CEMACON S.A.

Manufacturing

The Challenge

For over a half-century, Cemacon S.A. has been producing high quality materials for a range of construction applications. Today, they are the largest producer of ceramic bricks in Romania and the leader in the ceramic block market in Transylvania. As a company, they are not only committed to developing the best performing products, but also to being environmentally responsible by producing eco-friendlier materials and lowering the environmental footprint of their manufacturing operations.

When Cemacon leadership sought to address their energy needs at the Recea plant in Salaj county Romania, they partnered with Servelect, Capstone's distributor in Romania and Bulgaria, to design and install an on-site cogeneration solution that would support the plant's electricity needs while also producing direct hot air for the manufacturing process. The operational goals were to achieve overall efficiency as close to 100% as possible, while also minimizing maintenance and associated operational costs.

Commissioned ahead of schedule in May 2021, the system was the first of its kind in the region and in the manufacturing space and it was a success on all levels.

The Solution

The turnkey cogeneration plant, which runs in parallel with the utility, consists of two Capstone C600 Signature Series

"The microturbines work continuously 24/7, producing a large part of the electrical and thermal energy that Cemacon needs in the brick production process. Beyond the economic and technical benefits, the cogeneration plant helps our customer reduce the carbon footprint, contributing to its environmental goal, which in turn, reduces the carbon footprint of homes built with their products."

— Iulia Bargauan, General Director
Servelect

Power Profile

Customer
Cemacon SA

Location
Recea, Salaj County, Romania

Commissioned
May 2021

Fuel
High Pressure Natural Gas

Technologies
- (2) C600S Microturbines

Capstone Green Energy Distributor
Servelect

The electricity generated by two C600S microturbines meets the base demand of the manufacturing plant, while the exhaust gases are fed into a brick dryer, providing heat for the manufacturing process.

microturbine systems. Fueled by high pressure natural gas (HPNG), it provides 1.2 MW of electricity for plant operations. Since a key objective of the installation was to achieve the highest possible system efficiency, the turbines also serve as a thermal source for the industrial drying process. In other words, the hot air produced by the turbines is captured and channeled to the mixing chamber, and then to the recirculation chamber which dries the bricks and ceramic blocks. All the hot air produced by the cogeneration plant is used, which completely offsets the prior need for a separate heating source.

The system also features a SCADA application that provides remote and on-site monitoring of the cogeneration installation and the adjacent utility connections. Able to operate in either manual or automatic mode, the SCADA application can instantly alert technicians of any problems with the field instruments or the electric drive.

To ensure the system performs at its best and maintains the highest efficiency, Cemacon contracted with Capstone for a 10-year Factory Protection Plan (FPP). The FPP is designed to minimize downtime and lock in all maintenance costs, thereby ensuring the microturbine system will operate at the lowest total cost of ownership.

The Results

As of October 2022, the system has run 12,000 continuous hours, supplying more than 60% of the energy used in the factory. Thanks to the direct exhaust, the system reaches more than 95% efficiency. As a result, the plant has reduced its electricity consumption by 60% and offset the need to provide supplemental heat energy for the manufacturing process, both of which offer significant operational cost savings. Further, the project received incentive funding from Europe's Large Infrastructure Operational Programme 2014-2020. Because of its modular design, the system at the Recea plant is both flexible and scalable should the energy needs expand in the future.

As for the company's environmental goals, the combination of high efficiency and lower energy consumption have allowed the plant to reduce emissions by 2,700 tons of CO2 per year, a benefit not just to the facility but to the surrounding communities.

Capstone C600S Microturbine

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

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