CASE STUDY

Pharmaceutical Company Focuses on Energy Initiatives and Building Re-Tuning Training

NYSP2I New York State Pollution Prevention Institute

Challenge

A large healthcare company produces lifesaving medicines at its manufacturing plant in New York State. Due to the critical nature of the products produced at this facility, the water and steam that comes in contact with their products must be highly purified. This process, which takes place on-site, requires a tremendous amount of steam. The high energy requirements of the company's clean rooms require large amounts of electrical power as well. Furthermore, planned production increases at the facility are expected to drive a 4 MW power deficit that the local utility cannot meet with existing infrastructure. With such a power demand, the company wanted to explore options for reducing its reliance on grid energy.

Solutions

The New York State Pollution Prevention Institute (NYSP2I) was tasked with conducting a building re-tuning training to train maintenance, operations, and environmental staff on energy-saving opportunities within the facility and to assess the potential for incorporating renewable energy generation and energy storage into the facility.

Under a grant from the National Institute for Standards and Technology (NIST), administered by Empire State Development (ESD) in 2013, NYSP2I developed a Building Re-Tuning Training curriculum geared toward building owners and facility managers of industrial businesses. Building re-tuning can be considered an abbreviated version of building re-commissioning and is a detailed effort to reset and re-adjust all of a building's energy systems. The two-day training held at the company instructed attendees in performing periodic energy assessments in their buildings.

In addition to the training, NYSP2I investigated renewable energy generation feasibility and found that solution to be impractical due to the large electric load expected of the company's proposed new building and production facility. A

Challenge

- A pharmaceutical company wanted to reduce energy use at its Western New York facility through employee training and research into renewable energy generation and energy storage

Solution

- NYSP2I conducted a building re-tuning training to train maintenance, operations, and environmental staff on energy-saving opportunities within the facility.
- NYSP2I assessed the potential for incorporating renewable energy generation and energy storage.

Results

- 15 staff members from multiple facilities were trained on general building energy, compressed air systems, boilers and steam systems, and industrial refrigeration.
- 4.2MW natural gas combustion turbine driven generator with an exhaust heat recovery steam generator system with complete balance-of-plant steam system was chosen due to the turbine's high heat quality.

combined heat and power (CHP) feasibility assessment was completed to better understand the company's energy loads, predict the loads required to cover the new production facility, and conceive a CHP system that would meet those needs. Lastly, available financial incentives were explored to help offset some of the costs of a CHP system.

Results

The work performed by NYSP2I led to key takeaways that can support the pharmaceutical company with its energy initiatives.

- 15 staff members from multiple facilities were trained. Two training cohorts were held on October 9-10 and October 23-24 and covered general building energy, compressed air systems, boilers and steam systems, and industrial refrigeration.
- A 4.2MW natural gas combustion turbine driven generator with an exhaust heat recovery steam generator system with complete balance-of-plant steam system was chosen due to the turbine's high heat quality. The steam output of the projected system could supply approximately 71% of the company's steam load. The 4.2MW generator could cover 100% of the company's electrical shortfall and reduce losses caused by grid outages. The system cost is estimated at $8.53 million.
    - Operating and maintenance costs are estimated to be $2.1 million annually, and the combined heat and power plant is estimated to save $3.04 million in energy costs annually.
    - The expected simple payback is 9.1 years. When considering the cost of improving the electrical utility infrastructure, the payback drops to an estimated 2.3 years.
- The most notable financial incentive was a 10% federal tax credit for CHP owners. Additional opportunities included financial support for qualifying new construction projects, a grant to create an Energy Manager position, and several demand response programs.

Partners

RIT Rensselaer Clarkson University Cornell CALS College of Agriculture and Life Sciences Binghamton University State University of New York NEW YORK Manufacturing Extension Partnership

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Funding provided by the State of New York.