

So You Want to Make Some Money in Biodiesel?

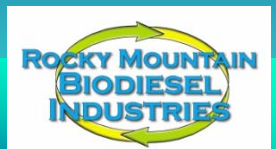
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Presented at:

**Local Biodiesel: A Biodiesel Coop Conference
Strategies For Community-based Biodiesel Groups**

July 13 – July 15, 2007 – CSM, Golden, Colorado

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Outline

- Why Biodiesel?
- Marketing
- Finance
- Regulations
- Technology Choices
- Sidestream Management
- Facility Considerations
- Quality Assurance
- Strategic Planning
- Case Analysis

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Framing your Mission

- Why are you entering the biodiesel business?
- If you chose not to enter the biodiesel business, What else might you do with your resources?
- Can you point to someone who is successfully doing what you intend to do?
- How much risk do you want to take?
- What values are important to you?

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Goal Setting

- What are your environmental goals?
- How Green can you afford to be or not be?
- What Financial objectives do you want (or have) to meet?
- What growth do you anticipate or desire?
- How will you measure your “Success”?

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Marketing 101

- Understanding the “4P’s”
- Product – What product or services will you offer?
- Place – Where/How will you offer your product or services?
- Price – How will you set and manage your price?
- Promotion – How will you position and promote your product or services?

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Products and Services

- Biodiesel
 - Production of B100
 - Blending for IRS credit – B99.9
 - Blending for end users – B5, B20, B20+
- Fuel Distribution
 - Trucks – “Rolling Stock”
 - Tanks
 - Blending
- Consulting
 - Educational Outreach
 - Design/Build

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Place

- Wholesale from production plant
 - Scale
 - Relationships
- Retail from plant
 - Scale
- Delivery
- Retail Station
- Coop Supply

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Price

- Diesel fuel is a commodity
- Biodiesel input costs are minimally tied to the price of petroleum
- Biodiesel price is tied directly to the price of petroleum for most consumers
- “Floating” with the price of diesel is common
- Offering contract pricing that accounts for both issues may be a viable strategy
- Understand taxes and margins in your proposed supply chain

Promotion

- If sold as into diesel market as a commodity, promotion is essential – price dictates sales potential
- If sold at a premium over petroleum diesel, differentiation is essential.
- FAQ's for new users are helpful
 - ASTM understanding and compliance
 - Blending and Handling – DOE Guidelines

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Financial Planning

- Capital Costs vs. Operating Costs
- Funding Sources
 - Private Investors
 - Public Lenders
 - Grants
 - Internally generated
- Fixed vs. Variable costs

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Breakeven Analysis

July 11, 2007

Input

Direct Material Costs

Feedstock	per lb	0.1770	\$/gal bio	1.724	1750 gal per batch	input oil
Methanol	per gal	1.3650		77.0%	reaction yield	
KOH	per pound	0.6500	0.390		385 gal per batch	22%
Phosphoric Acid	per pound		0.127		262 lbs per batch	18 g/l
Additives	per gal	40.0000	0.010		not used	
Total Direct Materials			2.251		biocide	

Other Variable Costs

Royalty	per gal		0.000			
NBB Royalty	per gal		0.010			
Sales Rep Commission	per gal	0.0000	0.000			
Wash Water Disposal	per gal	0.0600	0.045		75% of bio produced	
Glycerin Disposal	per gal	0.0000	0.000		plus 1st water wash	
Total Other Variable Costs			0.055			

Total Variable Costs

2.306

Pricing/Revenue

Biodiesel	per gal	2.200
Fed Tax Rebate	per gal	0.500
Total Revenue	per gal	2.700

Contribution Margin

per gal 0.394

Fixed Costs

per month \$ 25,000

Breakeven Gallons

per month 63,447

Gallons of feedstock required

per month 82,399 at assumed reaction yield

Gallons of feedstock required

per month 109,865 collection yield 75%

Financial Planning

- Sales Plan
- Production Plan
- Pro Forma Financial Statements
 - Income Statement
 - Cash Flow
- Tracking Mechanism
- Periodic Review of Progress
- Contingency Plan

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Regulatory Requirements

- Do your Homework Upfront!
- Small Business Administration – www.sba.gov
- Federal Requirements - (not an all inclusive list)
 - EPA registration
 - NBB Membership
 - FEIN – Withholding Tax
 - IRS Blender Application
- State Requirements — (depends on your location)
 - Fuel Tax License
 - Withholding Tax
 - Renderer's License
 - Air Emissions Permit – Methanol and Boilers
 - May be others...

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Technology Choices

- Choices are based on many factors:
 - Economic – capital and operational costs
 - Availability – accessible to you
 - Environmental – local conditions and your goals
 - Complexity – needs to be manageable
- There's lot's of ways to make ASTM quality biodiesel!

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Reactions

- Recipe
 - Feedstock
 - KOH or NaOH
 - Methylates
 - Acid Catalysis
- Process
 - Batch or Continuous
 - Heat Source
 - Mixing
 - Separation

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Washing

- Washing in wash tanks not reactors
- Continuous Wash
- Misting
- Bubbling
- Agitation (pump or paddle)
- Ion Exchange Resins
 - Magnesol
 - Amberlite

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Drying

- Flash Evaporation
- Bubbling
- Spray
- Thin Film Evaporation
- Salt Towers

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Polishing/Storage

- Filtering finished fuel
- Maintaining quality through delivery
 - Condensation
 - Bacteria
 - “Dreaded White Stuff”
- Avoid cross contamination in pumps and hoses
- Maintain appropriate storage temperature

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Tank Considerations

- Size all tanks based on your volume plans
 - Incoming Feedstock
 - Glycerin Staging
 - In Process tanks – wash, dry, methoxide mix
- Material compatibility issues
- Heated tanks
- Incoming feedstock and outgoing fuel tanks should be at least one week supply

Pump Considerations

- Different types of pumps are suited for different applications
 - Trash pumps
 - Diaphragm pumps
 - Peristaltic Pumps
 - Centrifugal Pumps
 - Vane Pumps
 - Gear Pumps
- Get the right pump for the job

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Methanol Recovery

- To Do or Not to Do?
- Reaction desires anhydrous methanol
- Environmentally and Financially compelling
- Methods
 - Simple Distillation – pot still
 - Vacuum Distillation – using lower than ambient pressure
 - Fractional Distillation – using a fractionating column - packing
 - Reflux – reintroducing “overhead” liquid to the column
 - Flash Evaporation – not really distillation – vaporization below the boiling point due to reduction of pressure
- Distillation can be very capital intensive
 - Heat requirement means boiler and fuel
 - May include vacuum equipment as well

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Sidestream Management

- Wastestream, sidestream, or co-product?
- Glycerin
 - Can be refined to crude or pharmaceutical grade
 - Potential uses – fuel, feed, compost, anti-freeze
- Washwater
 - About 1 gallon generated per gal of B100 produced
 - High in BOD
- Spent Ion Exchange Resin
- Get this lined up before you start generating it!

Facility Considerations

- Zoning/Permitting
- Power
- Water
- Containment
- Fire Suppression
- Ventilation
- Truck Access
- Maintenance

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Quality Assurance

- Bad Fuel is Bad for Business
- In-House vs. Third party testing
 - Some level of both is required
 - Budget accordingly
- “The Big Five”
 - Free and Total Glycerin
 - Water and Sediment
 - Cloud Point
 - Flash Point
 - Sulfur

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Strategic Planning

- SWOT Analysis
- Long Range Financial Planning
 - Annual budget process
 - Three Year Forecast
- Goal Setting
- Management By Objectives (MBO)
 - Measurable
 - Mutually agreed upon
 - Periodically reviewed

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SWOT - Strengths

- Current customers want 40K gallons/month
- Huge market potential for increased sales
- Production competence
- Oil industry experience
- Affiliation with other plants

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SWOT - Weaknesses

- Cash flow is anemic
- Too many things to do – not enough time
- Site may not be suited for high volume production
- Relationship between RMBI local community is strained

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SWOT - Opportunities

- Vertically integrate business
- Greatly increase production and sales
- Promotion of RMBI as a quality regional producer
- Enhance relationship between RMBI and local community
- Consolidate with another plant

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SWOT - Threats

- Cost increases in raw materials
- Lots of competitors – more on the way
- Permitting requirements are getting tougher
- Perceived quality issues with biodiesel producers
- Material handling issues – caustic, methanol, oil

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Questions?

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