



Simonds International

1.8-MW CHP System

Site Description

Simonds International's facility in Fitchburg, Massachusetts was constructed in 1935 and primarily manufactures metal blades for band saws from steel coils. Simonds is the third-largest metal cutting manufacturer in the world. Simonds installed combined heat and power (CHP) in 2011 for a project cost of \$6.5 million and an estimated 4.5-year payback. Construction was completed in 15 months.

Reasons for CHP

Simonds International installed the CHP system primarily for economic reasons:

- A high electricity cost from the grid was making the Fitchburg facility unattractive—\$0.16/kWh versus \$0.09/kWh at other Simonds sites.
- The CHP provides additional economic savings by using the recovered heat for building heat in the winter and to power an absorption chiller for cooling in the summer.
- "The installation of the CHP co-generation system at our Fitchburg, MA plant has changed our competitive cost position dramatically enabling the company to retain energy intensive manufacturing operations and to consider adding new operations in the future. The project is a win-win as it is good for the company, our employees and the economic health of North Central Massachusetts." Ray Martino President & CEO Simonds International

Quick Facts

LOCATION: Fitchburg, Massachusetts
MARKET SECTOR: Metal saw blades
FACILITY SIZE: 410,000 square feet
FACILITY PEAK LOAD: 2 megawatts (MW)
EQUIPMENT: Three 600-kW MWM engines, 400-ton Carrier absorption chiller
FUEL: Natural gas
USE OF THERMAL ENERGY: Building heat and cooling
CHP IN OPERATION SINCE: 2011
TOTAL PROJECT COST: \$6.5 million
ESTIMATED PAYBACK: 4.5 years
ENVIRONMENTAL BENEFITS: Reduced need for fossil fuel generated electricity, reduced greenhouse gas emissions
SYSTEM DESIGN and INSTALLATION: 2G Energy Inc.



Simonds International, a manufacturer of metal blades, installed a CHP system to save on energy costs. The system includes three new reciprocating engines (left) new heating and cooling piping (right).



The CHP system at Simonds International also includes new net metering switchgear (left) and an absorption chiller that runs on waste heat (right).

CHP Equipment and Operation

The current system consists of three 600-kW MWM engines running on natural gas, with emissions reduced using selective catalytic reduction (SCR). In addition to the engines, the system also includes switchgear, eight new air handlers, a 400-ton Carrier absorption chiller, and two miles of heating and cooling piping (which used an existing walkway previously used for tours).

The recovered heat from the engines is recycled back to the eight air handlers to maintain the proper temperature in the manufacturing facility. The recovered heat raises the closed hot water loop to 194°F. During the summer, the recovered heat is used to power the absorption chiller, providing space cooling.

Simonds started CHP operation in 2011, and now runs the system 24/7. CHP supplies 1.2MW to the facility. The CHP system operated in island mode for a year, until the interconnection process planned completion of April 2012. Separate electrical feeds were required to accomplish islanding. Simonds' goal is to generate close to 100% of the facility's electrical needs, operating in parallel and synchronized to the utility.

Lessons to Share

- Involve state agencies like the Massachusetts Department of Energy Resources and the Attorney General's Office, as well as federal programs like the Northeast Clean Energy Application Center.
- Picking a contractor for operation and maintenance is important.
- The interconnection process is complicated and takes time. Simonds estimates it took 15 months to complete.
- Negotiate utility contracts including natural gas supply (preferably long term), natural gas delivery, standby rates, and interconnection contracts.

For More Information

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More CHP Project Profiles:
<http://northeastcleanenergy.org>

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