

Waste Treatment Plant, Spanish Canary Islands


Where:

The Salto del Negro municipal waste treatment plant in Las Palmas de Gran Canaria

What:

A combined heat and power system running on dilute methane gas produced by a municipal waste digester

Purpose:

Utilize the energy contained in sewage digester gas to produce electricity and heat

Primary Choice Factors:

The ability of Cummins Power Generation to design and deliver a turnkey combined heat and power system that would run on dilute biogas; the reliability of equipment and the quality of service from the local Cummins Power Generation distributor

Canary Islands sewage treatment plant turns waste into heat and electricity

LAS PALMAS DE GRAN CANARIA, CANARY ISLANDS, SPAIN – Located in the Atlantic Ocean, opposite the northwestern coast of Africa, the Spanish Canary Islands are a destination for millions of travelers each year. As a collection of islands totaling only 2,875 square miles, disposal of wastewater and solid waste is an environmental and political issue throughout the Canaries.

One solution is the new Salto del Negro municipal waste treatment plant in Las Palmas de Gran Canaria. The plant processes garbage and sewage collected from Las Palmas de Gran Canaria, a city of 380,000, as well as from several surrounding towns and villages. The waste is processed in a digester which produces methane gas. The gas is used in turn to fuel generators that produce both electricity and heat. The combined heat and power (CHP) system was manufactured by Cummins Power Generation.

Catering to the Islands' needs

Waste management is a major problem for any populated area; however, it is especially critical in the Canaries because of the limited space and because tourism makes up over 30 percent of their GDP. "The Canary Islands are known for their unspoiled tropical beauty," says Jose Melgarejo, business development manager for Cummins Power Generation. "Most visitors aren't even aware there is a waste treatment plant here, which is exactly what we wanted to accomplish."

Dual-purpose facility

The primary purpose of the facility is to process the waste produced by the residents and visitors in Las Palmas de Gran Canaria and neighboring cities. "The facility has a processing capacity of 200,000 tons of waste a year. The capacity of the biogas digester is about 75,000 tons of waste a year," says Melgarejo.

The plant is able to use the biogas (65% methane) produced by the facility's digester process to power the cogeneration system

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from Cummins Power Generation. The CHP system uses the digester methane to generate both electric power and heat. The exhaust heat from the engines is used by the treatment plant to accelerate the anaerobic processes in the digesters, while excess electricity not used in the plant is sold to the local utility – earning a biogas-derived electricity premium.

The CHP system at the Salto del Negro waste management facility consists of two 1370 kW GQMA low-Btu gas generator sets, a PowerCommand® Digital Master Control and low-voltage switchgear, all built by Cummins Power Generation. These low-Btu generator

sets are especially designed to run on dilute solutions of bio-derived methane gas that are produced by municipal landfills, sewage digesters and coal seams. A third generator set is scheduled to be added within a year. In addition, Cummins supplied all of the system's ancillary equipment such as radiators, heat exchangers and expansion tanks, and provided installation supervision and commissioning.

The establishment of premium purchase prices for electricity produced from landfill biogas in a number of European countries has made it possible for municipalities like Las Palmas, owner of the Salto del Negro facility, to build and operate waste-to-energy projects profitably. The Energy Solutions Business of Cummins Power Generation designs, builds

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and even maintains on-site power generating plants that produce electricity by utilizing



The power plant consists of two 1370 kVA GQMA low-Btu generator sets, PowerCommand® controls, low-voltage switchgear and heat exchangers from Cummins Power Generation.

alternative fuels. We have installed alternative fuel systems worldwide, making use of energy sources such as landfill gas, biogas, coal seam methane, flare gas and more.

For more information on waste-to-energy power systems, contact your nearest Cummins Power Generation distributor. Or visit www.cumminspower.com/energysolutions.



The power building at Salto del Negro features a remote bank of radiators (left) to cool the generator set engines.



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