



Biomass Program

Gasification Research Center

Gas Technology Institute (GTI) is leading an effort to integrate and evaluate syngas cleanup and treatment technologies for syngas from biomass gasification processes. Researchers will screen and evaluate gas cleanup and processing technologies and process monitoring instrumentation for potential implementation in integrated biorefineries based on the thermochemical production of syngas.

Two facilities—Southern Company's Power Systems Development Facility and GTI's Flex-Fuel Facility—are available to host the slipstream system which will be built as part of this project. Both sites offer platforms of the appropriate scale to study integrated gas cleanup systems.

R&D Pathway

Obtaining near real-time measurements of syngas is critical for accurate, effective evaluations of syngas cleanup technologies. This real-time measurement capability requires an advancement in the state-of-the-art of gas sample conditioning. GTI is therefore developing a sampling interface to allow syngas to be extracted from the process stream and delivered on a continuous or near-continuous basis to a variety of on-line analyzers. Measurements made at key points in the slipstream cleanup process stream will include

identification and quantification of primary and trace gas constituents (CO, H₂, H₂O, CO₂, N₂, NH₃, H₂S, COS, Ar, HCl), as well as a wide range of vapor-phase hydrocarbon species.

These analyses will be coupled with more conventional batch extractive analysis methods to optimize the integration of technologies for tar cracking, syngas cooling, particular cleanup, gas cleanup, and steam-hydrogen-shift reactions. When the integrated upstream gas treatment is sufficient to meet the specifications for end use (fuel cells or feedstock for fuels and chemicals production technologies), the slipstream syngas cleanup system will be used in the evaluation of these end-use processes.



GTI's Flex Fuel Facility

Congressionally Directed Thermochemical R&D

Benefits

- **Optimized integration of biomass gasification technologies**
- **Improved economics of biomass gasification**
- **Development of a gas sampling interface for high-temperature, high-pressure gasification process streams**

Applications

The results of this research will provide viable options for gas clean up in biomass gasification.

Project Partners

**Electric Power Research Institute
Gas Technology Institute
Southern Company
University of Alabama at Birmingham**

Project Period

FY 2002 – FY 2007

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Visit the Web site for the Office of the Biomass Program (OBP) at
www.eere.energy.gov/biomass.html

September 2006