

Biodiesel Production - A Meat and Potatoes View

The Collective Biodiesel Conference

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by

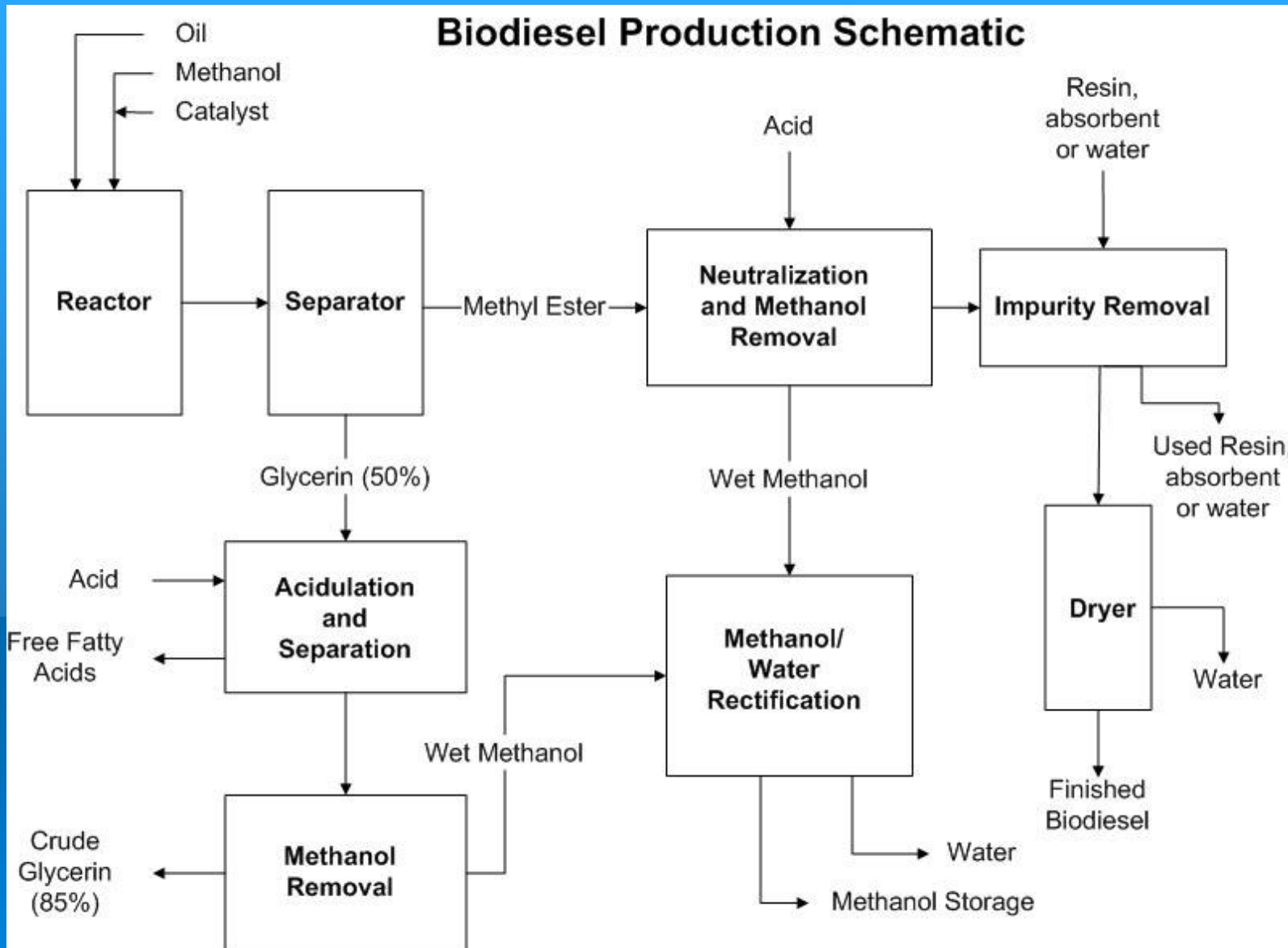
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Basic Biodiesel Decisions

Five most important questions

- What technology do I use?
- Where do I get my feedstock and what does it cost?
- What am I going to do with my biodiesel and byproducts?
- Can I make it safely and protect the environment while still making a profit?



Biodiesel Technologies

What technology do I use?

➤ Basic technology – mixing + catalyst + washing

- Versatile, batch or continuous, cheap

➤ New emerging technologies

- There always is a trade off
- New type of mixing, different type of catalyst, different way of removing impurities
- Technologies from other processes

Biodiesel Feedstocks

Where do I get my feedstock and what does it cost?

- Seed or plant oil
- Animal fats
- Waste Vegetable Oil (WVO)
- Other...
 - Off spec, waste products, opportunistic

Feedstock Type Comparison

Animal fats

- Less expensive
\$0.34/lb average
- Higher sulfur
- FFA 5-50%
- Less available
- Higher gel temp.
- More stable
- Lower Sterol Glycosides

Seed oil

- More expensive \$0.42/lb average
- Lower or no sulfur
- FFA <5%
- More plentiful
- Lower gel temp
- Less stable
- Higher Sterol Glycosides

Biodiesel and Byproducts

What am I going to do with my biodiesel and byproducts?

- Biodiesel for your own use or to sell
 - ASTM D6751, Government regulations, incentives, purity level of products, taxes
- Byproducts for your own use or to sell
 - Government regulations, purity level of products, disposal concerns

Production and Regulations

Can I make it safely and protect the environment while still making a profit?

- Knowledge of the process, technology, and chemicals used
- Understand the safety concerns of the process and equipment
- Research the government and environmental regulations – local, state, federal

Problem Solving Tips

- What goes in must come out
- Do mass balances
- Make test batches in the lab
- Make it wrong in the lab
- Visual appearance - first check of quality
- Know the affects of temperature on your product, process and reactions

Problem Solving Tips

- Free Fatty Acid (FFA) can be a problem
- Minimize water in reaction phase
- Understand the process and equipment
- Feedstock determines the biodiesel properties
- Soap produced is difficult to remove
- Sample and test frequently when troubleshooting

Some Final Advice

- Details do matter
- Feedstock preparation is so important
- Everything in the process is inter-related
- Ask an expert – it will save you time and money in the long run
- Know your market and customer
- Do what is best for the biodiesel industry

What is on the Horizon?

- Solid catalyst
- New feedstocks
- Small niche plants
- Low energy plants
- Integration with other processes and plants
- New or different technologies to make biodiesel

Resources



Rudy Pruszko, John Van Gerpen, Davis Clements, Brent Shanks, and Gerhard Knothe, *Building a Successful Biodiesel Business*

Available from
<http://www.biodieselbasics.com>

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