Cerámica Guadalquivir

Manufacturing

The Challenge

Cerámica Guadalquivir is one of the leading manufacturers of red ceramic products and a reliable supplier of a wide range of brick and roof tiles in Bolivia. As a family-run business, the company is committed not just to producing the highest quality products, but also to making technological investments that improve operations and support their social commitment to the community and the environment.

Cenit Ltda., Capstone's exclusive distributor in Bolivia, partnered with Cerámica Guadalquivir to help them optimize their factory's energy consumption while also reducing their electricity bill improving their energy resiliency. The new solution would also be highly efficient and more environmentally friendly.

Officially commissioned in October 2019, this project was the first of its kind in Bolivia: A combined heat and power (CHP) system that captured the heat from on-site power production and used it in the plant's industrial process.

The Solution

At the heart of the system is a Capstone C600S microturbine that produces 600 kW of electricity. The heat from the microturbine's exhaust is recovered and channeled

"I was looking for an environmentally friendly way to reduce our energy costs that met our high-quality standards and would contribute to the general social welfare of the local area. I was really pleased to find a technology that could meet our energy requirements, as well as provide resiliency and the ability to expand quickly and easily in the future as I continue to grow my business."

— Oscar Vargas Hernandez, General Manager
Cerámica Guadalquivir

Power Profile

Customer
Cerámica Guadalquivir

Location
Tarija, Bolivia

Commissioned
October 2019

Fuel
Pipeline Natural Gas

Technologies
- (1) C600S Microturbine

Capstone Green Energy Distributor
Cenit Ltda.

A single Capstone C600S microturbine ensures high reliability at Cerámica Guadalquivir, a leading manufacturer of red ceramic products and supplier of brick and roof tiles in Bolivia.

to the industrial ovens that are used in the ceramic tile and brick drying process.

From the electrical side, there are three bays configured in grid connect mode. One of the bays is specifically customized as a dual mode unit so it can operate in stand-alone mode in the event of a utility power outage. The support to critical loads means that power interruptions in the manufacturing process are 100% eliminated. This particular benefit goes beyond improved plant operations, it actually impacts the quality of the ceramics. In the past, power interruptions would cause thermal variations in the manufacturing process, which, in turn, caused microfractures inside the products. Prior to the new system, the plant's loss of goods had been significant with a large percentage of product being ruined during manufacturing or damaged during transport and delivery to customers.

The highly efficient and reliable power system is scalable, as well. The C600S is housed a five-bay enclosure, which can accommodate future expansion up to one megawatt.

The Results

From day one, the system has proven tremendously reliable and cost effective, running approximately 20,000 continuous hours as of October 2019. In the first year alone, the plant reduced utility costs by $320,000 USD, a 71% cost savings. That doesn't account for the savings generated by the dramatic reduction in lost and damaged product. Further, the efficiency gained through CHP and the microturbine's low emissions mean the plant has reduced its environmental footprint, offering an added benefit for air quality in the local community.

The system installed at the Cerámica Guadalquivir plant provides a proven model for heat recovery applications in other industrial and commercial settings in Bolivia and beyond. It also provides good potential for exploring A/C applications through absorption chillers, leveraging the microturbine units as thermal machines not simply power generators.

Capstone C600S Microturbine

The C600S provides up to 600kW of electric power and contains three air bearing microturbines

Call us (toll free) 1.866.422.7786 | Tel: 1.818.734.5300 | www.capstonegreenenergy.com

Capstone Green Energy