



SOUTHEAST
CHP
APPLICATION
CENTER

CLEAN HEAT & POWER

ENOREE LANDFILL

3.2 MW LANDFILL GAS GENERATOR

CHP FACTS

Location:

Enoree Landfill - Greer, SC

Generation Equipment:

Two Caterpillar G3520's

Output:

3.2 MW

Installation Date:

2008

Estimated Installation Cost:

Approximately \$4.5 Million

Fuel:

Landfill Gas



PROJECT OVERVIEW

After waste is deposited into the landfill, it naturally begins to decompose. One of the byproducts of waste decomposition is the production of landfill gas. The predominant substance in landfill gas is methane. Methane is a potent greenhouse gas and contributes to global warming, so it is normally flared rather than released into the atmosphere.

It is this opportunity fuel that inspired Greenville Gas producers to build the first non-utility owned landfill gas generation systems. Two 1.6 MW Caterpillar generators were installed in 2008. The systems produce enough electricity to power over 2000 homes which is then sold to Duke Energy. The county receives revenue from the gas payments, carbon and tax credits, and also receives positive PR benefits from the installation.

PROJECT BARRIERS

A power line had to be constructed to sell the power to Duke Energy Carolinas. One mile of new power line had to be added and 2.5 miles of power line had to be upgraded in order to transmit the power. Permits and approvals had to be made in order complete the line.





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EQUIPMENT

- Two Caterpillar G3520's (1.6 MW)
- ISO Switch Gear
- Fully enclosed, modular system
- Gas treatment skid

PLANT OPERATION

The Enoree Landfill generation equipment operates 24/7 with 95% online time at full capacity.

GAS TREATMENT

GC Environmental Inc. produced the gas treatment device to remove water, siloxanes and non-methane hydrocarbons. This treatment is expected to increase the life of the engine and decrease the amount of oil changes needed.



CHP OPTIONS

This facility does not incorporate CHP technology as there is little need for heating and cooling. Generating power from landfill gas has the benefit of using an opportunity fuel that would otherwise be flared.

Distributing the heat made by the landfill generators to sites which need process heat may not be an advisable solution. In future applications, a better solution would be to pipe the landfill gas to a nearby location which could set up a generator to produce heat and electricity for local use.

Energy efficiency is greater in CHP systems because less heat is wasted in the electric generation process. Most of this heat can be recovered and used as process heat in a local facility.

SOURCES

<http://www.epa.gov/lmop/conf/12th/brinker.pdf>

<http://www.coastalenvironmentalpartnership.com/landfill-gas.html>