

Tapping into Green Energy: BMW Plant Spartanburg's Landfill Gas Project



BMW's gas turbines now utilize methane gas created naturally at the Palmetto Landfill to produce electricity and hot water.

Project Description

In 2001, BMW Manufacturing Co., LLC initiated a project to use methane gas that is naturally generated within the Palmetto Landfill to power four onsite turbines and “cogenerate” electricity and hot water for the manufacturing plant in Spartanburg, South Carolina. The Palmetto Landfill, owned and operated by Waste Management, Inc. (WMI) and located near Spartanburg, contains approximately 10 million tons of refuse. It is permitted for a total of 16 million tons of refuse. Decomposition of this refuse generates a substantial amount of gas that is composed of approximately 50% methane and 45% carbon dioxide. The other 5% is comprised of primarily nitrogen, oxygen and other trace gases. Before this project was implemented, this gas was collected and burned in flares located at the landfill in an effort to reduce odors and methane gas emissions. The gas offers a source of "green" (e.g. renewable, nonpolluting) energy that will last as long as the landfill waste continues to decompose—through 2030 and beyond.

This landfill gas project consists of collecting, cleaning, and compressing the landfill gas and then transporting it through a 9.5-mile pipeline to the BMW plant. There, the gas is further compressed, filtered,

and then delivered to four gas turbines. These cogeneration units produce electricity and hot water for the plant's operations. This project is unique in that it is the first to generate electricity and recover thermal energy at an industrial site remote from the landfill itself. The turbines, which prior to this project were powered by natural gas, began running on landfill gas on January 29, 2003 and have been solely powered by landfill gas since the middle of April 2003.

Environmental Benefits

This landfill gas project was formally adopted as an environmental improvement program in 2002 as one of the requirements of BMW's environmental management system. Using landfill gas as an alternative energy source reduced area carbon dioxide emissions by 42,000 tons in 2003, which equates to more than 93 million miles driven per year by the average automobile. Furthermore, the project recovered sufficient energy to heat the equivalent of 13,500 homes per year during the same timeframe. The use of this renewable energy source provides more than 25% of BMW's energy needs while lowering the area's carbon dioxide emissions and reducing its dependence on nonrenewable fossil fuels. In fact, it is estimated that this project will reduce the plant's natural gas consumption by 15.8 billion cubic feet over the next 20 years. This landfill gas project supports BMW's sustainability strategy, specifically by means of conserving natural resources and minimizing environmental impact. For its efforts, BMW Manufacturing Co., LLC has won several national and state environmental awards, including the 2003 South Carolina Governor's Pollution Prevention Award, EPA's Green Power Award, and EPA's Landfill Methane Outreach Program (LMOP) Project of the Year award.