

Edar de Lloret de Mar WWTP

Government/Municipal

The Challenge

Lloret de Mar is one of the main touristic towns of South Costa Brava in Spain. As such, the region's infrastructure needs to reliably handle the impact of a large influx of visitors, especially in the busy summer months. This is particularly the case for the wastewater treatment facility. That's why in 2019, the town made an investment in the plant by installing an on-site cogeneration system that would not only help reduce energy costs, it would increase efficiency and lower emissions.

The system was commissioned by Micropower Europe and features Capstone microturbine technology paired with solar photovoltaic (PV) for optimal efficiency.

The Solution

The installation at the Lloret de Mar wastewater treatment facility features two state-of-the-art C65 microturbines and a heat exchanger capable of recovering up to 222 kWh. The system covers the electricity demand of the plant while also producing heat for the digesters.

What is unique to this site is that the installation was also designed as a hybrid system by including a 5 kWp (kilowatt-peak) PV pergola over the top of the microturbines. In this way, the system is designed for maximum efficiency. At the time of day when temperatures are generally the highest,



In the Lloret WWTP, the use of microturbines is combined with solar panels to increase production of electrical energy, especially in the hours of maximum sun, which conveniently coincides with the microturbines' hours of least production due to the "derating" in higher temperatures."

— Manel Blasco Busquets, CEO
Micropower Europe

Power Profile

Customer

Lloret de Mar Wastewater Treatment Plant

Location

Girona, Spain

Commissioned

July 2019

Fuel

Biogas

Technologies

- 2 C65 microturbines
- IPLC remote monitoring
- 122 kW heat recovery unit
- 5 kW photovoltaic pergola

Capstone Green Energy

Distributor

Micropower Europe



**Smarter Energy
for a Cleaner Future**



Two Capstone C65 microturbines produce electricity and thermal energy from biogas generated on-site during the treatment process.

the microturbines are at their lowest production level while the PV panels are at their greatest level of production since these are the hours with most solar availability. The PV panels generate 4,500 kWh per year of electricity, which is used for the recharging electric vehicles in the area.

The availability of biogas and the ability to tap it as a fuel makes the use of microturbines especially profitable. The cogeneration plant is able to take advantage of the biogas generated in the digestion of sewage sludge to produce electrical and thermal energy. This energy is used in the wastewater treatment plant itself, and therefore, significantly reduces the consumption of electricity from the external grid network. The microturbines are a superior option for wastewater applications because they can hold a higher level of siloxane than reciprocating engines are able.

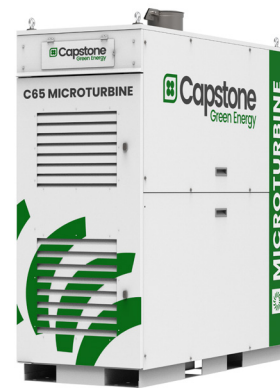
The Results

The benefits of the system are substantial. The Lloret del Mar cogeneration plant generates 1,048 MWh of electricity per year and recovers 1,773 MWh per year of heat, which has allowed for overall efficiency of 78%. The payback of the investment is estimated at 3.7 years and the internal rate of return is expected to be 26.41%.

As an area that depends on the natural beauty to inspire tourists, the system helps improve air quality by avoiding 199 tons per year of CO2 emissions.

“In the Lloret WWTP, the use of microturbines is combined with solar panels to increase production of electrical energy, especially in the hours of maximum sun, which conveniently coincides with the microturbines’ hours of least production due to the “derating” in higher temperatures,” said Manel Blasco Busquets, CEO of Micropower Europe.

Capstone C65 Microturbine



A C65 Microturbine provides up to 65 kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150 kW of thermal power for CHP and CCHP applications.