Renewable Chemicals and Fuels

BIO Pacific Rim Conference

October 2012

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Multiple Feedstocks; Proprietary Technology; Numerous End Markets

Feedstock

Proprietary Technology

Bio-Cracker

GIFT® Separator

Direct "drop-in"

Target Markets

Green Processing
### Seven Strategic End Markets; Strong Customers

<table>
<thead>
<tr>
<th>Specialty Chemicals</th>
<th>Gasoline Blendstock</th>
<th>C4 Market</th>
<th>Bio-PX/PET</th>
<th>Bio-Jet</th>
<th>Hydrocarbon Fuels</th>
<th>Co-Product Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sasol</td>
<td>VP Racing Fuels</td>
<td>Toray</td>
<td>Coca-Cola</td>
<td>United</td>
<td>Total</td>
<td>Purina</td>
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<tr>
<td>Sasol off-take and distribution agreement in place</td>
<td>Mansfield agreement, with their 900+ supply points, will initially focus on Marine</td>
<td>LANXESS 10-year exclusive global supply agreement in place</td>
<td>Coca-Cola partnership to create fully renewable PET for plant-based packaging</td>
<td>U.S. Air Force’s (USAF) initial volume delivered with testing underway</td>
<td>Mansfield agreement, with supplier network in place, will support regional distribution rollout strategy</td>
<td>Purina, the premier brand owner, partnership to maximize value of co-products</td>
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<td>Accounts for majority of Luverne and Redfield capacity</td>
<td>VP Racing Fuels to evaluate a wide array of fuel applications</td>
<td>Negotiating terms for Canadian supply agreement</td>
<td>Toray off-take agreement to create renewable Paraxylene for fibers and films</td>
<td>USAF interested in energy security / alternative jet fuel supply</td>
<td>Exploring how to enhance the value of isobutanol Distillers Grains (iDGs™ or animal feed)</td>
<td></td>
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<td>Sasol has begun customer sampling of Gevo’s isobutanol</td>
<td>LOI with Total to evaluate isobutanol as a second-gen biofuel blendstock</td>
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<td></td>
<td>USAF test flight end of June</td>
<td>United Airlines LOI in place</td>
<td></td>
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</tbody>
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Source: Company materials, IEA, EIA and Nexant
How We Produce Isobutanol (GIFT®)

✨ Our patented, proprietary yeast produces only isobutanol from carbohydrates.

✨ Our patented Gevo Integrated Fermentation Technology® (GIFT®) continually separates isobutanol during fermentation

### Standard Fermentation Process

**START:** Feedstock

- Fresh & Recycled Water
- Jet Cooker
- Steam
- Enzymes
- Fermentation
- CO₂

**New Isobutanol Recovery**

- Isobutanol
- Recovery
- Animal Feed
- Drum Dryer
- Syrup
- Evaporation System
- Water
- Distillation System
- Thin Stillage
- Beer
- Wet Grain
- Molecular Sieves
- Finished Product

**BEFORE**

**AFTER**

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Downstream Hydrocarbons: Unlimited Potential

Green Processing

- Diesel Blendstock
- Jet Fuel Blendstock
- Ethyl t-Butyl Ether
- Paraxylene to PET & Other Polymers
- Poly-Isobutylene & Butyl Rubber
- Methyl Methacrylate
Guiding Principles

Feedstocks

- Food First (nutrition/protein)
- Use carbohydrates for feedstocks
- Use lignin (the woody part) for energy
- Land quality can’t degrade
- Can’t pollute the water

Processing and Products

- Reduce and eliminate toxic trace chemicals
- Safe processing for people and environment
Feedstock Discussion

Corn Starch & Sustainable Corn
- First two Gevo plants are planned to be based on corn starch as feedstock (lowest cost today)
- Initial results from UM study show that corn supplied to Gevo has a much lower carbon footprint than US avg – we are developing a position for “sustainable corn”

Biomass/ Cellulosic Feedstocks
- Gevo continues to work with leaders in the conversion of biomass to fermentable sugars
- Two active projects
- High capital cost for conversion of biomass to fermentable sugars
Measuring the carbon footprint of Gevo, Inc's corn supply

A survey based assessment of the potential for delivering a low carbon corn grain feedstock for biofuels

A report submitted to Gevo, Inc. by
John Sheehan
Jaafir Coulter
Kris Moncada
Craig Schaeffer
Jason Hill
Mika Huisinga
Keith Paustian

University of Minnesota
Gevo
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Colorado State University

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Corn Yields

Bu per acre

158
172
183
193

US
State of MN
Rock Co
Gevo

"The closer we zoom in on the region, the better the picture gets."

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Overall Carbon Footprint – US avg. vs. Gevo

The overall carbon footprint:

- US: 371 gCO2 eq per kg grain
- Gevo: 233 gCO2 eq per kg grain

- Depreciable capital: 160
- Electricity: 80
- Natural gas: 59
- LPG: 36
- Farm & transport: 22
- Lime: 20
- Ag chem: 57
- Fertilizer: 104
- Soil N: 0.00
- SOC: 0.87

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2010 Corn Use

~13 Billion Bushels
86% uses no irrigation
~1% is directly used as food
>60% produced using soil conservation practices

Source: USDA National Agricultural Statistics Service and National Corn Growers Association
We believe our technology will allow us to make isobutanol with many cost-competitive carbohydrate source, not just corn

- Crop residues
- Forest products
- Wood
- Energy Crops
- Waste product residues

More biomass should increase the available pool of carbohydrates and keep costs relatively low.