



REFORMED CHURCH HOME: HEAT PUMP OPTIMIZATION PROGRAM

PROJECT INFORMATION OVERVIEW

CLIENT:

Reformed Church Home

LOCATION:

Old Bridge, New Jersey

INDUSTRY:

Senior Living

CHALLENGE:

Optimize performance of aging mechanical systems in residential facility without interruption, focusing on energy savings and ROI.

SOLUTION:

A state-of-the-art energy management system that can be monitored and modified via the Internet, redesigned pumps and motors, and electronic controls and variable frequency drives.

BENEFITS:

- Reduction in energy consumption
- Ability to monitor and modify energy consumption
- Extended equipment life cycle
- Increased occupant comfort and satisfaction

SAVINGS:

- 226,500 Kwh annual reduction
- \$50,000 annual savings
- Simple payback of 1 year (after incentive)

INCENTIVES:

- \$48,500 NJ SmartStart Buildings® Custom Measures

BACKGROUND

The Reformed Church Home is a not-for-profit assisted living, skilled nursing, and rehabilitation community established and supported by the Reformed Church in America. The 127,000 square foot facility was completed in 1998 and is situated on 15 landscaped acres.

The Reformed Church Home was recently awarded a Five-Star Quality Rating, the highest possible overall performance rating. Only about 13% of the 362 nursing homes surveyed in New Jersey received this honor, placing the Reformed Church Home among an elite group of healthcare providers.

CHALLENGE

Today's senior living industry is extremely competitive. Owners and operators are challenged with delivering the highest standards of resident care and comfort while focusing on the bottom line. HVAC, plumbing and domestic hot water heating are critical with respect to both concerns.

The Reformed Church Home was built as a state of the art senior living facility in 1998. Almost 15 years later, in a dual effort to continuously improve quality of life for residents and identify opportunities to reduce utility costs, the Reformed Church Home partnered with Hawks & Company to develop a customized strategy to reduce energy consumption.

Hawks initially measured the performance of mechanical systems and benchmarked the resultant data. Hawks observed that the condenser loop pump and domestic booster pump, original equipment now more than a dozen years old, operated 8,760 hours per year or 24 hours a day and were vastly over designed for the facility's actual needs. The building also lacked centralized controls to optimize the common areas of the facility during non-peak operation.

SOLUTION

Hawks & Company and the New Jersey Clean Energy's Smart Start Buildings Program developed a comprehensive program to reduce the

“The Hawks solution saved us more than 200,000 kilowatt hours of energy consumption and at the same time extends the life cycle of our equipment. With the added incentive checks from New Jersey Clean Building Council, this project made sense--from an energy perspective and from a financial standpoint.”

Kate Shepard
Executive Director/Administrator

facility’s energy consumption while providing a state-of-the-art energy management system that can be modified and monitored remotely via the Internet. The new system includes a redesigned loop pump complete with a Variable Frequency Drive coupled with newly installed zone valves on all of the common area water source heat pumps throughout the facility. When the demand for the heat pumps decreases, the VFD slows the motor. The Johnson Controls energy management system optimizes the same common area heat pumps during night-time hours. The program also resulted in an opportunity to downsize the cooling tower. The cooling tower became more efficient due to a reduced flow; new high efficient motors coupled with VFD’s and controls were installed for optimized performance. The 200-plus water source heat pumps now operate more efficiently.

The Reformed Church Home received a check for more than \$48,000 from the New Jersey Clean Energy’s Smart Start Buildings Program to offset the project cost of \$108,000.

BENEFITS

As a result of this initiative, energy consumption at the Reformed Church Home has been reduced by over 200,000 Kwh per year. The redesigned pumps and motors have been upgraded to high efficiency models with VFD’s. The new motors now have a soft start and operate on demand, reducing wear and tear on motor bearings and windings. Additional benefits of the cooling tower optimization project include a reduced load on the facility’s water source heat pumps during the cooling season resulting in a Kwh reduction for each heat pump.

Residents at the Reformed Church Home will continue to enjoy the highest quality of life while knowing that their residence operates at peak performance and energy efficiency.

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