

Spencer Digester Gas Booster Helps Customer Tap Wastewater for Power Generation

Looking for a clean, renewable alternative fuel? The Spencer Turbine Company helped a customer find it in an unlikely place—a wastewater treatment plant.

When the Hunts Point Water Pollution Control (WPC) in New York City set out to reduce its energy consumption, the New York Power Authority (NYPA)—which operates the facility—investigated using biosolids to generate electricity.

With a grant from the New York City Department of Environmental Protection (NYC DEP) energy savings program, the facility realized it had the perfect combination to generate its own power: biosolids and fuel cells. The pairing of methane and fuel cells at the Hunts Point WPC is possible because the methane gas from the wastewater treatment process contains hydrogen, which is what a fuel cell runs on. Tapping the hydrogen, however, requires that the gas pressure be boosted to specific pressure levels.

That's where Spencer's digester gas booster capabilities played a vital role. Spencer provided a skid package specifically designed to help the Hunts Point facility move digester gas from the digester to the fuel cell at the desired pressure levels.

But the Hunts Point digester gas includes chemicals, such as hydrogen sulfide (H₂S), and other matter that are corrosive. Optimum performance depends on preventing damage from their corrosive effects. So Spencer's Engineering Department recommended stainless steel gas booster construction with anodized aluminum impellers to resist corrosion. Additionally, the hermetically sealed design allows zero leakage of corrosive, explosive and odorous digester gas to the environment.

The gas tight, corrosion-resistant gas booster was mounted on a common skid. The skid included a recirculation system, control panel, drip traps and drain lines for condensate removal, temperature and pressure gauges, switches and other components. To ensure that the equipment met customer requirements, Spencer delivered the complete skid to the site pre-assembled, pre-piped, pre-wired and factory tested to the company's standard factory performance test procedures. This turnkey package is truly a plug-and-play design.



The hermetically sealed digester gas booster is fabricated from stainless steel with anodized aluminum impellers to resist corrosion.

Typical Spencer Hermetic Digester Gas Booster Skid Package Components include:

- **Load control** prevents surge and/or motor overheating during low flow conditions and motor overloading at high flows.
- **Bypass control** allows a portion of the discharge gas to be reintroduced to the gas booster inlet so that flow through the gas booster remains above the allowable minimum. Cooling of recirculated gas is provided as required.
- **Low inlet pressure switch** will shut down the gas booster whenever pressure drops because of low digester gas production. This important system protection prevents the gas booster from “drawing down” the digester and inlet piping system.
- **Internal motor temperature switch** is an additional safety feature that will shut down the motor if temperatures are too high.
- **A starter/disconnect** can be included in the control panel.
- **Moisture and Particulate Separators** improve fuel quality and protect against condensation build-up.



Hunts Point, New York WPC is utilizing a custom designed and manufactured Spencer Digester Gas Booster Skid Package to boost digester gas from the digester to fuel cells at the desired pressure levels.

Spencer is the only digester gas booster provider with a range of expertise that applies across flexible design, engineering fabrication, and packaging.

The wastewater treatment plant at Hunts Point has been generating power with fuel cells fed by the processed methane gas for two years. Without the help of the Spencer skid packages, much of this valuable fuel would be flared off and lost. Instead, the Hunts Point WPC facility saves money, and helps the environment by utilizing this renewable fuel supply.

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