

METRO

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THE PLAIN DEALER

Akron Turns Waste into Watts

Methane-Fueled Sewage Plant is a First

By: Ellen Jan Kleinerman
Plain Dealer Reporter

It's basic biology. Tiny bacteria at the sewage plant eat organic waste and emit methane gas. The gas is captured and converted to electricity. The electricity is used to power the sewage plant.

Akron put a system like this online last December to process one-third of the sludge going through its wastewater treatment plant and is finding success: The city is saving about 15 percent on its electricity bill.

Akron's methane-powered sewage plant is the only system of its kind in the United States. But other cities, including Solon and Canton, now are looking to follow Akron's lead.

Use of this biological process to create energy from waste should gain momentum within the next five to 10 years, predicted Jim Currie of Ohio State University. That's because conventional ways of disposing of waste are becoming too expensive and our appetite for new fuel sources is increasing, said Currie, program director of

BioHio at OSU's Agricultural Research and Development Center in Wooster.

"The hurdle is showing people how well the system works," Currie said.

Ohio's abundance of farms, ethanol companies, and food and beverage processing plants like Anheuser-Busch make it a prime spot in which to root this technology, Currie said.

Embracing the technology could create more than 100,000 Ohio jobs in engineering, manufacturing, steel fabrication and biological processes, said Mel

Kurtz, president of Schmack BioEnergy, the Independence firm that built the Akron plant.

Schmack BioEnergy is planning an \$8 million plant in Zanesville and is set to break ground next month for a \$10 million plant in Columbus. This plant will process municipal and industrial waste that eventually could produce enough electricity to power 1,300 homes annually, said Clemens Halene, vice president of engineering at Schmack.

"This is not an experiment," Halene said. Schmack Biogas

Turning waste into energy

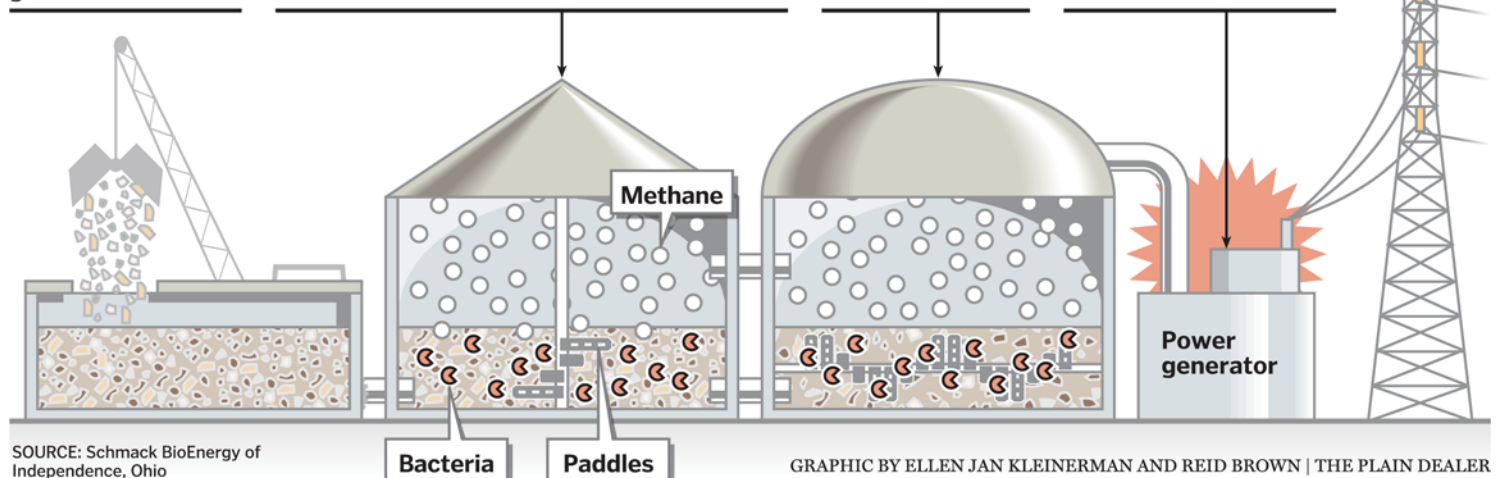
Producing energy, like electricity, auto fuel or natural gas, from organic waste is an old concept gaining new attention. The process called anaerobic digestion involves bacteria that do not need oxygen to survive. The closed processing tanks mean no smell on the outside. The bacteria eat the waste and give off methane, which is converted to usable energy. Akron opened its \$7 million biogas plant last year and is planning expansions. Schmack BioEnergy, which built the Akron plant, soon will break ground on plants in Columbus and Zanesville.

1 In addition to sewage, food waste, farm waste and distillers' grains left over from the brewing of beer can go into the mix.

2 The slurry is moved to a digester tank, where bacteria are introduced into the process. The bacteria eat the waste and produce biogas, which primarily consists of methane. Mechanical mixing paddles and heat exchangers ensure the correct distribution of food and a stable environment.

3 Fermentation is finished in a second tank. Leftover solids are dehydrated and can be used as compost and fertilizer.

4 The biogas can be used to fuel a power generator or boiler or can be upgraded to meet natural gas quality standards and then injected into the gas grid.



SOURCE: Schmack BioEnergy of Independence, Ohio

GRAPHIC BY ELLEN JAN KLEINERMAN AND REID BROWN | THE PLAIN DEALER

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Continued

perfected the technology in Germany, where it has more than 300 anaerobic digestion plants in operation.

The process uses organic material such as animal waste, human waste and food production waste to generate energy. Bacteria that do not need oxygen to survive are used and can be housed in closed vats, eliminating the smell factor. In addition to producing usable energy, the process can result in clean water and fertilizer.

"A lot of communities in the U.S. are starting to see that the cost to handle waste is getting out of control," Halene said.

The recent high fuel prices are prompting more corporate and city officials to investigate renewable-energy processes, said Tom Voldrich of CT Consultants Inc., a Willoughby planning firm that works with area cities. When energy was cheap, no one thought twice about burning off the methane from a sewage plant into the atmosphere, he said.

"Now, it's a green thing, too," Voldrich said. Not burning the methane cuts down on pollution. Now, the methane can be converted to electricity, natural gas and auto fuel.

Ohio consumes 1.3 billion gallons of motor vehicle and diesel fuel a year, said Schmack's Kurtz. If most of Ohio's waste from crops, distillers' grain, farm animals and municipalities were processed like Akron's, he said, "we could produce 90 percent of fuel consumed in the state and at a low cost."

Akron's \$7 million plant opened in December and has exceeded expectations for electricity production, said Annette Berger, vice president of operations at KB Compost Services, the company that runs the Akron plant. Plans are in the works to expand, possibly beginning in 2010.

Solon, which now trucks its sludge to a landfill and burns off the methane gas, is looking at alternatives for its aging sewage plant, said James Stanek, public-works director.

The city, with its large industrial area, has some likely partners, including Nestle USA, which has a food production plant on the city's southwest side, Stanek said.

Kurtz said word is slowly spreading. He's getting inquiries from cities on the East Coast and is negotiating an agreement with a major food-producing company in Oregon.
