

Tecogen

Advanced Modular CHP Systems



CH-400x - DTx Series Water-Cooled Chiller



Case Study

Jamaica Hospital Medical Center, located on the VanWyck Expressway within sight of New York's JFK Airport, serves patients from Queens and Eastern Brooklyn and has been called one of the 50 fastest-growing hospitals in the U.S. But the 431-bed community teaching hospital found a downside to all the growth – rising energy costs were difficult to manage, thanks to the unpredictable electric rates in the region.

In 1998, the hospital needed to replace two aging central plant chillers. “We had to choose between electric and gas-fired technologies,” says Hans Waldvogel, Director of Engineering for Jamaica Hospital. “We wanted to

“We wanted to improve the reliability of our systems and save the hospital money ...”

improve the reliability of our systems and save the hospital money over the long term.” The hospital called upon EBM Consulting Services to evaluate and develop a unified chilled water system for the entire campus. EBM then partnered with Custom Energy, a nationally accredited energy service company, to construct the project.

“Several different options were evaluated on a lifecycle cost basis. “The Tecogen units were very attractive, when we

factored in all of the capital and operating costs of the equipment,” recalls Jonathan Harkness of EBM Consulting. “The hospital wanted a technology that would be flexible enough to accommodate their

eventual expansion without the addition of more chilling capacity. By utilizing variable flow pumping and the gas-fired Tecogen units in the main building, the hospital can now supply chilled water to an addition and several adjacent buildings. This has increased the redundancy of the entire campus and allows the hospital to run just the Tecogen units on partial load days, thus eliminating the prior need for every building to have one chiller running.”

The two TECOCHILL® DTx 400-ton units allowed the hospital to recover their investment in less than three years. And Jamaica Hospital was already familiar with Tecogen’s products, having purchased five of the company’s 50-ton air-cooled chillers two years earlier.

Powered by natural gas instead of electricity, Tecogen’s units can provide cooling at a significantly lower cost than conventional electric chillers. Customers like Jamaica Hospital can realize additional cost savings by using the waste heat generated by the units to produce “free” hot water for use throughout the hospital.

In addition to delivering the promised payback and significant cost savings in each of the last six years, the TECOCHILL systems have met the hospital’s demand for flexibility. To date, the hospital has been able to build two additions without having to increase the cooling capacity of the baseload chillers. “Thanks to Tecogen’s variable volume pumping system and two-ended design, it’s like having four machines instead of

two,” says Waldvogel.

During the widespread New York blackouts in the summer of 2003, engineers at Jamaica Hospital Medical Center discovered another compelling advantage of their TECOCHILL systems. Unlike electric chillers, which require large amounts of power too taxing for most backup generators, Tecogen’s systems continue to run on natural gas, so they can provide much needed cooling during a power outage, without jeopardizing other essential operations.

Engineers at the hospital initially had some concerns regarding maintenance of the 400-ton units. “There’s no one out there who can service the Tecogen units except for Tecogen,” explains Waldvogel. But with Tecogen’s long-term service and maintenance contract, those concerns were unfounded. “They’ve always responded quickly to make the necessary repairs,” says Waldvogel. “So it hasn’t been a problem.” Based on the performance of these units, and the responsiveness of Tecogen’s service group, EBM has purchased more Tecogen units for installation in several New York City locations.

“Hospital staff concerns about noise and vibration were addressed through sound level analysis and the installation of Tecogen’s sound attenuation packages. To the surprise of those who thought the engines would be noisy, the machines could not be heard over the background din of the boiler plant when they were first started. After the new chillers were at full output, the plant actually grew quieter. The electric chiller stopped whining, while the hot water boilers fell silent as the TECOCHILL systems took over hot-water production,” recalls Harkness.

Over the past six years, the two TECOCHILL units have logged more than 16,000 hours of cooling for the medical center without incident. Plans are underway to add two more units next year to accommodate even more expansion, and Hans knows the hospital will stick with gas-powered cooling. “Gas was, and still is, a better utility for us,” he says.

For more information about Tecogen’s
DTx Water-Cooled Chiller
 or our other Natural Gas Engine-Driven Products
 please email us at products.tecogen.com

Actual Jamaica Hospital Operating Costs
 [TECOCHILL vs. Other Technologies]

