Biodiesel vs. Bioethanol

**Biodiesel:**
- Fuel made from oil plants/sources
- Produced by transesterification
- Usually blended with petroleum diesel fuel
- Few diesel engine modifications are required

**Bioethanol:**
- Fuel made by fermenting sugars in biomass materials such as corn
- Usually used as a gasoline additive
- Requires flex fuel engines

“Let’s not be cruel, use alternative fuel!”
**What?**

Biofuels - Fuels produced from renewable resources such as plant biomass or vegetable oils. These fuels are in the form of alcohols, esters, ethers, and other chemicals.

**Why?**

- It is a priority to find alternate sources of energy as the supply of petroleum decreases
- Cheaper to use and don’t harm the environment
- Reuses waste oils and turns them into a cleaner burning fuel

**Production**

- A processor running a batch/day will meet Testa’s needs
- This overshoots the target production allowing for unscheduled down time

**Volumes of Reactants and Products:**

<table>
<thead>
<tr>
<th>Required Biodiesel</th>
<th>1200 gal/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactants</td>
<td></td>
</tr>
<tr>
<td>oil</td>
<td>1470 gal/week</td>
</tr>
<tr>
<td>Methanol</td>
<td>367.5 gal/week</td>
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<tr>
<td>KOH (90% Pure)</td>
<td>52 kg/week</td>
</tr>
<tr>
<td>Products</td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>184 gal/week</td>
</tr>
<tr>
<td>Biodiesel</td>
<td>1654 gal/week</td>
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</tbody>
</table>

*The biodiesel recipe must be fine-tuned based on available waste oil. For calculations a recipe of 22 vol% Methanol, 78 vol% Waste Oil, and 36g KOH/gal Oil was used.*

**Murphy’s Machines**

- Has knowledge of biodiesel processing and great customer service
- Sells plans to a 500 gallon biodiesel processor
- Estimates an initial investment of $5000/processor and $0.03/gallon biodiesel made