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Plasma plant presents powerful possibilities for Montgomery

By Jill Nolin
jnolin@gannett.com

HUNTSVILLE -- Montgomery envisions a green future, both because it may help the area become one of the most environmentally friendly in the country and because it could save millions of dollars in the process.

Montgomery is trying to do this by becoming the first city in the country to embrace what could literally be one of the nation's hottest technologies.

Using temperatures as high as 3,200 degrees Fahrenheit, a plasma gasification plant could potentially convert up to 175,000 tons of household waste into energy or reusable byproducts -- both of which can be sold for profit.

The temperatures used in the process are so high that proponents of the plant are saying it could recycle virtually all the city's garbage, as long as it was not hazardous waste.

The plant could also save Montgomery millions while weaning it off of a landfill. But while it could be good for the environment and for the city's budget, it could also mean a plump return for investors willing to fund the cutting edge technology.

If the plant was built here, it would make Montgomery the first city in the world to use graphite arc plasma to gasify household waste.

And, other than a slight release of sodium chloride, which is what makes up table salt, the tests conducted have not revealed any other potential threat to the environment.

How it works

But, as good as the technology may sound, what the heck is it?

That's what Montgomery officials are trying to wrap their minds around as they temper the desire for forward-thinking technology with conservative restraint.

"We like to say it's innovative, not inventive. It's leading edge, not bleeding edge," said Plasma Waste Recycling President and CEO Terry Moore, in a response to concerns investors may have about fronting money for projects involving PWR's technology.

Moore noted that the technology is nothing new; it's the application of the technology that is groundbreaking. The graphite arc plasma technology is currently being used in other industries, such as in the steel industry, and the output from a plasma plant would be synthesis gas.

"That's what people have been making for 130, 140 years -- it's 'syn gas'," Moore said during a recent presentation for north Alabama county commissioners who are interested in partnering with PWR and building a plant that would serve four counties.

Synthesis gas is a gas mixture that contains varying amounts of carbon monoxide and hydrogen. The

majority, or about 80 percent, of the garbage fed into a plasma plant would become synthesis gas. That gas can be used to produce a variety of products, including methanol, power and steam, and fuels.

Montgomery is exploring the possibility of generating electrical power. Rob Vera, chief technology officer for PWR, estimated that 20 tons of municipal solid waste could generate about 30 to 35 megawatts per hour of electricity on a full-scale plant.

Depending on the efficiency of the power-generating equipment, one ton of municipal solid waste can produce a net of 450 to 850 kilowatts per hour. The plant would be designed to handle about 500 tons of garbage a day.

Other communities interested

Not every community talking to PWR wants to use the plant to generate electricity. A potential partner in Washington State, for example, wants to explore using the plant to make fuel.

Moore said PWR receives numerous inquiries on a daily basis and that the company is in "long-term negotiations" with 10 to 15 places. As things are now, Montgomery will likely be the first community to have a plasma gasification plant. Moore said PWR would bring prospective partners to Montgomery to tour the plant in the future.

"(The plant in Montgomery) will be our first pickle out of the jar. When you get the first one out, the other kind of tumble out. But you've got to get that first one out," Moore said.

"Of course, the people who come in early are going to get a better deal than the people who come in late. That's just how the world works," Moore said to the group of county commissioners who visited the company's Huntsville office in November.

PWR representatives claim that the technology can handle anything that is thrown into the garbage, including things such as batteries, medical waste and tires that aren't supposed to be thrown away in the regular garbage.

The only hang-up is hazardous waste, because once hazardous waste is introduced to the rest of the garbage, everything becomes hazardous waste. Hazardous waste also comes with its own set of strict state and federal regulations, which would complicate the entire process.

Everything else is fair game though, according to Moore.

"When you have temperatures this high, any kind of waste is amenable," Moore said.

Both the city of Montgomery and PWR have made their interest clear, but a feasibility study and then a permitting process must be completed before a \$20 million pilot plant can be built on a five-acre site at the city landfill in north Montgomery.

The mutual decision to undertake a feasibility study in a contract, rather than create a contract encompassing the entire project, has bought the city more time to consider the project. Having the study, which will be done in six months to a year, will also provide more detailed information about the logistics of how a plasma plant would work in central Alabama.

The feasibility study

A feasibility study, which will cost PWR as much as \$1 million, will determine whether the plasma gasification plant is sustainable in Montgomery, but a key piece of that study will rely on the participation of the communities surrounding the Capital City.

PWR and CH2M HILL will look for potential contributors of garbage within a 50-mile radius of Montgomery. All said, another 75,000 tons of garbage per year must be identified in order for the plant to be considered feasible. Montgomery will contribute about 100,000 tons a year.

But the city would not take all of its garbage to the plasma plant. It would continue to take some garbage to the landfill as a way of creating a safety net should the plasma project fail.

So far, the mayors of Prattville, Millbrook and Wetumpka say they know little about the plasma plant project or the feasibility study.

Prattville Mayor Jim Byard said he is in favor of the concept, but he has not had the opportunity to discuss the details with PWR. At this point, Byard said he sees the potential for Prattville to benefit from participating because the city currently picks up its own household garbage and takes it to a nearby transfer station. Then, Advanced Disposal System handles the rest.

Prattville households generate about 10,800 tons of garbage every year, according to Byard. The amount of garbage generated in Millbrook and Wetumpka was not made available for this story.

The issue of household garbage in Prattville became a controversial issue last year when Byard proposed that the city save money by privatizing its garbage service. Because of overwhelming opposition from the public, that did not happen.

If Prattville participated in the plasma plant, city crews could still pick up the household waste. The waste would just no longer go to the transfer station. But details beyond that have not been discussed and agreed upon at this point.

Millbrook Mayor Al Kelley said he had not been approached about participating in the project but that he is receptive to the concept since it has the potential to help the environment.

Like other small municipalities in the region, Millbrook contracts out its garbage service to a private company. Millbrook uses Waste Management.

Kelley said, in the past, he has explored the possibility of Millbrook processing its own household waste, but it did not take much research to figure out that the expense would outweigh the benefits of the city providing the service.

For municipalities such as Millbrook that contract out the work, the benefits of joining Montgomery in the plasma plant project are limited, according to Kelley. Still, he said if it's good for the environment it's worth serious consideration.

"If it's good for the environment, I'm all for it," Kelley said.

Wetumpka Mayor Jerry Willis echoed Byard and Kelley, saying that he is reserving judgment until he hears what is in it for his city. Like Millbrook, Wetumpka contracts out its household garbage service.

Sunflower Waste, a private company, provides trash pickup in the city and takes it to its own landfill elsewhere in the county.

However, Wetumpka is grappling with another issue -- its landfill designated for construction and demolition waste has nearly reached its capacity.

"We would need information on all of this," Willis said. "I think it's a great concept. For it to work would be wonderful. Can we participate? We don't know. We will just have to wait and see what they would be accepting."
