



Biomass Program

Biochemical Platform Analysis

The objective of this project is to perform analysis for the Biochemical Platform to support the on-going research in biochemical conversion of biomass that will be part of an integrated biorefinery. In the Biomass Program, analysis is closely linked to R&D, providing information and guidance to direct and plan projects efficiently. Analysis provides essential direction to research by evaluating the technical, economic and environmental aspects of biomass conversion technologies and their value to the biorefinery. Analysis is performed to identify targets for the platform research projects and measure the progress made to those targets. The analysts:

- work with the researchers at the beginning of a project to determine what the targets should be and how they will be measured/reported
- provide process design mass/energy balance modeling and economic analysis input to the project to direct and show progress
- report analysis results to research and management staff and work with both to keep the project focused on meeting the targets.

The analysis work in the Biochemical Platform continues to be focused on showing how

research can increase the process efficiency of converting lignocellulosic biomass to sugars and ultimately ethanol. Specifically, the biochemical platform analysis goals are to: 1) track research improvements for their contribution to reducing the cost of ethanol production to \$1.07 per gallon, 2) direct research to the areas that will give the largest cost reductions, and 3) support biorefinery development, combining biochemical conversion of carbohydrates with thermochemical processing of the process' residues.

To aid in this, different types of cases are developed and sensitivity analysis is used to understand the effect of process values on product costs. Annual evaluations of the technology status are other important work products, documenting the research progress and providing the basis for budget projections and multi-year plans developed by the Biomass Program.

This task supports the following research areas:

- Targeted Conversion Research
- Feedstock/Process Interface
- Pretreatment and Enzymatic Hydrolysis
- Biochemical Process Integration

Two major design reports were published in 1999 and 2002, which detailed processes to produce ethanol from yellow poplar and corn stover, respectively.

Biochemical R&D

Benefits

- **Enable cost-effective conversion of lignocellulosic biomass to sugars and ethanol**

Applications

This analysis provides direction to and shows progress of Biochemical Platform R&D projects.

Project Participants

National Renewable Energy Laboratory

Project Period

FY 2006 – FY 2009

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