

POWER PROFILE

Customer: Hangzhou Municipal Solid Waste Treatment Company Ltd.

Location:

Hangzhou, Zhejiang, China

Customer Business Issue:

Use landfill gas as a renewable fuel source

Solution:

Four Cat® G3516 generator sets
Cat paralleling switchgear
Customer Value Agreement

Cat® Dealer:

Lei Shing Hong Machinery



This landfill gas-to-power generation plant in Hangzhou, China, was developed with government tax incentives and has helped increase the capacity of the local power grid.

POWER NEED

In the late 1990s, the Chinese government implemented reforms to help aid in the growth of the country's rapidly expanding economy. One of these reforms was an energy plan that would help ensure a more robust, consistent power grid. To achieve this, the government offers electricity production tax incentives. In addition to improving access to electricity, government officials wanted to increase the use of renewable fuel sources instead of continuing to rely on coal-fired power plants.

A ready source of renewable fuel is landfill methane, a byproduct of the decomposition of landfill waste. In recent decades, China has turned to using sanitary landfills, which are specifically designed to prevent contamination of groundwater and surrounding soil with a lining system. At these sites, waste is deposited in specific areas, and compacted and covered on a near-daily basis. The highly planned and managed nature of these landfills makes methane collection much easier than at old-fashioned dumping sites.

SOLUTION

Hangzhou Municipal Solid Waste Treatment Company Ltd. operates multiple landfills in Hangzhou, China. In 1998, an outside waste-to-energy agency took advantage of the tax incentives and developed China's first landfill gas-to-power generation project at one of Hangzhou Municipal Solid Waste Treatment Company's landfill sites. The agency contracted with local Cat dealer Lei Shing Hong Machinery to supply and install two Cat G3516 generator sets, each rated at 970 kW, and paralleling switchgear.

"These generator sets have been running successfully for more than 10 years and recently underwent their first major overhaul in 2011," indicated Zoey Wang, Caterpillar Gas Territory Manager for China. "The G3516 generator sets have demonstrated a reliability and availability that rivals even most natural gas engines."

Because of the success of this project, two more Cat G3516 generator sets, rated at 1030 kW, were installed at a second landfill site in 2009 and commissioned in March 2011. The installation is very similar to the first project. Based on estimates of landfill gas production, the customer expects to realize a future total production capacity of 8.4 MW.

RESULTS

The two landfill power plants currently export approximately 4 MW of electricity back to the local grid, enough to power 20,000 average Chinese homes. Through Customer Value Agreements with the developers, Cat dealer Lei Shing Hong has kept the generators running smoothly, helping contribute to the increased reliability of the local power grid. Because this was the first landfill gas-to-power generation installation in the country, the support of Lei Shing Hong was instrumental in ensuring the project's success.

For more information, please visit cat.com/powergeneration

