DELIVERING POWER WHERE FACILITIES NEED IT MOST

With Combined Heat & Power (CHP) as a form of onsite power generation, you control your electricity rates. Learn more about how these businesses use CHP in the recovery of waste heat to produce thermal energy for cooling and heating in their facilities.

Capstone® Turbine Corporation AUTHORIZED DISTRIBUTOR

COMBINED HEAT & POWER

ITHACA AREA WASTE WATER TREATMENT FACILITY

Project: GEM Energy worked with the developer on this biogas renewable fuel project. The system includes four C65 Capstone micro turbines with integrated heat exchangers producing 260 kW of electric power and one million BTU's of hot water. The hot water is used to heat the anaerobic digester and supplement building heating requirements.

Microorganisms inside the digester break down the treated sludge which releases a percentage of methane - a reusable form of energy. Moisture and siloxanes are removed from the digester gas using a proven gas conditioning system. The cleaned gas directly fuels the micro turbines.

Ithaca's plant is one of the first wastewater treatment facilities in the country to add other waste streams to their digester. Whey and septage are currently being added to the digester, with plans to add food waste in the future. The additional waste streams increase the amount of digester gas allowing for more electricity generation.

Results: The system provides 50 to 60 percent of the plant's annual electricity use with the goal being zero net energy use.

SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY (ESF)

Project: As part of the SUNY ESF campus expansion, the new, high-performance Gateway Center building provides a centerpiece for campus activities. The building is utilizing renewable energy to produce its own power and create a carbon-neutral facility. The GEM Energy CHP installation consists of three C65 Capstone micro turbines that will provide 195 kW of electric power and an exhaust fired steam generator to produce steam for heating. The micro turbine CHP system complements a biomass (wood chip) boiler system that produces high-pressure steam generating electricity via a steam turbine before it is used to heat campus buildings.

Results: Gateway Center and four other buildings on campus will benefit from both thermal and electrical energy. This system is expected to provide approximately 65 percent of campus heating needs and 20 percent of campus electrical needs while reducing the campus-wide carbon footprint by 22 percent.

CHART YOUR OWN ENERGY DESTINY

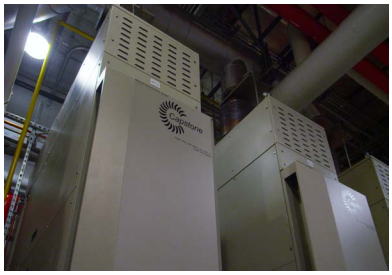
When harvesting exhaust energy, a GEM Energy CHP system powered with Capstone micro turbines drives down energy use, reducing your facility's overall operational costs.

Capstone® Turbine Corporation AUTHORIZED DISTRIBUTOR

COMBINED HEAT & POWER

ROME MEMORIAL HOSPITAL

Project: Rome Hospital was looking for a way to reduce operating costs and avoid the unpredictability of fuel oil and natural gas pricing. In addition, the facility wanted to reduce its carbon footprint with a simple, reliable system that would not require constant maintenance and upkeep. The answer? A GEM Energy CHP system made up of four C65 Capstone micro turbines which generate 260 kW of electric power.



The system supplements the hospital's thermal and electrical loads and is sized to operate at peak performance, full capactiy 24/7/365. Driving the CHP system size was the facility's significant year-round hot water reheat systems that require 205 F-degree water.

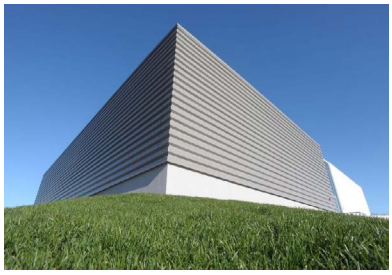
Results: Each turbine produces 205 F-degree hot water via the on-board heat recovery heat exchangers for a total of approximately 1.44 MMBTU/hour. This heat is piped to the hospital's existing terminal reheat systems for which there are consistent, year-round base loads.

The annual utility savings are approximately 1.5 million kWh of electricity and 9,000 million BTU of useful heat recovery, with a reduction of 22 metric tons in carbon dioxide emissions.

ROME MEMORIAL HOSPITAL

SYRACUSE UNIVERSITY DATA CENTER

Project: GEM Energy was chosen to design and build one of the world's most energy efficient computer data centers. The tri-generation system includes 12 Capstone C65 Hybrid UPS turbines that run off natural gas, function as uninterruptible power and produce 65 kilowatts each. The center produces its own heating and cooling by recovering the turbine waste heat. Absorption chillers are used to make cold water to directly cool the computers.



Results: The data center has its own onsite power plant, and estimates that it uses 50 percent less energy than a typical data center of its size. It is able to operate off-grid due to the tri-generation system.

SYRACUSE UNIVERSITY