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Biodiesel Plant Development Seminar

Larry Breeding

Biodiesel Operations

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West Central History

- West Central was incorporated in 1933 in Ralston, Iowa, which is still its headquarters.
- West Central is governed by 9 elected board members and 2 appointed associate board members.

West Central History

West Central’s full-service 3,500+ farmer-owned cooperative is headquartered in Ralston, Iowa. West Central markets products throughout most of North America and to several other foreign destinations.

Operating divisions:
- Grain, agronomy, feed, soy processing & administration.
Annual Operations

- West Central employs 228 people
- Grain – markets 72 million bushels
- Agronomy – joint venture with Agriliance
- Feed – processes over 115,000 tons
- Soy Processing – processes 8.4 million bushels of soybeans and processes 90 million pounds of soy oil into methyl esters

Sales History (millions)

<table>
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<tr>
<th>Year</th>
<th>Sales (millions)</th>
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<tr>
<td>2000</td>
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<tr>
<td>2001</td>
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SOY PROCESSING

- SOY BEANS
  - Meal
  - SoyPLUS®
  - Flour
  - Oil
  - Lecithin
  - Biodiesel
  - Other Oil Sources
  - Glycerin

Soy Nutrition Products

- SoyPLUS® (Dairy cow protein)
- SoyChlor® (Dairy cow treatment)
- Lecithin
- Soy Flour
West Central Biodiesel Plant

West Central’s 12 million gallon capacity biodiesel plant is the first continuous-flow biodiesel plant in the United States. The biodiesel plant processes 90 million pounds of the co-ops soybean oil into biodiesel and other methyl ester products each year.

Why Biodiesel?
- Reduce Emissions
- Operational Benefits - Lubricity
- Energy Balance
- Expanded Use of Soy Crops
- Nation’s Energy Goals

Reduce Emissions
2000: Biodiesel becomes only alternative fuel to meet EPA Health Effects Testing under the Clean Air Act
- Carbon Monoxide: 50% lower than petroleum diesel
- Particulate Matter: 30% lower than petroleum diesel
- Hydrocarbons: 93% lower than petroleum diesel
Operational Benefits
- B2 has up to 66% more lubricity than #2 diesel
- Exceptional lubricity = longer engine injector life
- Superior engine performance compared to other alternative fuels
- Use in unmodified diesel engines
- Doesn’t require specialized mechanics to service engines

Energy Balance of Biodiesel
- Units of energy produced for 1 unit of energy consumed *
  - Petroleum 0.88 units produced
  - Ethanol 1.62 units produced
  - Soy Biodiesel 3.24 units produced

* USDA

Expanded use for Soy Crops
1 bushel of soybeans creates 1.4 gallons of pure biodiesel (B100)

Nation’s Energy Goals
- Increase energy independence with a domestically produced renewable resource
USES FOR BIODIESEL

- U.S. Military
- Underground Mining
- School Buses
- Home Heating
- Agricultural Sector
- Construction
- Municipality Fleets
- Ferries

RENEWABLE ENERGY GROUP

- Build turnkey biodiesel plants
- Assist in site selection
- Process design and engineering
- Construction and installation
- Computerized process controls
- Stringent process safety management

RENEWABLE ENERGY GROUP

- Laboratory set-up
- Safety training
- Real-world production training
- Start up services
- Research and Development
- Updates on process
MANAGEMENT

- General Manager
  - Manage and oversee plant administration and operations
  - Implement and oversee business plan
  - Direct, promote and coordinate personnel
  - Maintains relationships with investors
  - Includes financial and accounting systems

- Production Manager
  - Plan and schedule biodiesel production
  - Oversee Quality control
  - Manage all facility and equipment maintenance
  - Assist with budgeting and control labor costs and plant expenses
  - Implement processing changes, new technologies and other production projects

PROCUREMENT

- Chemicals
  - Procure all basic chemical inputs needed for production, including catalyst
  - Negotiate for discounts where obtainable

- Fats and Oils Feedstock
  - Provide analysis and audit feed stock suppliers
  - Purchase feed stocks to meet production schedules
  - Provide transportation logistics and scheduling of feed stock deliveries

SALES & MARKETING

- Biodiesel
  - Transportation and logistics
  - Market analysis of biodiesel supply & demand
  - Invoicing and accounts receivable management
  - Market access to West Central distribution channels

- Co-Products
  - Glycerin
  - Fatty Acid

SUMMARY

West Central

- Marketing/Procurement Value Package
  - National and International customer base
  - Multiple feed stock origination
  - Extensive distribution network
  - Nationally recognized brand name
- Experience
  - Producing and marketing biodiesel since 1996

REG

- Innovative Technology
  - Continuous flow process
  - Continual research and development
  - Environmental systems to insure low emissions
  - Highest safety standards
  - Cost effective processes
- Experience
  - Design, build and operate the largest biodiesel plants in North America
Thank you