

Solar[®] Turbines

A Caterpillar Company

COMBINED HEAT AND POWER PROJECT

Powering the Global Energy Demand

Loyola University Medical Center Produces Sustainable Energy

Location:

Chicago (Maywood), Illinois

Owner/Operator:

Loyola University Medical Center

Installed: 2005



Faced with the need to replace 50-year old natural gas steam boilers with costly new ones, Loyola University Medical Center in Chicago invested in the more sustainable solution of a gas turbine-based combined heat and power (CHP) facility that generates nearly all its electricity while also providing low-cost steam as a byproduct. Because the facility provides critical power for a 536-bed hospital and surrounding 70-acre campus, the reliability of the system was a key requirement. Other criteria included reducing energy consumption and cost, high overall cycle thermal efficiency, and meeting stringent air and noise emissions regulations.

At the center of the cogeneration system are two *Taurus*[™] 60 gas turbine generator sets. Solar was chosen as the single source to design and build the plant under an engineer, procure, and construct contract. Extended scope of supply included detailed design and construction, heat recovery steam generators (HRSG), fuel gas

compressors, motor control center, electrical interconnection with the utility, a building addition to house the plant, and a long-term service agreement.

The two *Taurus* 60 natural gas turbine generator sets provide 11 MW of electricity and can operate in a stand-alone mode in the event of a utility power outage. Under full load, the CHP system operates at 81.9 percent efficiency and compared to the sources of electricity and steam it replaces, reduces CO₂ emissions by 34,934 tons per year, the equivalent to removing the annual emissions of 5,955 cars or planting 9,525 acres of forest.

Exhaust from the *Taurus* 60 gas turbines goes to two HRSG's capable of producing 180,000 pph of steam. The steam is used for comfort heating, medical equipment sterilization, food preparation, and the operation of several absorption chillers that supply cooling during the summer months. The heat recovery boilers provide local hot water for 32 buildings at the center.

In more than 2,000 cogeneration installations worldwide, *Solar*[®] gas turbines generate clean electrical power from natural gas, while simultaneously producing useful thermal energy tailored to meet your needs for heating, cooling and process steam.

Our combined heat and power packages are specifically designed to limit impact on the environment, protect people who operate the equipment, and respect people who live nearby. Due to their exceptional overall efficiency, *Solar* gas turbines can provide significant reductions in greenhouse gas emissions by displacing power and heat from more traditional and carbon-intensive sources, while at the same time maintaining very low pollutant emissions levels.

For more information on this project contact:
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