

The future energy resources SilvaGas? process operating experience in the Vermont gasifier

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The Burlington, Vermont gasifier is the first commercial scale demonstration of FERCO's SilvaGas? indirectly heated biomass gasification process. The gasification plant is the largest operation of its type in the United States. The SilvaGas? process was the first process to integrate a biomass gasifier with a gas turbine during pilot operations at Battelle's Columbus, OH facilities. The Burlington plant is coupled to the McNeil station of the Burlington Electric Department and is being used to evaluate and demonstrate the gasification technology both as a producer of fuel gas and in a combined cycle with a gas turbine power generation system.

The SilvaGasTM demonstration plant has achieved a number of significant milestones. These milestones have helped to validate the technology and provide a sound basis for discussions leading to the establishment of commercial projects around the world. Activities continue at the McNeil site to thoroughly evaluate the process and its integration into a range of end uses.

This paper discusses the operating results at the Burlington site including gas composition and production rates, and biomass throughput measurements. During testing in 2000, measurements made in the Vermont gasifier have shown that:

- ?? The process is very stable as demonstrated by around-the-clock operational periods utilizing wood feedstocks with moisture contents ranging from 10 to 50+%.
- ?? Gas composition and production rates are identical with those projected based on pilot plant testing. Gas heating value of 11-14 MJ/Nm³ (450 to 500) Btu/scf has been demonstrated for extended operating periods.
- ?? The product gas heating value has been shown to be constant regardless of changes in feedstock moisture. Such consistency simplifies downstream control systems allowing them to be identical to natural gas control systems.
- ?? Reactor throughput has been demonstrated to be 150% of design.
- ?? The process has the ability to rapidly respond to downstream conditions.

Future Energy Resources, the owner of the gasification technology, is developing projects worldwide based on the SilvaGas? process.