



NORTHEAST
CHP
APPLICATION
CENTER

combined heat & power in pharmaceutical facilities

Bristol-Myers Squibb

4.7 MW CHP Application

Project Profile

Project Overview



A reliable power supply is critical to the Bristol-Myers Squibb facility in Wallingford, Connecticut. The pharmaceutical research and development conducted in this facility requires a consistent environment. Temperature, humidity, and ventilation must be closely controlled, so any interruptions in utility service can be harmful and costly. Energy consumption is significant at this one million square foot facility, which operates 24 hours a day.

In 1998, a combined heat and power system with a 4.7 MW natural gas-fired turbine was installed to generate energy on-site. This system is now operated continuously and provides most of the facility's electricity and thermal energy.

Using the CHP system along with supplemental electricity from the utility and on-site boilers and backup generators has provided the high power quality necessary for this facility.

This project was carefully designed, taking into account the year-round heating and cooling loads as well as steam-driven equipment at the facility. The system efficiency is 72%, and Bristol-Myers Squibb saw a payback of their investment in less than five years.

To learn more about sustainability programs at Bristol-Myers Squibb, visit www.bms.com/sustainability.

Quick Facts

- Location:**
Wallingford, Connecticut
- Installation Date:**
1998
- CHP Equipment:**
4.7 MW Solar gas turbine
Two York absorption chillers 1,500 tons each
- Additional Equipment:**
Backup boilers
Four electric chillers
Three diesel generators, for emergency power and demand response
- Type of Fuel:**
Natural gas
- Heat Recovery Applications:**
Process heating & cooling
Building heating & cooling
- System Efficiency:**
72%
- Simple Payback:**
5 years

Energy Overview

Bristol-Myers Squibb installed a 4.7 MW Solar turbine and heat recovery system with two York absorption chillers with total capacity of 3,000 tons. The turbine is run on natural gas, but its dual-fuel capability allows for oil to be used as a backup. The facility has 4 MW of diesel generators from Cummins and Waukesha that can be used for backup or supplemental power.

Steam output from the turbine is used to provide space and process heating and to generate chilled water in the absorption chillers for space and process cooling. In the winter, the system meets approximately 98% of electricity needs and a boiler is used for supplemental heating. In the spring and fall, the system meets the full demand for both steam and chilled water. In the summer, when the peak cooling load is 5,200 tons, supplemental cooling is provided by purchasing more electricity to run the centrifugal chillers. A sophisticated automated control system manages the utility plant operation.

This CHP system was designed in-house at Bristol-Myers Squibb. Site personnel perform routine system maintenance, and the company has a service contract with the vendor for semi-annual inspections and any major repairs.

Bristol-Myers Squibb recently began to participate in the ISO New England Demand Response Program. At times of high electric demand in the region, they generate extra electricity with their CHP system and backup generators to supplement generation at power plants. The facility also participates in a local peak load reduction program to assist the Wallingford municipal utility in reducing their costs associated with the severe grid congestion in southwest Connecticut. By participating in these programs and selling extra electricity to the grid, the company generates revenue and supports the reliability of the electricity supply to other customers in New England.

Benefits

- More reliable power.
- Energy cost savings.
- Reduced greenhouse gas emissions by approximately 20% or 6,600 tons per year.
- Reduced NO_x emissions by 33% through upgrades to turbine combustor.

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*“We chose
CHP because a
reliable power
supply is
critical for our
pharmaceutical
research.”*

*Marc Estra,
Associate Director
of Engineering &
Maintenance*

