

# Compania Aquaserv SA

Government/Municipal

## The Challenge

Compania Aquaserv SA faced a critical need to optimize operating costs at its wastewater treatment plant in Cristesti, Mures, Romania. The existing cogeneration plant, powered by a gas-fired thermal engine had reached its end of life. Rising electricity prices in the Romanian market further exacerbated the financial burden, while the opportunity to leverage biogas—a renewable fuel derived from anaerobic sludge digestion—presented a sustainable and cost-effective solution.

With investment opportunities emerging in cogeneration projects, Compania Aquaserv sought an advanced, high-efficiency cogeneration system to replace its aging equipment and significantly increase power output.

## The Solution

To meet its operational and sustainability goals, Compania Aquaserv worked with Servelect to implement a high-efficiency cogeneration system featuring two Capstone microturbines with a combined output of 800kW. The project utilized biogas generated from the anaerobic fermentation of sewage sludge to fuel one C600S microturbine (600 kW) and one C200S microturbine (200 kW) powered by natural gas from the local utility.

## Power Profile

### Customer

Compania Aquaserv SA

### Location

Mures, Romania

### Commissioned

December 2023

### Fuel

C200S – Pipeline Natural Gas  
C600S – Biogas

### Technologies

- (1) C200S Microturbines
- (1) C600S Microturbines

**Capstone Green Energy  
Partner**  
Servelect



**We are excited to have completed Romania's first Capstone Green Energy cogeneration plant at a wastewater treatment facility. Biogas, a free and renewable resource, offers Romanian WWTP operators an opportunity to optimize operational costs and significantly lower greenhouse gas emissions. This approach paves the way toward energy neutrality by 2040."**

— Iulia Bârgăuan  
General Manager of Servelect



**Smarter Energy  
for a Cleaner Future**



The Capstone C600S microturbine, fueled by biogas, and the C200S microturbine, powered by natural gas, provide a high-efficiency cogeneration solution for the Cristesti Wastewater Treatment Plant. Generating 800kW of clean power while capturing waste heat for sludge drying and heating, the system cuts costs, reduces emissions, and enhances energy independence.

A variable flow gas compressor was installed to ensure that the natural gas-powered microturbine operated at optimal pressure, while a biogas compressor with dehumidification capability was used to condition the biogas from the existing pipeline. An air-water heat exchanger (EGHE) was installed to recover heat from exhaust gases, with the recovered heat used to support sludge drying and heating processes.

The project required dismantling the old equipment, storing it on-site, and expanding the existing location to accommodate the increased power capacity. The new cogeneration plant occupies a 200-square-meter area (2,153-square-feet), with exhaust gases routed through a thermally insulated collector to maximize heat recovery before being safely discharged.

## The Results

The advanced cogeneration system has transformed the Cristesti Wastewater Treatment Plant into a model of energy efficiency and sustainability. The plant now generates all its required electricity and thermal energy on-site, significantly reducing its reliance on external power sources and lowering greenhouse gas emissions. By using biogas to produce clean electricity and heat, the system reduces dependence on fossil fuels while supporting sludge drying and heating processes with recovered thermal energy.

The project has also mitigated environmental impact by efficiently utilizing biogas and reducing greenhouse gas emissions. Funded through grants under the EEA Financial Mechanism 2014–2021, the project demonstrates Compania Aquaserv's commitment to renewable energy adoption and cost optimization, establishing the company as a leader in sustainable wastewater treatment operations.

## Capstone C200S Microturbine



A C200S provides up to 200kW of electric power and contains the world's largest single-unit air bearing microturbine.

## Capstone C600S Microturbine



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