

Global Electronics Manufacturer

Manufacturing

The Challenge

As a global company, this electronics manufacturer provides engineering, manufacturing, aftermarket and supply chain services to major global companies. Among the company's many locations around the world, it operates a plant in Jalisco, Mexico, where it handles electronics engineering and manufacturing. When company's leaders sought to lower operational costs at the plant, they connected with Capstone to target reductions in its energy costs.

Capstone proposed the installation of an efficient, onsite combined cooling, heat and power (CCHP) system that could offset most of the roughly 10,700,000 kWh the plant consumed every year from Mexico's Federal Electricity Commission (CFE Network).

The new system would also align with the company's overarching objectives of improving efficiency by reducing energy consumption and greenhouse gas emissions in an effort to minimize the environmental impact of the plant's operations. The organization has set an intensity target to improve energy efficiency by three percent annually.

The Solution

At the heart of the site's energy solution is a Capstone C1000 Signature Series microturbine, which supplies 63% of the plant's electricity consumption and 64% of its billable



Utilizing reliable and efficient microturbines as an alternative to the expensive and unpredictable local utility provides businesses significant savings and a positive impact on their bottom line."

Power Profile

Customer

Global Electronics
Manufacturer

Location

Zapopan, Jalisco, Mexico

Commissioned

December, 2019

Fuel

Compressed Natural Gas

Technologies

- 1 C1000S HPNG DM Capstone Microturbine
- World Energy Absorption Chiller



**Smarter Energy
for a Cleaner Future**



At the heart of the site's energy solution is a Capstone C1000 Signature Series microturbine, which supplies 63% of the plant's electricity consumption and 64% of its billable demand.

demand. This amounts to approximately 567,000 kWh per month, producing with a power of 788 kW.

The highly efficient trigeneration system was designed so that heat generated by the microturbine (which reaches 536° F / 280° C with an energy of 4.95 GJ/hour) could be captured and fed through a World Energy Absorption Chiller for the plant's HVAC systems. The chiller is able to produce 850 gallons per minute of cold water (40° F / 6° C), with an efficiency of 1.0 kWh / ton of refrigeration. An absorption chiller utilizes waste exhaust gas heat to provide cooling capabilities for combined, cooling, heat and power applications of all sizes, thus enabling a microturbine to achieve up to 90 percent efficiency.

An added benefit of the onsite power system is its ability to operate in stand alone mode, providing seamless emergency power at a rate of 650 kW/hour in the event of utility grid failure.

The Results

Within the first few months of operation, the new microturbine system delivered significant savings due, in part, to its maximum efficiency, which reaches roughly 80% overall. In fact, after the installation, the plant consumed less than 37% of the CFE energy it previously required.

The environmental benefits are significant, as well, as the CHP system was able to reduce CO2 emissions from 520 Kg/MW to 280 Kg/MW annually.

The company achieved all the goals it set forth at the outset: reduced energy costs, greater efficiency and lower emissions. Plus, they were able to improve reliability, which also provides savings by eliminating the high cost of manufacturing down time. With all factors considered, the return on investment is projected to be three years.

Capstone C1000S Microturbine



A C1000S provides up to 1MW of electrical/thermal generation and can be paralleled to generate up to 10MW of clean-and-green power.