



# Biomass Program

## Thermochemical Conversion Analysis

Analysis of scientific and technical issues behind the development of advanced technology is a critical element of research. Effective analyses provides direction and focus to research, identifies technical, economic, and environmental challenges, and helps to set goals and measure progress.

The Office of the Biomass Program at the U.S. Department of Energy conducts analysis to support on-going research in bioenergy, including the thermochemical conversion of biomass to fuels and products via gasification or pyrolysis. Current studies in this area have focused on biomass gasification followed by synthesis gas cleanup and conditioning for integrated fuels production processes as well as pyrolysis oil production.

## R&D Pathway

Currently, studies are being conducted to evaluate biorefinery concepts that utilize both biochemical and thermochemical technologies and examine the potential of dry (CO<sub>2</sub>) reforming to produce syngas. Additionally, the state of biomass syngas technologies and their integration into biorefineries will be updated annually to determine the progress made in overcoming R&D

barriers, the cost of syngas and end products, and the environmental benefits.

Previous years analyses have examined the impact of oxygen purity on direct and indirect gasification, assessed the energy requirements and cost of delivering pyrolysis oil versus other forms of biomass to a biorefinery, and evaluated the technical and economic feasibility of numerous fuels and chemicals from biomass-derived syngas. The products investigated include ethanol, mixed alcohols, hydrogen, and Fischer-Tropsch liquids.

Other issues such as biomass drying, feed handling, and process integration are taken into account in thermochemical conversion analysis.



Researchers discussing analysis data.

## Thermochemical R&D

### Benefits

- Shows the potential impact of overcoming technical barriers to thermochemical conversion of biomass.
- Measures research progression in obtaining program goals.

### Applications

These analyses will help provide direction and support in developing technologies that are the most suitable and economically viable for thermochemical conversion of biomass.

### Project Partners

National Renewable Energy Laboratory

### Project Period

FY 2003 – FY 2010

### For more information contact:

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April 2006