PHG waste-to-energy plant approved for construction

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By PennEnergy Editorial Staff
Source: PHG Energy

PHG Energy (PHGE) and the city of Lebanon, Tennessee, have signed a contract that will provide an environmentally sustainable method of waste disposal and produce green power in the process.

The waste-to-energy technology, which will go on line early next year, is a downdraft gasification plant that will cleanly convert up to 64 tons per day of blended waste wood, scrap tires and sewer sludge into a fuel gas that will generate up to 300Kw of electricity. The generation of this power will provide for the plant's internal power needs as well as contribute electricity to the wastewater treatment plant where it will be located.

"This is not incineration or burning," Lebanon Mayor Philip Craighead pointed out. "There is no smoke or odor. The feedstock material is broken down at very high temperatures in a sealed vessel, and about 95 percent of what goes into the gasifier comes out as the fuel gas." Craighead also said the remaining 5 percent to 10 percent of material exiting the gasifier is a high-carbon biochar that can be recycled or sold for agricultural or industrial uses.

PHGE President Tom Stanzione said the Lebanon project will deploy what his company believes is the world's largest downdraft gasifier and added, "This is the same basic technology we utilized in all our previous designs, and we have upgraded capacity and power density to accomplish a lot more gasification in what is not a lot more space."

The Large Frame gasifier, as the company refers to it, has been vetted through a rigorous testing process for more than two years at PHGE's research facility. A standard PHGE gasifier can convert up to 12 tons of feedstock per day to fuel gas, while the Lebanon model will process up to 64 tons per day without substantially increasing the footprint of the plant.

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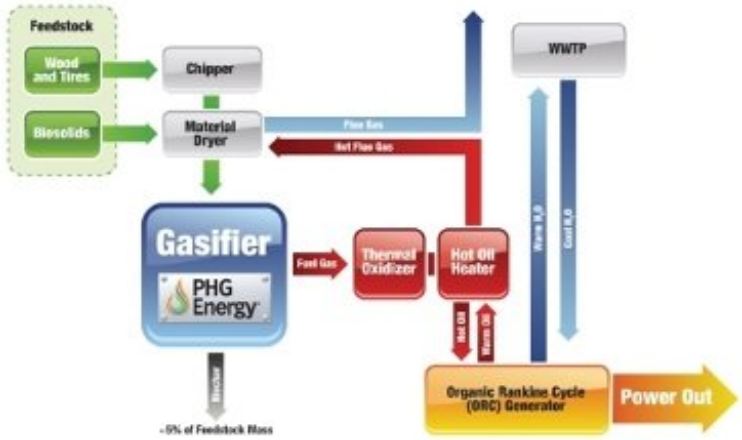

The plant is projected to keep more 8,000 tons of material out of landfills each year – the equivalent of a line of trucks over 4 miles long. Carbon dioxide emissions will be reduced as well, keeping over 2,500 tons out of the atmosphere each year. According to the Environmental Protection Agency, that equates to the CO2 produced annually to provide electricity to 312 homes, or the annual greenhouse gas emissions from over 450 passenger vehicles.

Funding of the $3.5 million capital cost has been obtained through a federal program that awards bond subsidies to local projects that conserve energy. Those Qualified Energy Conservation Bonds are allocated through the Tennessee Department of Environment and Conservation (TDEC), and repay communities about 70 percent of interest expense.

The Lebanon project will mark the 14th gasifier installation for PHGE. The company's first municipal installation was commissioned in Covington, Tennessee, in 2013. Prior deployments of the thermo chemical process were for industrial brick manufacturing clients to replace natural gas usage by cleanly converting wood waste to what is called producer gas or synthetic gas.

Craighead said that the city is viewing this installation as a first stage in a larger plan to convert the city's household and commercial garbage to energy in the future. He added, "We see keeping our garbage out of the landfill and using it to make energy as major goals for Lebanon in coming years. This is a problem that is coming straight at all of us, and we are going to make sure our city is ready with answers. One of our primary criteria is that the solutions we want will have to make good financial sense along the way."

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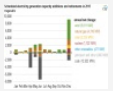

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