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Garbage In – Fuel and Energy Out

by Orville Moe

Orville Moe makes his home in Hutchinson, MN, and serves on the Board of Directors for Onsite Power Systems, Inc. (OPS), in Davis, CA. Here, he shares some of the cutting-edge renewable energy technology development happening at OPS.

Our landfills are overflowing. Our need for alternative fuels is increasing. What if we could turn garbage into energy? Could it work right here in southwest Minnesota? These are the questions that Onsite Power Systems, Inc. (OPS) is addressing through the opening of a new Advanced-biological Phased Solids (APS) Processing Plant in Davis, CA. This plant serves as an operating model for future plants to be built throughout the United States – perhaps even here in southwest Minnesota.

The OPS plant demonstrates that anaerobic gaseous fuel, a clean renewable energy resource, can be generated with this system. It shows the technical and economic feasibility of generating bio-hydrogen, pipeline natural gas quality, methane, and other grades of bio-fuels using community wide organic garbage as the primary feedstock. Various harvests of silage crops can also be used as feedstock.

The APS process converts 70 to 90 percent of the organic solid feedstock (garbage) to bio-gas. Any remaining solids have an added value as a soil amendment or fertilizer additive, much like compost, and the water recovered from the feedstock can be recycled or used for irrigation. The key advantages to the APS system is its capability to convert the organic feedstock into fuel more efficiently and in a shorter time thereby requiring fewer and/or smaller digester operating tanks and thus less initial investment in the plant. The added benefit of disposing organic garbage rather than going to a landfill contributes to the economic viability of this system.

The potential market for the APS system, in the state of California alone, was derived from information provided by the California Integrated Waste Management Board. A recent study revealed that an estimated 40 percent of the landfill material, 22 million tons per year of wet organic wastes, are disposed of in California. The APS system can recover as much as 3 million Btu of bio-gas from each ton of organic feedstock. This volume of organic wastes, therefore, can produce enough of a bio-gas fuel supply to generate over 1.36 million gallons of gasoline equivalent fuel per day or 895,000 Kg of bio-hydrogen per day. California has already started a hydrogen highway project to

supply hydrogen to future vehicles throughout the state. Low cost "home grown" hydrogen will likely be the fuel of the future since a number of hydrogen fuel cell-powered hybrid vehicles are already coming into use.

The potential economic impact to the state of California, using "home grown" fuel rather than imported fuel is at least $1.2 billion dollars per year and will create well-paid technical employment opportunities for many people. Multiple APS Digesters located throughout the United States will reduce our reliance on imported oil by creating new sources of bio-fuels which are economical enough to provide renewable electrical energy.

Tomorrow's world will increasingly rely upon renewable organic resource recovery to comply with the ever-increasing environmental regulations, intensive agricultural operations and, the fact that municipalities can no longer rely on conventional landfill waste disposal practices. We therefore must seek cost-effective alternative solutions, such as the APS Digester System, to address waste management and disposal issues while generating fuel, jobs and new economic opportunities for the rural communities.

The APS anaerobic digester technology offers an efficient, cost effective, alternative method of handling the waste products effectively and economically, increasing profitability and maintaining environmental sustainability by providing a reliable renewable energy supply

This monthly column is brought to you by the Southwest Initiative Foundation as part of its efforts to advance renewable energy as an economic asset in southwest Minnesota by branding and promoting the region as The Renewable Energy Marketplace™. For more information on the Renewable Energy Marketplace™, log onto www.renewableenergymarketplace.org and for more information on the Southwest Initiative Foundation, log onto www.swifoundation.org.

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