



Combined Heat and Power (CHP) at New Belgium Brewery

Site Description

The New Belgium brewery in Fort Collins, Colorado—the 4th largest craft brewery and the 7th largest brewery in the U.S.—produces more than two dozen varieties and about 960,000 barrels of beer annually. The brewery installed a CHP system in 2010 to generate electricity for on-site use and thermal energy to heat process water. The 500kW gas-fired CHP system provides about 11% of the site's electricity needs and the thermal energy is used to supplement the brewery's natural gas fired boilers that provide hot water for brewhouse processes.



Biogas from process water treatment is captured in methane balloons before being piped to the CHP system. Photo courtesy of New Belgium Brewing Company



Reasons for Installing CHP

Cost savings related to wastewater treatment and energy

The brewery was faced with a decision regarding how to treat their process wastewater. They could pay Fort Collins a large plant-investment fee for the city to construct infrastructure to treat the brewery's wastewater or they could build their own 225,000 gal/day on-site process water treatment plant. New Belgium chose to build its own treatment system which generates methane-rich biogas as a byproduct of aerobic and anaerobic digestion. The biogas fuels a CHP system that runs about 10–15 hours per day, coinciding with utility peak demand and available biogas. This arrangement offsets purchased power during coincident peak, allowing New Belgium to reduce the demand charges that apply when Platte River Power Authority, Fort Collins Utilities' generation and transmission supplier, hits its system-wide peak. The system saves New Belgium Brewing an estimated \$53,000 annually in electricity costs.

Commitment to environmental stewardship and renewable energy

The efficient generation of electricity and heat in a CHP system fueled by biogas, a renewable resource produced on-site, contributes to the company's sustainability goals. This system can run on natural gas when biogas is not available. Either way, it saves emissions and money due to the increased efficiency of CHP over separate generation of heat and power.

Facts at a Glance

- **Cost:** \$12 million for 500 kW CHP system and process water treatment plant
- **Savings:** ~\$53,000 annually
- **Installation Year:** 2010
- **Fuel:** Biogas generated from treatment of process waste water
- **Capacity:** 500 kW
- **System Components:** 500 kw Guascor engine (now called Siemens Gas Engine) with heat recovery from Continental Energy Systems
- **Owner/Operator:** New Belgium Brewing Company
- **Thermal Use:** Hot water for the brewing process



About CHP for the Food and Beverage Industry

CHP is a great solution for energy intensive food and beverage manufacturers such as bakeries, breweries, dairies, animal and pet food makers, and vegetable and meat processors. CHP systems provide thermal energy and electric power for food and beverage processing while improving energy efficiency, lowering operating costs, and reducing emissions associated with power generation and heat production. The thermal energy generated in the CHP system can be used for heating and/or cooling, hot water, chilled water, dehumidification, equipment sterilization, and cleaning. Importantly, CHP systems can operate independently of the grid when electric service is interrupted, powering critical processes to protect health and safety and prevent damage to equipment and facilities. Systems can run on natural gas and a variety of fuels eligible to contribute to the Colorado Renewable Energy Standard, including digester gas and biomass. Nearly 300 food and beverage processing facilities in the U.S. use CHP to meet their thermal energy and electric power needs.



Photo courtesy of New Belgium Brewing Company



Pursuing a CHP Project

If your company has a need for space heating, process steam, or space or process cooling; wants to save money on utilities; would suffer significant business, safety or health impacts if power supply were interrupted; or wants to reduce emissions, then CHP may be the right solution for you. Free technical assistance is available through the Upper West CHP Technical Assistance Partnership (TAP) (see contact information below). Their experts can help you decide whether your potential CHP application is promising and warrants a more detailed feasibility study.



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