

EMERGING TECHNOLOGIES AND ACCELERATED COMMERCIALIZATION (ETAC) PROGRAM

Project Brief: CATALYST Efficiency-Enhancing Controller Improves RTU Performance

Background

Packaged rooftop units (RTUs) are used for heating and cooling on tens of thousands of nonresidential buildings across New York State. Constant-volume RTUs provide a steady stream of hot or cool air to condition the building, then turn off until called for again. New types of RTU retrofits, such as Transformative Wave Technologies' CATALYST Efficiency-Enhancing Controller, can provide these units with sophisticated controls and fault detection. A successful demonstration of this technology is expected to have widespread potential for facilities throughout New York State.

Project Description

Sure Temp Co., Inc. is a full-service HVAC&R contractor based in Binghamton, NY, specializing in energy reduction strategies and clean energy technologies for HVAC&R equipment. This company is also a NYSEERDA HVAC Commercial Business Partner. Sure Temp has installed 30 CATALYST Efficiency-Enhancing Controllers on RTUs at five project host sites across Central New York, including two light manufacturing/assembly facilities, an exercise facility, a library, and an office building. The system uses several sensors and programming logic to properly ventilate the space and optimize energy use in the process. For instance, controls ensure that supply fans run at significantly lower speeds when there is no call for heating or cooling. Control of economizer dampers and fan speed is based on outdoor air temperatures and other factors to satisfy the needs of the space while enhancing comfort and indoor air quality.

Benefits

Reductions in energy consumption are primarily enabled through controls for RTU fan use and optimization of outside air for cooling. CATALYST is also expected to assure proper ventilation for occupants through demand-controlled ventilation, and to prolong equipment life by reducing compressor run times. In addition, the system can detect faults and send email notifications so maintenance issues can be resolved as soon as possible. This project is expected to reduce peak demand by 50 kW, and save approximately 281,000 kWh and 560 MMBtu annually across the five project host sites. A previous demonstration by the Pacific Northwest National Lab found average electric savings of 57%, and average payback periods of 2-6 years, depending on local electricity rates.

Investment

NYSEERDA	\$137,470
Participant Team	\$91,647
Total	\$229,117

The ETAC program supports multi-site demonstrations, provides in-depth performance validation, and shares results through dedicated outreach.

Lead Participant

Sure Temp Co., Inc.
Binghamton, NY
www.suretemp.com

Project Host Sites

Mettler Toledo Hi-Speed Checkweigher
Upturn Industries, Inc.
YMCA of Ithaca
Broome County Library
Transonic Systems, Inc.

Related Links

www.pnnl.gov/main/publications/external/technical_reports/PNNL-22656.pdf

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