

WASTEWATER TREATMENT PLANT COGENERATION SYSTEM Oceano, CA

Wallace Group worked closely with the South San Luis Obispo County Sanitation District to provide a 150 kW engine-generator cogeneration system for the Water Pollution Control Plant in Oceano. Wallace Group acts as the District Engineer for SSLOCSD.

In the spirit of sustainability we wanted to reduce energy consumption, reduce the District's impact to the environment and save operating costs through a green solution, basically using a waste gas to produce heat and electrical power rather than just burn it off as a waste product.

The project's main goal was to reduce the plant's dependence on local utilities by using the methane gas produced during the treatment process to generate electricity and provide heat. SSLOCSD utilizes a heated anaerobic digestion process in solids handling – a by-product of which is methane gas. Historically, the District has fired a boiler with methane to heat the digester to its 95°F operating point. Since this required a relatively small quantity of gas, the balance was sent to a flare that burned the gas.

The new system treats and then burns the methane in a clean-burning internal combustion engine that drives a 150kW induction generator. As the gas flow varies over the course of a 24-hour day, this type of engine provides the best opportunity to operate in high and low gas production scenarios to maximize the energy produced. The engine drives the generator to produce electricity that powers a significant portion of the plant's electrical load, while the heat generated by the engine is transferred via heat exchangers and used to heat the digester. The term "cogeneration" refers to the generation of electricity and re-usable heat from a single energy source.

Based on the historical average gas flow rates, the system is expected to produce an average of 125 kW, which will offset approximately 80-85% of the plant's current electrical load, resulting in over \$100,000 annual savings. In addition the plant used natural gas at times to heat the digester, with the waste heat from the engine; the district's use of natural gas will also be significantly reduced. Typically all the gas produced will be utilized, with a small portion flared when the engine is down for servicing, resulting in overall improved air quality.

Additionally, the District was awarded \$150,000 in incentive money from the State of California to help fund this project. The District partnered with the Southern California Gas Company to reserve the money through the State's Self-Generation Incentive Program (SGIP). The annual savings plus the rebate allow this project to be self-funded, at no net cost to the District.

Wallace Group was responsible for securing a government rebate through the Self Generation Incentive Program, administering the selection of the energy services contractor, and facilitating the design of the system. We also provided Construction Management and inspection services.

CLIENT

South San Luis Obispo County
Sanitation District

SERVICES PROVIDED

Construction Management
Mechanical Engineering

AWARDS

2010 APWA Environment Projects
(Less than \$2 million)

2010 APWA Central Coast
Green Award

2010 ASCE Honorable Mention,
Outstanding Sustainability
Project

