



HACC Forms Biomass Gasification Research Partnership

By Joseph R. Wojtysiak and David Heck

Independence from foreign oil, improving energy security, and reducing global warming are just a few reasons to identify new sources of clean reliable energy.

In October 2010, HACC, Central Pennsylvania's Community College, and Enginuity Energy LLC formed a partnership dedicated to tackle these issues. A new biomass gasification research and development center was established to create renewable energy and to educate students for jobs being created within the renewable energy sector.

The mobile gasification equipment is mounted onto a 48-foot long trailer and is housed inside a 38-foot wide, 70-foot long, and 19-foot high green hoop structure. Syngas is produced during the patented gasification process, which powers a boiler to create steam. The steam can be used for thermal applications and/or to generate electricity to power a school, an industrial plant, a commercial complex, or the community. The facility is equipped with state-of-the-art emission control technology called an ESP (Electro Static Participator). The ESP will capture particles smaller than 0.25 microns from escaping into the atmosphere.

Existing gasification technology has restricted traditional biomass to uniform size, shape, and moisture content. The Ecoremedy® advanced biomass gasification lab at the HACC campus represents a quantum leap for the biomass industry because of its capability to accept irregular size non-traditional organic materials with a variable moisture content of up to 65 percent. Biomass eligible for testing includes, but is not limited

to, corn stalks, beet pulp, apple cores, agricultural manures, mushroom soils, and more. A typical full-scale Ecoremedy plant can process tens of thousands to over 100,000 tons of biomass material annually.

Animal manures, with their high nitrogen and phosphorous content, are a leading contributor to pollution of our waterways. Ecoremedy technology offers a means to assist Pennsylvania's efforts in cleaning the Chesapeake Bay. For example, a 3MWe Ecoremedy plant, fueled by poultry manure, could reduce Pennsylvania's annual Chesapeake Bay nutrient pollution targets by 3.5 percent for nitrogen, and 4.4 percent for phosphorous; prevent 34,000 tons of CO₂; eliminate hauling 60,000 tons; avoid 15,700 acres of land application; and recover 10,000 tons of nutrients as renewable fertilizers.

Technologies, such as the one being tested at HACC, stands to play a critical role in both addressing our energy needs and improving the environment, most notably, our waterways. Video of the Ecoremedy Facility can be found on YouTube under <http://www.youtube.com/watch?v=lxdjUlsbduI> or search under "Ecoremedy".

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