NEW YORK–NEW JERSEY
CHP TECHNICAL ASSISTANCE PARTNERSHIPS

PROJECT PROFILE

Albany Medical Center

4.6 MW CHP System

Location of CHP plant at Albany Medical Center, Albany, NY

COURTESY OF Cogen Power Technologies

Quick Facts

LOCATION: Albany, NY
MARKET SECTOR: Hospitals
FACILITY PEAK LOAD: 8 MW
EQUIPMENT: 4.6 MW Solar Turbine Mercury 50-6000R recuperated gas turbine
FUEL: Natural Gas
USE OF THERMAL ENERGY: Space heating and cooling, domestic hot water, sterilization, healthcare processes
CHP TOTAL EFFICIENCY: 84%
ENVIRONMENTAL BENEFIT: 20,000 ton annual reduction in CO_2 emissions
TOTAL PROJECT COST: $23 million
PAYBACK: 7-9 years
CHP IN OPERATION SINCE: 2013
NOTE: Received 2015 Build NY Award from Associated General Contractors of NY State

Site Description

Albany Medical Center in downtown Albany, NY encompasses the 651-bed Albany Medical Center Hospital, as well as the 550-student Albany Medical College. It is a Level-I Trauma center, and the only academic health sciences center in Northeastern New York State. In 2013, Albany Medical Center underwent a $330 million expansion of the Medical Center Hospital. Not only does the expansion allow for state-of-the-art services, it also allowed Albany Medical Center to become the first hospital in the region to attain LEED Gold Certification, in part due to its incorporation of CHP.

Reasons for CHP

To meet the increased power needs from the expansion, Albany Medical Center Hospital chose to invest in a CHP plant. Because of its urban location, the available space for power generation is tightly constrained, and Albany Medical Center wanted to ensure they could meet the needs of their current and future expansions. CHP is compact enough to site on their campus, and even provide the option of future plant expansion. It also provides significant energy cost savings for the hospital, and reduces carbon emissions by 20,000 tons per year, helping meet the Center's environmental goals.

- Ability to site in a dense urban location
- Resiliency
- Energy cost savings
- Environmental benefit

CHP Equipment & Operation

The CHP system at Albany Medical Center is a 4.6 MW Solar Turbine Mercury 50-6000R recuperated gas turbine. Recuperation allows low NO_X emissions, important for an urban site in preserving local air quality. The turbine exhaust feeds a Rentech heat recovery steam generator providing 85 psig saturated steam at 14,000 lb/hr unfired, and 60,000 lb/hr fired. It also has a 225 psig natural gas compressor. Two 500-ton electric centrifugal chillers were installed with the plant, enabling it to provide both space heating and cooling.

Solar Turbine Mercury 50-6000R and chillers at Albany Medical Center

COURTESY OF Cogen Power Technologies

In the case of a utility grid outage, the system is equipped with an automatic load shed system to control the electricity supply when islanded and maintain critical hospital facility operations. The load shed system controls 12 breakers, and automatically calculates the number that need to be shed to maintain the turbine. It also provides automatic synchronization across both utility breakers, and allows operators to remotely trip the two utility breakers or the 12 feeder breakers.

Lessons To Share

Because of projected growth of Albany Medical Center and the space-efficient and modular capabilities of CHP systems, the CHP plant was built to accommodate two 4.6 MW turbines, although only one is currently installed. This gives Albany Medical Center an easy means of scaling up their power generation to accommodate future projects, with an additional 4.6 MW of electricity and 13,000 lb/hr of steam.

> ***"One advantage of having an on-site cogen plant is that less energy is lost because it is distributed right here at the Medical Center…It's a win-win proposition for both Albany Med and the environment."***
>
> ***- Emilio Genzano, Assistant Vice President of Engineering and Construction***

The project also demonstrates how CHP can help meet the most ambitious environmental standards. The expansion at Albany medical Center incorporating the CHP plant was awarded LEED Gold certification, its second-highest tier. The Albany Medical College Research Facility also received an award as a High Performance Building from NYSERDA for performing 30% above the New York State Energy Conservation Construction Code.

For More Information

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