



Monday, March 26, 2007

Performance Improvements in Commercialized Biomass Technologies

- 9:00 **Introduction by Symposium Chair**
Mark Reidy, Andrews Kurth LLP
- 9:00-9:45 **Assessing the State of the Art in Direct Biomass-to-Power Conversion Technology**
This presentation will assess the state of the art, in North America and Europe, for the conversion of biomass solid fuel and gaseous fuel (biogas) to electric power via direct combustion or gasification. It will address power only, for combined heat and power (CHP), and co-combustion of biomass with fossil fuel applications. Current and future estimates will be presented for sizes of the power plants, installed capacity, capital costs, efficiency, fuel costs, and cost of the resulting electricity.
Evan Hughes, Ph.D, Biomass Energy and Geothermal Energy,
Consultant
- 9:45-10:30 **Advances in MSW Conversion Technology**
One of the most prevalent sources of biomass used for conversion to energy is municipal solid waste (MSW) and landfill gas. Residential, commercial, and institutional post-consumer wastes contain a large percentage of plant derived organic material that constitute a renewable energy resource, while the vast amounts of methane created in bacterial digestion of organic garbage can be captured, converted and used to create energy. This presentation will review the current state of the art in converting MSW to power and/or biofuels, and discuss the current economics for such systems.
Greg Shipley, President, Waste-to-Energy (WTE)
- 10:30-10:45 **Morning Refreshment Break**
- 10:45-11:30 **Industrial Processing—Waste Efficiency Energy Plants**
Many industrial processing companies are investigating the usage of waste conversion technologies to obtain syngas as a hedge against volatile natural gas prices and supplies. Such byproducts as wood waste and shredded parts that would otherwise be buried in landfills can instead be converted to gas and used to fire microturbines. This presentation will

assess the technology and economics of using biomass as the feedstock for onsite generation.

John Keppler, CEO, Intrinergy, LLC

- 11:30-12:15 **Use of DDG and Bagasse for Biofuels Production and Biorefineries**
Biomass feed stocks such as DDG, corn stover, sugar cane bagasse and other plant biomass materials are potentially available and cost-competitive at a large scale. However, the challenge is to find economic ways to convert these lignocellulosic resources into reactive intermediates such as fermentable sugars and other key building blocks. This presentation will address the latest technologies and how their integration could help us to speed up the DDG and bagasse conversion process, efficiency and value to maximize cost-efficiency and productivity in the biofuels and biorefinery space.

Marco A. Baez, Ph.D, M.B.A., Project Manager Corporate R&D,
Dyadic International (USA), Inc.

- 12:15-1:45 Group Luncheon

<i>Assessing the Commercial Possibilities of Unproven Technology Developments</i>
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- 1:45-2:30 **Advances in Digester Technology**
This presentation will cover how anaerobic digestion technology is developing to improve economics by producing multiple products and by bringing various benefits.
Shulin Chen, Ph.D, P.E., Professor, Department of Biological Systems Engineering, Washington State University
- 2:30-3:15 **Advances in Cellulosic Ethanol Production**
Cellulosic ethanol commercialization requires closing some voids in the supply chain and selecting a business model and processing route. This presentation will discuss how to best proceed in filling these voids, as well as what the best business model and processing routes are likely to be.
Jim Hettenhaus, Co-Founder, cea Inc.
- 3:15-3:30 Afternoon Refreshment Break
- 3:30-4:15 **Advanced Conversion of MSW to Fluff for Energy Production**
This presentation will cover conversion of municipal solid waste (MSW), including household garbage, into “Fluff” that resembles peat moss or woody biomass. The process uses unsorted MSW and mechanically (automatically) separates metals after crushing/grinding and then disinfects the product to yield Fluff. The Fluff can be used as a “green” energy source for producing heat, power, or diesel product, which will be

described. Thus, we not only produce green energy but also eliminate more than 90% of MSW going to landfills.

Satya P. Chauhan, Senior Program Manager, Battelle

4:15-5:00

The Forest Biorefinery

Modern pulp & paper mills - today's biorefineries - are roughly 50% energy self-sufficient (fueled by biomass residuals). The forest products industry is the largest producer and user of renewable biomass energy in the United States. This presentation will review the results of a recently completed analysis of pulpmill biorefineries and discuss more broadly the potential for the forest products sector to be transformed into a net exporter of biomass-based power, transportation fuels and chemicals.

Ryan Katofsky, Associate Director, Navigant Consulting, Inc.