valve found in override to 100 % open. Recommend release valve from override and confirm controls operation.
ISSUE-025	Alampi Science / AHU-4	Unit failed to go into Unoccupied mode when commanded. Review sequence of operation and program controls accordingly.
ISSUE-004	Alampi Science / VAV-4	Damper actuator moves marginally and not controlling airflow. Adjust or replace damper actuator. Check VAV controller programming.
ISSUE-354	Mill Building Building Observations	All six (6) AHU's run on residential style thermostats. There is no remote control of these units or building. Recommend Bacnet stats be installed for each AHU and tied into the BAS.
ISSUE-147	Student Center / AHU 1	Return air humidity sensor reads 9.1%. Correct reading is 46%. Calibrate or replace return air humidity sensor.
ISSUE-145	Student Center / CHW Plant / CHWP-1	Pump alarm not being generated when run command does not match status. Recommend correcting BAS logic to properly display alarm.
ISSUE-163	Student Center / HW Plant / Controls	Central Utilities Plant hot water bypass valve has no movement when commanded. Service or replace pneumatic building hot water bypass valve.
ISSUE-225	Student Center / TU-A-119	Zone sensor misreading by almost 4 degrees. Recommend replacement of sensor.
ISSUE-218	Student Center / TU-A-132	Found heating valve overridden to 100%. Office is functional, valve released and returned to 0%.
ISSUE-240	Student Center / VAV-1-36	Unit not following setpointcontrol, Occupancy control, or BAScontrol. Recommend replacement of the controller and zone sensor.

