

Microgasification Technology

Commercial Application

The microgasification technology is a packaged power generation system in the range of 10 kW_e–1 MW_e. Microgasification power generators provide energy solutions for commercial and industrial clients that have simultaneous waste disposal and power needs. Wood-based fuels (biomass) are the most common application; however, other agricultural residues and coal can be considered.

Commercial Opportunity

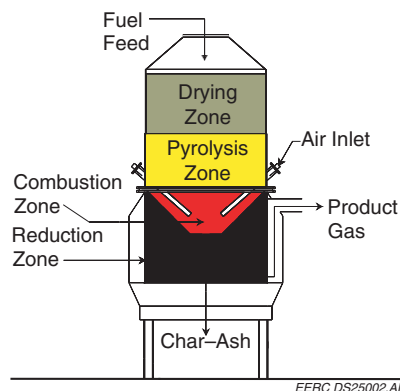
Many residues have a high energy value; however, this value is lost as they are transported off-site at a disposal cost. As corporations seek to lower operational costs and increase revenues, utilization of residues or by-products provides an economically attractive solution.

Current Approaches

Steam boiler combustion technology is used to produce electricity from biomass; however, steam boiler combustion is expensive and requires certified boiler attendants.

Technological Advantage

Gasification technology provides a lower-cost alternative to steam boiler power generation. Capital needs are half that of combustion, and operating costs are low as no regular certified attendants are needed. Because of the attractive economics, gasification enables the use of fuel on-site, minimizing costs associated with fuel transportation. The Energy & Environmental Research Center (EERC) utilizes a downdraft gasifier because of superior gas quality performance relative to updraft fluidized-bed gasifiers.



Benefits

- Completely automated to minimize operational cost.
- Utilizes on-site, low-value by-products and wastes to produce value-added products
- Distributed generation of electricity
- Small footprint enables use in portable applications
- Potential chemical or liquid fuels production
- Packaged to meet the strictest environmental requirements and permits.
- Inherently safe design, low pressure, meets Occupational Safety and Health Administration (OSHA) and National Electrical Code (NEC) standards, computer-monitored and logic-based feedback interface.
- Simplified maintenance and recycled process consumables.

Market Information

Numerous industries such as forest products, agricultural processing, and secondary milling can benefit from the waste utilization features of gasification technology. There is an estimated potential application for at least 100,000 units in the United States.

Development Stage

The EERC has operated a 5-ton/day portable gasification system (illustrated in the figures) for testing and performance measurement since 2004. Currently, a commercial system has been installed at a secondary wood products manufacturer in Grand Forks, North Dakota, and is being operated to prove long-term viability. The EERC looks forward to providing complete solutions for residue disposal and power production in partnership with industry.

Future development may include utilization of syngas for chemical conversion.

Type of Collaboration

The EERC is actively seeking demonstration and commercialization partners in medium and small commercial applications.

Intellectual Property (IP) Rights

Development of a comprehensive package of IP rights is under way.



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