Microturbine Power For "Trashy" French Power Plant

In a project that has turned waste into energy, Verdesis, the Capstone Turbine distributor for Belgium and France, has installed 18 microturbines in La Ciotat, France. The microturbines use waste gas from decomposition to generate 1.2 MW of electricity — enough to power 2000 homes.

For two decades, operators of the Mentaure landfill in La Ciotat, a picturesque town along France's Mediterranean coast, flared the methane that was formed from decomposition of trash. But when town authorities learned that electricity could be generated from the waste gas, they jumped at the idea.

In today's energy environment, methane from landfills is no longer considered waste. And in the case of La Ciotat, it has become the vital ingredient in a self-sustaining on-site power plant that produces 1.2 MW of clean electricity each day — enough power for 2000 French homes.

The centerpiece of the power plant installation is the 18 Capstone Turbine microturbines that are fueled by the landfill-produced methane and create electricity the city sells to the grid. According to Xavier Lombard, CEO of Verdesis, Capstone's distributor for Belgium and France, the 18 microturbines, each delivering 65 kW, produce less than half the emissions of reciprocating engines.

"To reduce carbon dioxide and nitrogen oxide emissions, engine manufacturers have to add pricey equipment," Lombard said. "But even with the add-ons, emissions from traditional engines are still more than 10 times greater than the Capstone microturbines.

"The Capstone Microturbines also are more environmentally friendly because they use air-bearing technology, which means they don't need any oil, coolants or other hazardous materials to operate."

Commissioned in June of last year, the power plant at the Mentaure Landfill is a simple operation that already has recorded more than 4000 hours of continuous operation. While Capstone microturbines generally do not require the waste gases they use for fuel to be filtered, Verdesis designed a filtration system that eliminates water, hydrogen sulfides and siloxanes in the landfill gas.

Because it is located in a dry climate and is more than 20 years old, the

Each of the 18 Capstone microturbines in La Ciotat is rated 65 kW. Maintenance is simplified, Verdesis said, by the fact that each microturbine unit has just one moving part.

Mentaure Landfill produces waste gas with low levels of methane — as low as 30%. In comparison, newer landfills in less arid environments produce waste gas that is more than 50% methane. However, the low methane content does not inhibit the microturbine operation, according to Lombard.

"These microturbines are extremely flexible to variations in methane content," he noted, "which makes them useful for landfill applications because methane content often decreases as landfills age."

The power plant requires minimal maintenance, since each microturbine has just one moving part. "We only spend about 20 to 30 minutes per turbine every three months checking air, electronic and gas filters," Lombard said. "It's very quick and less risky than the maintenance required with most engines."

The experience at the Mentaure Landfill power plant has led to plans by Verdesis Group to install similar systems at landfills in Germany, Spain, Switzerland, Austria, France and Belgium.

"In France, they look for innovative energy technologies that also lower air pollution," Lombard said. "The country is working hard to limit its reliance on oil and gas imports and to reduce emissions. This landfill proves it's possible to achieve both objectives." ◆