

The Jenkins Brick Company recently won EPA's Landfill Methane Outreach project of the year award.

## Landfill methane a solid brick-plant solution

It started a few years ago with a \$10,000 tabletop exercise to evaluate landfills for methane supply. The end result is an environmentally sound manufacturing facility—praised by state and national leaders—that has given the client, Jenkins Brick Company, a competitive edge.

The new \$56 million plant in Moody, Alabama, the first such U.S. facility to be built near a landfill specifically to tap methane, will use the gas to

fuel kilns and initially provide 40 percent of its energy. Within 10 years, as the landfill expands, it will meet 100 percent of the facility's energy needs.

The project will reduce greenhouse gas emissions by 62,000 metric tons of carbon dioxide annually; the equivalent CO<sub>2</sub> synthesized by a 20,000-acre forest.

### Here's how it all began

In October 2003, Mike Jenkins, the brick company's chief executive, contacted CH2M HILL's J.P. Martin about evaluating landfill gas production.

"The client saw the proposed plant as a way to set new industry standards and production records, and make the company even more competitive," Martin said.

Jenkins authorized CH2M HILL to complete the initial site evaluations and selection process. Leslie Shannon and Tom

Kraemer evaluated hundreds of existing landfills through the Landfill Methane Outreach Program, sponsored by the U.S. Environmental Protection Agency.

The EPA program provided an initial list of landfills within Jenkins' eight-state search area, as well as helpful data such as the amount and type of waste collected, years in operation and current permit information. The evaluation of each prospective landfill included:

- overall review
- assessment of economic factors
- evaluation of existing gas-collection systems
- projection of future gas supply

The CH2M HILL team, led by Beth Vaughan, evaluated 301 landfills and identified 13 qualifying for additional review. Representing Jenkins as a confidential client, CH2M HILL employees met

with management from the 13 landfills for further evaluation.

"Jenkins didn't want its plan of using landfill gas to power its new production facility made public, so we were asked to represent the company and ensure that the project be kept confidential," Vaughan said. "To do this, we even removed all mention of the company's name from our NFIS system and replaced it with *Beth's Confidential Client*." (Now that the project has been completed, the Jenkins name has been reinstated in CH2M HILL's database systems.)

The CH2M HILL team contacted the top three landfills to confirm information that had been used in the evaluation process and to find out additional information about each landfill's viability for this project. Virginia Wilson painstakingly tracked down landfill operators to confirm how much waste was

### Working out the details

**Land acquisitions:** Jenkins needed land for the plant site and also needed a separate tract that would serve as the plant's source of shale, the raw material for brick making. Glen Davis, Stephanie Park, Melanie Wiggins, Rich Reeves, Jeremy Scott, and Rob Seip were involved in assessing several parcels for the plant site. Sam Shannon helped locate and evaluate parcels with shale resources.

**Permits:** Rather than use a dry lime absorber, the brick company opted for the more expensive and more efficient state-of-the-art dry injection fabric filter scrubber to control air emissions. David Martin, Heather Bowman and Charmaine Williams produced the company's air permit application.

**Piping placement:** Once the plant site was set, Peyton Ashmore evaluated pipeline locations and Melanie Wiggins evaluated possible environmental issues. Tom Kraemer, Ashmore, and Mike Davis designed the blower, compressor and pipe for the pipeline system. Ashmore and Jimmy Scott provided oversight for the pipeline installation.

**Opening day:** The grand opening for the new Jordan Plant was held on October 20, 2006. In his speech at the event, Mike Jenkins thanked CH2M HILL for its efforts and work to find the landfill gas, to pursue the issues, and to oversee the pipeline construction.

Attendees included Alabama Governor Bob Riley, U.S. Rep. Robert Aderholt, EPA Administrator Stephen Johnson, and Trey Glenn, director of the state's environmental agency.

"For centuries, bricks have been the building blocks of society, and now, by turning landfill waste into wealth, Jenkins Brick is also helping build a clean and plentiful energy supply for America," EPA's Johnson said. "Through investments in renewable energy technology, President Bush and EPA are securing the power that builds our economy."

Currently the new brick plant is in the initial stages of production. It is expected to be fully operational in November.



The blending station at the new plant blends natural gas as needed with landfill gas for use in the kilns.



At the grand opening, Alabama environmental official Trey Glenn and CH2M HILL's Beth Vaughan.



currently in place, the acceptance rate, storage capacity, proposed changes to capacity, and landfill-gas market conditions.

The finalists were then reevaluated by Leslie Shannon, Steve Newton, Tom Kraemer and Pete Woodfill on the basis of: zoning; domestic water availability and cost; industrial water availability and cost; wastewater disposal; stormwater construction; and site runoff.

The Star Ridge Landfill, owned by Veolia Environmental Services (then Onyx) in St. Clair County, best met the company's requirements. Vaughan conducted a file review of the facility at the Alabama Department of Environmental Management and at the landfill and was able to collect valuable public relations information, existing landfill gas collection system information, and data for modeling the available and future gas supply.

Once Jenkins gave the green light, CH2M HILL presented Veolia with a confidentially agreement on behalf of Jenkins and then revealed the history of the project and Jenkins' plans for a new plant.

Stephanie Park and Tom Kraemer worked with a subcontractor to install probes at the landfill and gather data based on actual gas flow. This data confirmed that there was adequate gas for Jenkins' new plant. In addition, Kraemer presented a number of improvements that could be made at the landfill to increase gas production.

Then, with the help of CH2M HILL's Pete Woodfill, Jenkins inked a long-term contract with Veolia.

Meanwhile, Sabra Sutton assisted Jenkins with public relations, and in November 2004, Jenkins announced its intent to build the new plant. 



The Star Ridge Landfill in St. Clair County, Alabama.



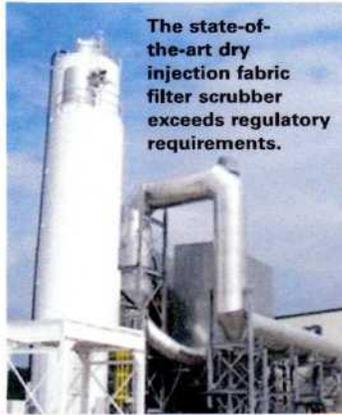
Dignitaries celebrate the grand opening with a ribbon-cutting ceremony.

## Environmental benefits

Methane is the primary component of landfill gas, which results from the natural break-down of buried waste. Reducing methane emissions provides immediate environmental benefits because methane, a greenhouse gas, is at least 20 times as potent as carbon dioxide at capturing heat in the atmosphere. Capturing and using methane as a clean fuel also provides economic and energy security benefits.

Alabama Governor Bob Riley called the plant an example of 21st century manufacturing. "It signals what we are going to be talking about for the next generation. Alabama's taking the lead in technology and the economy."

The plant, named for former company president William M. Jordan Jr., will also employ robot technology for loading and unloading brick. Company President Mike Jenkins said the plant shows "you can be both a vital industry as well as a steward of the environment."



The new Jordan Plant is one of the largest of its type in the nation. Jenkins Brick and Veolia partnered with EPA's Landfill Methane Outreach Program to create a first-of-its-kind landfill gas energy project.

"Our years-long cooperation with EPA's outreach program has provided us with valuable technical expertise as we identify ways to save money and the environment," Jenkins said. "In building this innovative facility, our American-owned company shows that it is much more than a brick manufacturer and distributor."

## Jenkins Brick Company: innovation leads to higher yield, less energy usage

Jenkins Brick Company was founded in Alabama in the late 1800s. Today, it is operated by the family's fifth generation and is competing globally. Jenkins currently has three manufacturing facilities.

At the company's Coosada Plant 87 employees produce 80 million bricks per year, requiring 1.6 work hours per 1,000 bricks.

The Montgomery Plant (which uses transported landfill gas) makes 110 million bricks per year with 78 employees, averaging 1.4 work hours per 1,000 bricks.

The Jordan Plant will make 136 million brick per year with 55 employees and produce 1,000 bricks in just a half work hour. The new facility will see a reduction in energy to 1/6<sup>th</sup> of what the company was using in the 1960s, from 4,200 to 700 Btu (British thermal unit).

The company is online at: [www.jenkinsbrick.com](http://www.jenkinsbrick.com).

## Jenkins Brick Company's new Jordan Plant.



## U.S. Environmental Protection Agency's landfill methane outreach program

"The U.S. EPA's landfill methane outreach program is a voluntary assistance and partnership program that promotes the use of landfill gas as a renewable, green energy source. Landfill gas is the natural by-product of the decomposition of solid waste in landfills and is comprised primarily of carbon dioxide and methane. By preventing emissions of methane (a powerful greenhouse gas) through the development of landfill gas energy projects, (the program) helps businesses, states, energy providers and communities protect the environment and build a sustainable future."

For more information: [www.epa.gov/lmop](http://www.epa.gov/lmop).