

Next Generation Bio-Ethanol

13 - 14 November 2007 ■ SGS Group Headquarters - Geneva, Switzerland



*“Technical, Economics, Logistics & Enzymes
Breakthroughs in Cellulosic Ethanol”*

*“Can Recent Technologies develop this industry
into a competitive level ?”*

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MESSAGE FROM KEY COURSE LEADER



Dear Delegate,

The recent increase on oil prices is putting stress on economies around the World. World energy demand, however, will continue to increase, exacerbating this situation. Alternative energy sources, therefore, are receiving a lot of attention. Particularly, for transportation, ethanol, derived from biological sources, has become

the most popular alternative fuel.

Ethanol has been produced since antiquity and its use as transportation fuel dates from the very inception of motorized transportation. However, conventional ethanol feedstock (i.e., sucrose and starch) have limited availability and compete with food. Another, much more abundant, more available and less costly biological material is cellulose and the other biopolymers that often accompany it, hemicellulose and lignin. The material containing these three biopolymers, known as lignocellulose, can be grown productively all over the World, and along side with food. Ethanol economies are bound to, eventually, implement cellulosic ethanol to continue to grow. However, cellulosic ethanol implementation has challenges.

This workshop is designed to be a thorough technical introduction to the economic and environmental benefits of cellulosic ethanol, its different production technologies under R&D and their advantages and challenges. Crop-to-wheel logistics needed for implementing cellulosic ethanol will also be discussed. Such in-depth introduction will provide valuable insights and will be a starting point for the delegates to fit this growing new field to their own needs and hopefully continue to pursue and interact with others towards its implementation.

I look forward to interacting and networking with you in this workshop.

Regards,

Cesar Granda

COURSE LEADER Cesar B. Granda, Ph.D.

Dr. Cesar Granda obtained his B.S. in chemical engineering and his Ph.D. in the same discipline from Texas A&M University. He has been working in the biotechnology and waste utilization area for many years now.

Dr. Granda has been involved with biomass conversion to chemicals and fuels since 1997 conducting research in almost all unit operations of the process. He has experience in the sugar industry as well. Many technical publications and patents in these areas have resulted.

In his research, he has been involved in preservation of sugarcane juice for processing into sugar and ethanol, the development of an efficient sugarcane juice extraction system to handle high-fiber cane varieties, pretreatment of sorghum and sugarcane fiber to increase their biological digestibility, enzymatic degradation of sugarcane fibers into simple sugars for the production of ethanol, mixed-acid fermentation of lignocellulosic residues, energy-efficient dewatering of fermentation broths, conversion of organic-acid salts into chemicals such as ketones (e.g., acetone), and acids (i.e., acetic acid) and conversion of organic acids and salts into alcohols (e.g., isopropanol and ethanol).

Day 1 Tuesday, 13th November 2007

TYPES AND METHODS FOR PRODUCING BIOFUELS

ETHANOL AS A BIOFUEL

ETHANOL PRODUCTION

Brief Introduction to Mature technologies

- Squeezed sugar (Sugarcane)
 - Process description
- Starch (Corn)
 - Process description
- Distillation
 - Alcoholic distillation, description, capacities
- Anhydrous ethanol production
- Yields /Overall process energetics

CELLULOSIC ETHANOL

- Historic background of cellulosic ethanol
- Importance of establishing a cellulosic-ethanol economy
- Potential feedstock & yields - sugarcane bagasse & trash, corn straw (stover), rice straw, wheat straw, rice husks, municipal solid waste, sewage sludge, manure (cattle, poultry, swine), wood chips, switch grass
- Characteristics of lignocellulose
- Some incentives for implementing cellulosic ethanol
 - Agricultural waste burning phase out
 - Lignocellulose yields
 - Environmental impact of using wastes
 - Potential ethanol yield from lignocellulosic sources
- High-productivity crops (energy cane, Miscanthus hybrids, sweet sorghum, water hyacinth)
- Harvesting, transportation and storage strategies (efficiency and economics)

CMT's Biofuels forums provide practical and useful updates. Each forum highlights commercialization issues, feedstock markets and supply, trading and business constraints, as well as biorefinery operations and technology issues. The events are held across the globe from Asia to Middle East, Europe and Latin America.

POTENTIAL OUTLOOK OF CELLULOSIC ETHANOL - THE NEXT GENERATION OF ETHANOL MANUFACTURING

- Commercial Viability of Cellulosic Ethanol – Will it take off ?
- Can recent technologies develop this industry into a competitive level

Lutz Buske, Associate Principal
McKinsey & Company

ETHANOL PRODUCTION FROM LIGNOCELLULOSE

- Gasification followed by Catalysis
 - Economics/yields
 - Description of processes
- Gasification followed by ethanol fermentation (Gaddy process)

WHO SHOULD ATTEND

- Supply/Operations Executives/Analysts of Oil & Gas Majors
- Oil Trader's Assistants for Quality control and Blending
- Business, Planning & New Managers of Ethanol and Biodiesel Producers
- Ethanol Investors, Traders & Financiers & Risk Managers
- Sales and Marketing Executives of Food/Agriculture and Industrial Biotechnology Corporations
- Sales and Marketing Executives of Additives and Enzymes Companies
- Commercial Managers of Shipping, Terminal, Logistics & Tanker Operations
- Middle/New Executives in Biofuels Technology and R&D
- Feedstock and Biomass Suppliers of Sugarcane, Corn/Maize, Sorghum etc
- Managers & Technical Executives in charge of Biofuels STARTUPS

COURSE TIMINGS

Registration : 8:00 am
Seminar Proper : 9:00 am – 5:00 pm
(Lunch at 12:30 – 1:30 pm with another ten minutes coffee/tea breaks)

Day 2

Wednesday, 14th November 2007

- Lignocellulose hydrolysis processes followed by ethanol fermentation
 - Acid hydrolysis
 - Enzymatic hydrolysis
 - Pretreatment technologies for enhancing biodigestibility
 - Ethanogenic microorganisms

RECENT BREAKTHROUGHS IN ENZYMES - ENZYMATIC HYDROLYSIS OF PLANT BIOMASS

Dr. Thomas Brück
Senior Scientist Biocatalysis - Corp R & D
Süd-Chemie AG

- Lignocellulose hydrolysis followed by Acetic-acid fermentation with downstream Chemical transformation into ethanol (the Zechem process)
 - Rationale: Acetic-acid fermentation vs. ethanol fermentation
- Mixed-acid fermentation of lignocellulose followed by downstream chemical transformation into ethanol and higher-alcohols (the MixAlco process)

TRANSPORTATION & ETHANOL BLENDING IN THE GASOLINE POOL

- storage tanks
- pipelines & cleanliness
- usage of additives – under what circumstances

SHIP CLEANLINESS

- impact on quality
 - types of ships
- Senior Representative
SGS

Program topics, speakers and schedules published herein are confirmed as at printing time. Please refer to the event's timetable page at www.cmtsp.com for the most up-to-date information.

How You Will Benefit

You will attain a comprehensive grounding in Cellulosic Ethanol Production & Ethanol Blends including

- Cellulosic Ethanol Manufacture, Economics, Technical Aspects
- State of Cellulosic Ethanol Technologies Worldwide.
- Parameters influencing the Economics and Efficiency of Cellulosic ethanol Production from Diverse Crop
- Transportation / Storage of Ethanol & Blending into the Gasoline Pool

Testimonials from previous workshop

VP - SE Asia, Poyry Forest Industry

"Good base knowledge and good contacts. Cellulosic processes were of most value"

GM-Trading, Idemitsu Intl (Asia)

"I could construct many partial info I knew before about ethanol and make some points clear"

Manager, New Bis Devt, ADM Far East Ltd

"Most valuable in terms of understanding status of the technologies & Cellulosic for ethanol production"

Principal Process Engineer, Foster Wheeler Eastern Pte Ltd

"Excellent exposure to new technologies in the fuel market"

Sales Manager, P.T. Sarchem Inter Mitra

"Good understanding on details of alcohol production and the improvement of methods"

Customised Sponsorship Packages Available

This event is an excellent platform to promote your organisation to influential players and investors in the industry. Sponsorship opportunities available include Corporate, Exclusive Luncheon, Cocktail & Documentation sponsor. Exhibition / catalogue display can be arranged upon request. Contact cynthia@cmtsp.com.sg or **(65) 6346 9132**.

REGISTRATION

Next Generation Bio-Ethanol

13 - 14 November 2007 • Geneva

Fees: The full Registration Fee includes cost of all sessions, luncheon, coffee/tea & documentation.

| | | |
|--------------------|-----------------|---|
| | 1 Person | Group fee for 3 or more* (from the same company) |
| Regular Fee | EUR1,195 | EUR895 (MIN SAVINGS OF EUR900) |

* Terms and conditions apply.

TO REGISTER

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TELEGRAPHIC TRANSFER

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TT must include additional EUR18 for Beneficiary's Bank charges. Delegates must bear all bank charges and local taxes (if applicable). Fees must be NETT of ALL charges.

Cancellations, Refunds & Transfers: A full refund will be promptly made for all written cancellations 3 weeks before the meeting. Thereafter, cancellations are not refundable. A substitute may be made at any time.

Photocopy Registration Form to Preserve Brochure Copy. Nov. 2007

CONFERENCE VENUE

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HOTEL

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~ CMT'S 2007 UPCOMING EVENTS ~

2nd BTLtec (Biomass-to-Liquids)

12 - 13 September 2007 • Vienna

*"Next Level For BTL Development
 Towards Commercialisation"*

Next Biofuels Technologies

25 - 26 October 2007 • Beijing

*"Future Processes & Technologies
 Available Today"*

*"Focus: Non Food Feedstock
 - Sweet Sorghum, Jartopha & Biomass"*

2nd Americas SugarTrade & Ethanol 2007

12 - 13 November • Miami

- NAFTA 2008 & market integration – implications on Sugar Trade
- Massive ethanol expansions – impact on pricing, grains, biofuels markets.
- Is a wave of ethanol mergers coming ?
- Cellulosic Ethanol potential - Can corn based producers get in on the game ?
- Can Brazil maintain its lead as major ethanol producer ?
- Mexico - Entering ethanol production

**Top Regional Panel of
 Industry & Key Officials**