



RECAP


from

A Commercial Engineering
Standpoint





U. S. Biofuels

- Federal Goals have been set
 - Federal Mandates Not Set
 - Biodiesel left to the States
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ETHANOL

- Intended to be an Oxygenator
- Political-escape from Foreign Oil
- E-85 Problem

BIODIESEL

- Environmental Drivers
- Diesel-Sulfur Content
 - ---500 ppm to 15 ppm in U.S.
 - ---50 ppm (soon 15 ppm) in Brazil
- Lubricity Problems-Biodiesel will restore at B2 Blend


Biodiesel Mandates

- Oregon--B2 9 Counties August 5, 2009
- Oregon--B2 Entire State October 1, 2009
- Massachusetts--B2 July 1, 2010
- Pennsylvania--B2 January 1. 2010



Biodiesel Research

Grants and research funding for Biofuels in the U. S. depend on ultimately having a commercial or environmental improvement application






Biofuels Feasibility

- Economic Analysis of inputs and Outputs
 - Personnel Required
 - Raw Material Supply
 - Manufacturing Process Definition
 - Marketing
 - Future Expansion
 - Immediate Process Improvement
 - Source of Funds
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PERSONNEL

- **On-site Lab Required for QC**
 - **Lab Manager and staff for 24/7**
 - **Minimum Production 38 to 100 million liters per year**
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Raw Material Supply

- Cooperative
 - Relationship with Farmers
 - Gathering area—250 Km (150 mi.) radius
 - 250 Km radius = 6.0 Hour round trip
 - Be aware of raw material competitors
 - Adequate Storage—Condo Storage
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Integrated Oilseed Crushing

- An economical effective biodiesel operation should include an integrated crushing operation
- The high value output of crushing is 48% protein meal for animal feed
- The demand for protein meal drives the soybean crush required

AUCTION

BIODIESEL REFINERY
www.maascompanies.com



Photos Wayne W. Kubert, MAI

Lender Ordered Collateral Sale
..... January 22, 2009
5 Million Gallon/Yr
B100 Biodiesel Refinery

Call for Complete Information!

Facility Newly Built in 2006-07 • Equipment Selling as a Unit • Currently Located on Leased Premises • Property Served by Rail Siding to Loading Dock
Sale with or without Existing Long-term Favorable Ground Lease • New Owner can Assume Lease and Operate On-Site or Re-locate Equipment to New Plant
Refined, Bleached Soybean Oil Feed • Equipment by DeSmet Process & Technology, Inc (desmet ballestra) of Marietta, Georgia

Terms: 10% Buyer Premium. 1% Broker. Sale Subject to Seller Confirmation. \$100,000 Certified Deposit on day of sale, balance due at closing within 30 days.



Marketing

- Knowledge of livestock numbers
 - Export Opportunities
 - Quality Co-Products—important
 - Search for CO₂ markets
 - Greenhouses
 - Depleted Oilwells
 - Plantations
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Biodiesel Value vs. 48% Protein Meal Value

- **300,300 gallons/day of biodiesel @ \$2.65 per gallon = \$795,795**
- **The biodiesel revenue stream does not include the glycerin**
- **The 5550 MTPD crush will yield 3858.4 MT of soybean meal @ \$346.50/MT* = \$1,336,926.**
- **The 5550 MTPD crush will yield 314.5 MT of soybean hulls @ \$110.00/MT** = \$34,595.**
- **The combined value of the Hulls & Meal is \$1,371,521 vs. \$795,795 for the Biodiesel.**

* The values above for soybean products are based on the Cash Market, WSJ, July 17, 2009.

** Feedstuffs, June 30, 2009

Stainless Steel

- 304 S/S = 18% Ni , 8% Cr, < .08% C
- 316 S/S = 18% Ni, 10 Cr., < .08% C
- 304L & 316L <.03% C
- Alloy is selected by temp and acid/base environment