

Phoenix Contact

Manufacturing

The Challenge

International manufacturing company Phoenix Contact, prides themselves on their innovation and quality – two values that are pivotal to how they do business. Located in Harrisburg, Pennsylvania, the German-based company's 370,000-square-foot, U.S. headquarters serves as a hub for engineering, manufacturing, and logistics and distribution operations for both North and South America.

To meet their customers' increasing needs and demands and to better support the growing product demand, the company chose to renovate its existing location and nearly double its manufacturing footprint. The significant expansion meant their outdated boiler and chiller would have to be replaced. The company sought an environmental option that could be implemented to meet not just their increased electrical demand but could also support their additional heating and cooling needs.

Phoenix Contact turned to Capstone Green Energy's local distributor, E-Finity Distributed Generation (E-Finity), for a trigeneration combined cooling, heating, and power plant (CCHP) solution.

The Solution

Phoenix Contact's clean-and-green investment comes in the form of a CCHP system featuring a Capstone C1000 Power



At Phoenix Contact, we realize we have a large energy footprint and have chosen to help our region and the world by making a significant investment to generate our own power in a more environmentally friendly way."

— Jack Nehlig
President of Phoenix Contact USA

Power Profile

Customer

Phoenix Contact

Location

Harrisburg, PA, USA

Commissioned

January 2014

Fuel

Pipeline Natural Gas

Technologies

- (1) C1000R Microturbine
- 5000 MBH Hot Water Heat Exchanger
- 300-Ton Exhaust-fired Absorption Chiller
- (mTim) PLC Control System

Capstone Green Energy Distributor

E-Finity Distributed Generation



**Smarter Energy
for a Cleaner Future**



The integration of Capstone Green Energy's CCHP system resulted in remarkable financial savings, environmental impact, and a decade of uninterrupted power supply.

Package, which contains five Capstone 200kW microturbines packaged into a single 30-foot ISO container, a 300-ton exhaust-fired absorption chiller, and a 5,000 BTU hot water heat exchanger. The thermal dynamics of the building drive the microturbine which is capable of generating up to 1MW of electricity, enough electricity to power the entire facility 65 percent of the time.

Running on low-pressure natural gas, the trigeneration system also provides heating and/or cooling to the entire facility: roughly 5,100 MBH gross thermal output and 300-tons of chilling output. As the turbines generate electricity, they vent the waste exhaust heat through either the building's absorption chiller or heat exchanger to generate the building's chilled and hot water supply.

E-Finity's PLC-based control system (mTIM) remotely monitors the system and records key energy production data between the plant and the building's automation system to boost thermal priority performance. The mTIM allows E-Finity's customer service department to not only remotely monitor the facility but also to diagnose and troubleshoot the system 24/7. This also means that E-Finity can provide repairs to the system without being on-site, which minimizes downtime and maximizes uptime for Phoenix Contact.

The Results

The CCHP system at Phoenix Contact has proven to be a multifaceted asset, yielding two key benefits. Upon its installation in January 2014, the company not only capitalized on local and state incentives but also realized substantial annual

operational cost savings, averaging over \$275,000 per year. This financial advantage translated into a noteworthy five-year return on their investment. Furthermore, the system serves as a crucial redundancy for electricity, enabling the facility to sustain full production even in the face of natural disasters or local utility outages.

The comprehensive advantages of the CCHP system extend beyond financial gains. With an impressive total efficiency rate of over 75%, it contributes significantly to environmental sustainability. This is evidenced by an annual reduction in carbon emissions amounting to approximately 4,775 tons — a feat equivalent to removing 517 cars from the road each year.

Managed with precision by E-Finity for over nine years, the CCHP system stands as a beacon of reliability, providing uninterrupted power to the facility for ten years now.

Beyond its role in ensuring a consistent power supply, the system's efficiency and eco-friendly attributes played a central role in Phoenix Contact achieving the esteemed LEED Gold status.