SOUTHEAST CHP APPLICATION CENTER

CLEAN HEAT & POWER

BMW Manufacturing

11 MW Combustion Turbine

CHP Facts

Location:
Spartanburg, SC

Generation Equipment:
2 gas-fired combustion turbines

Output:
11 MW

Installation Date:
2003

Upgrade Cost:
$11 Million

Annual Savings:
$5-7 Million

Fuel:
Landfill Gas

Project Overview

The BMW manufacturing plant in Spartanburg, SC uses landfill gas, a local opportunity fuel, from Waste Management's Palmetto Landfill. The gas travels through a 9.5 mile pipeline to the plant.

At the BMW site, two gas-fired combustion turbines use this gas to produce 11,000 kW of electricity, while heat is recovered from the engines and used in the facility as process steam. This system produces 30% of the plant's electrical need and 60% of the plant's thermal needs.

Project Barriers

A natural gas CHP system was installed in 1992, but the system sat idle because cost of the gas was more expensive than purchasing electricity from the local utility. In 2000, BMW researched the possibility of using landfill gas (LFG) from the neighboring Palmetto landfill to run their equipment.

After a 20 year purchase agreement was made for 4000 CFM of Palmetto's LFG, the 9.5 mile pipeline was constructed. The pipeline was routed under highways, a river and a railroad. Gas treatment equipment had to be installed on site and turbines had to be modified to run on LFG.

Prepared For
United States
DOE

Equipment

- Two 5,500 kW Gas Turbines
- Heat Recovery Steam Generators
- Two 1,200 kW backup gas turbines

Gas Treatment

To prevent damage to the combustion turbines, BMW invested in new gas treatment equipment to remove siloxanes from the landfill gas. The gas is collected at the landfill site, cleaned and compressed before sending it to the BMW facility.

Sources

http://www.wm.com/WM/ThinkGreen/RE/palmetto.asp

http://eponline.com/articles/2009/06/16/bmw-invests-12-m-in-methane-gas-power-for-manufacturing-plant.aspx

http://www.autobloggreen.com/2009/06/11/bmw-expands-landfill-methane-electrical-generation-at-spartanbur/

http://wasteage.com/mag/waste_gas/

Additional Facts

- The site has reduced carbon dioxide emissions by 92,000 tons per year.
- 2003 South Carolina Governor's Pollution Prevention Award
- EPA's Green Power Award
- EPA's Landfill Methane Outreach Program Project of the Year Award
- 60% of the plants energy requirements are provided by landfill gas