



MIDWEST
CHP
APPLICATION
CENTER

In Partnership with
the US DOE

combined heat & power in healthcare

St. Mary's Hospital Medical Center

900 kW CHP Application

Project Profile

Quick Facts

- Location:**
Madison, Wisconsin
- Facility Size:**
900,000 square feet
289 Beds
- Prime Mover:**
One Solar Turbine GSC100 Dual Fuel
- Generating Capacity:**
900 kW
- Operating Schedules:**
Peak Shaving
- Began Operation:**
1972
- Equipment Durability:**
- Major overhaul in 1989
 - Regularly scheduled maintenance

Project Overview

St. Mary's Hospital Medical Center of Madison, Wisconsin has generated its own electricity with a gas combustion turbine for over 30 years. Not only is the hospital generating electricity, the hospital is recovering exhaust heat from the gas turbine generator for heating applications throughout the hospital. The recovered heat increases the efficiency of the system providing environmental benefits and increased energy savings to the hospital. The recovered heat from the turbines turns a standard electric generating system into a Combined Heat and Power (CHP) application.

NOTE: The turbine has not been in daily operation since 2001 due to major overhaul required to system.

The CHP Solution at St. Mary's Hospital Medical Center

The three main driving factors for the 1972 installation of the natural gas-fired turbine-generator CHP application included the following:

- **Energy Savings**
- **Power Reliability**
- **Power Outages**

Waste heat is recovered from the turbine and used in the following parameters:

- **Domestic Hot Water**
- **Building Space Heat**
- **Medical Equipment Sterilization**



Plant building housing CHP equipment

What is Combined Heat and Power?

Combined Heat and Power (CHP) refers to an integrated system that is located at or near a building or facility. The CHP system provides at least a portion of the building's electric load and utilizes the thermal energy from the electric generation equipment to provide space heating, space cooling, domestic hot water, dehumidification, sterilization, and/or process heat. Over 200 hospital/healthcare facilities nationwide already experience the benefits of CHP.

Why CHP in hospitals?

Hospitals present an excellent scenario for Combined Heat and Power applications due to their high electric demands and high thermal requirements along with the extended building occupancy.

What is a combustion turbine-generator?

Combustion turbines are electric generating devices that produce high-temperature, high-pressure gas to induce shaft rotation by impingement of the gas on a series of specially designed blades.

For further information contact

*Energy Resources Center
851 S. Morgan Street
Chicago, IL 60607-7054*

Phone: (312) 413-3835
Fax: (312) 996-5620

www.CHPCenterMW.org



System enclosure of natural gas-fired turbine-generator



Open enclosures of turbine-generator



Heat recovery boiler

