

Project Case Study: Secondary Heating Loop Controls – Fresh Pond Apartments

Lesson: Customized, common-sense solutions can often be found for complex problems.

Background: This 504 unit property consists of two multi-family, high-rise towers built circa 1970. The original design lacked controls on the distribution-side of the HVAC system which meant that the building circulation pumps ran at 100%, 24/7 during the heating season. As a result, the core of the building was overheating and tenants were popping windows year-round. The property is responsible for all utility bills.

Property Management at Fresh Pond Apartments had been advised by other vendors that the only way to gain control of the heating distribution system was to install individual zone valves and thermostats in each apartment, a cost-prohibitive solution. Our challenge was to find another, more cost-effective solution.

Strategy: Taking a holistic perspective, we first clarified the existing overheating conditions through data logging of apartment temperatures throughout the building as well as interviews with site staff. Building from that base, RPM was able to develop a unique solution.

We addressed the entire heating distribution system by dividing each building into sections and installing a set of strategically placed thermostats and control valves in the riser loops. These were tied back to new VFDs on the building main heating pumps. A new digital control system was installed to facilitate operations and enable remote control.



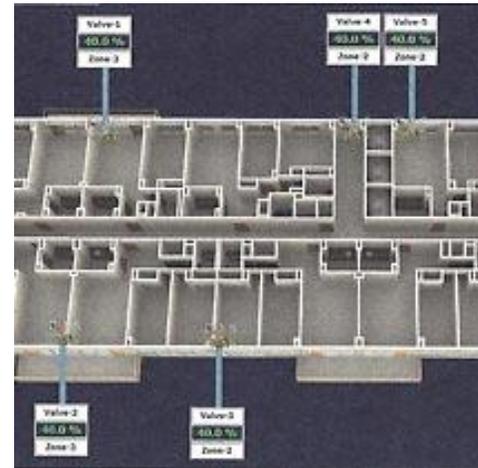
New flow control valves



New flow control valves

Outcome: The solution was installed in one of the two 22 story buildings at a cost less than 1/3 of the originally proposed project. Projected annual energy savings are 111,000 kWh and 9,000 therms. At a standard assumed rate of \$0.15 per kWh and \$1.00 per therm, this equates to approximately \$14,550 annually. The project cost was covered 100% by the utilities.

The project has successfully eliminated the problem of apartment overheating, reduced energy use, simplified building operations, and created a better living environment for the tenants. Reductions in pump speed and hours are exceeding expectations. The second tower is being retrofitted this summer.



Remote access system controls

RPM's Role:

- Mapped tenant unit temperatures and the distribution system flows as the basis for designing a simple, tailored control system. Vetted design with engineering design companies.
- Developed scope of work for design-build process, oversaw contractors, managed add/alts and ensured proper installation and operations.
- Monitored system post installation, which resulted in additional reductions in distribution system flows. During winter months, building circulation pumps in two zones ran at 25% capacity the majority of the time, while the third zone ran between 40% and 100% of capacity. In addition, the number of open windows greatly reduced. Year 1 energy savings analysis will be completed in December.
- Management and maintenance staff are able to view building temperatures and make adjustments remotely. This has reduced the number of no-heat calls during cold snaps, as maintenance is able to see when building temperatures are beginning to fall and make necessary adjustments. In addition, they can leverage building heat retention characteristics. For example, it is now possible to shut down the distribution system pumps when outside temperatures rise above 40° and still maintain appropriate tenant unit temperatures.
- Investigated, optimized and administered the utility incentive process.

RPM had been working with the Schochet Companies for several years to implement a company-wide sustainability initiative. Our previous work at this property included multiple lighting upgrades, CHP installation and improvements, no and low cost measures, refrigerator replacements, and maintenance staff training. Additional projects under development include improving domestic hot water operations and refurbishment of the make-up air system.