

COMBINED HEAT AND POWER

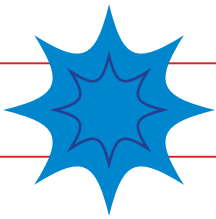


CHP
a game-changer
for plethora of
institutions

Health and
elder care
facilities
gravitate
to CHP

Micro CHP
offers reliable,
cost-effective
energy





Always On

CHP provides ideal solution for 24/7 operations.

BY TONYA MCMURRAY

With three shifts operating around-the-clock, large manufacturing facilities need a near-constant supply of reliable electricity.

“Anybody that operates all the time and consumes a lot of energy is a perfect candidate for combined heat and power [CHP] systems,” said Jeff Beiter, managing partner, E-Finity Distributed Generation LLC, the exclusive Capstone Turbine Corp. distributor for the mid-Atlantic and Southeastern United States.

“Most industrial facilities can use thermal energy as well,” he added. “So instead of just buying natural gas, putting it in a boiler and making hot water or steam, you put it into a turbine and you get electricity along with hot water, chilled water or steam.”

CHP systems allow a facility to generate electricity on-site and then capture waste heat generated during the process to provide steam or hot water that can be used for industrial processes, space heating and cooling.

“That is the economic advantage of combined heat and power,” said Paolo Paglialunga, sales manager, power generation, Siemens Canada Ltd. “In most cases, CHP makes sense for industries both from a financial standpoint and also from a greenhouse gas emissions point of view.”

In areas where electric power plants use coal and gas to generate electricity, CHP can result in a significant reduction in a company’s greenhouse gas emissions,

Paglialunga said. The capture of waste heat brings CHP system efficiencies close to 90% compared to about 40% from electricity generation at a typical coal power plant or 56% to 60% at combined cycle gas plants.

He said the combination of resiliency, energy efficiency and cost savings along with low maintenance costs translates into low lifecycle costs for CHP systems, which increase the benefits to manufacturing facilities.

COST AND ENERGY SAVINGS

Higher efficiency and cost-effectiveness were key selling points for a recent Siemens Canada deal with Inter Pipeline Ltd. to provide two industrial gas turbine generators at a Central Utilities Block in the Heartland Petrochemical Complex under



Inter Pipeline Ltd. will install two Siemens SGT-800 industrial gas-turbine generators to supply power and steam for use in its production processes at a Central Utilities Block in the Heartland Petrochemical Complex scheduled to open in late 2021 in Fort Saskatchewan, Alberta, Canada.

PHOTO COURTESY OF SIEMENS CANADA LTD.

PHOTO COURTESY OF E-FINITY DISTRIBUTED GENERATION LLC.



Benz Research and Development Corp. uses the Capstone C200S microturbine for a combined cooling, heat and power system (CCHP) that provides clean and reliable power while saving the company about \$60,000 a year in energy costs.

construction near Fort Saskatchewan in Alberta, Canada. With commercial operation expected to begin in late 2021, the CHP system will supply power and steam for production of polypropylene used in plastics for consumer products.

The reliability and energy efficiency of CHP was also important to Benz Research and Development Corp., a leader in research, development and manufacturing of optical polymers and associated technology used worldwide for contact lens and interocular lenses.

Benz Research uses a combined cooling, heat and power (CCHP) system to generate on-site electricity and recover the waste heat for plant heating and powering two 30-ton, hot-water-fired absorption chillers for the heating, ventilation and air conditioning system. The company first installed CCHP technology more than 10 years ago and has seen excellent results in terms of both energy and cost savings, said Rakesh Vasant, manager, plant operations, Benz Research and Development.

In April 2019, the company turned to E-Finity to upgrade its Capstone CCHP

system to keep up with manufacturing growth.

Benz Research's CCHP system produces an additional 60 refrigeration tons of space cooling with no carbon emissions, offsetting 70 kilowatts of electrical power, boosting overall thermal efficiency to more than 75%, and saving about \$60,000 a year, Vasant said.

"Benz Research has always been environmentally conscious," he added. "By using CCHP, we not only reduce our purchase of 'dirty' utility power, but we also recover the exhaust waste heat and energy for useful purposes and, thus, reduce our carbon footprint and avoid heating up the atmosphere further."

With the upgrade to new Capstone microturbines, Benz Research also expanded its use of the CCHP system to garner even more savings. Previously, the company used CCHP to offset peak electricity rates, but with the upgrade, Benz Research negotiated favorable rates for natural gas from TECO Peoples Gas and Infinite Energy Inc., and it is evaluating the cost-benefit of keeping its system running 24 hours a day.

NO POWER OUTAGES

For most manufacturing facilities, reliability is as important as cost and energy savings. Power outages can result in major disruptions to manufacturing facilities, but CHP systems continue to generate electricity even when the power grid experiences a significant outage due to weather or other problems.

With CHP, facilities can continue operation even if it takes days or weeks for the electric grid to reestablish full power generation, E-Finity's Beiter said.

As a medical device manufacturer with strict quality and regulatory standards, that resiliency is critical for Benz Research.

"Owing to our location in the hurricane-prone state of Florida and the

lightning capital of the world, achieving power resiliency was especially challenging for Benz Research until we turned to Capstone for our on-site power generation," Vasant said.

The system also features easy maintenance as it has only one moving part with no spark plugs, oil or antifreeze, Beiter said.

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— Jeff Beiter, E-Finity Distributed Generation LLC

"Our first planned maintenance cycle is at 8,000 hours," he said. "If you turn it on January 1, you don't have to shut it down until Thanksgiving. And then one person can do all the maintenance within an hour or two. Then, you turn it on and wait for another year." **CHP**



For more information about combined heat and power (CHP), visit:

Understanding CHP:
www.understandingchp.com

Capstone Turbine Corp.:
www.capstoneturbine.com

Siemens Canada Ltd.:
<https://new.siemens.com/ca/en.html>





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