Georgia Organic Recycling
New Organic Program
Coming To Georgia in 2015

First Generation Energy and M-PASS Environmental (MPE) partner together to bring commercial organic recycling to Georgia.

First Generation will operate the two commercial facilities (Atlanta & Augusta) and MPE will provide all market related services:

- Transportation & Logistics
- Recycling Agreements
- Account Management & Customer service
- Sales & Marketing Efforts
What is Biogas Technology? (A Brief Overview)

Organic Waste to Energy
Biogas

• Biogas is Generated Through Controlled Anaerobic Digestion of Organic Materials

• Alternative to Fossil Fuel

• Methane Rich Gas Can Be Used to Fuel a Combined Heat and Power (CHP) System or Upgraded to Pipeline Quality Natural Gas

• Biogas Uses
  - Electricity
  - Thermal Energy
  - Vehicle Fuel
  - Natural Gas Pipeline
How is Biogas Created?

1. **Hydrolysis**
   - Substrate input to pre-treatment

2. **Acidogenesis**
   - Acidification phase
   - Substrate input to anaerobic fermentation

3. **Acetogenesis**
   - Acetic acid formation
   - Anaerobic fermentation (in 4 phases)

4. **Methanogenesis**
   - Methane formation
   - Output: Digested substrate

**Composition of Biogas**

<table>
<thead>
<tr>
<th>Component</th>
<th>Fraction</th>
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</thead>
<tbody>
<tr>
<td>Methane</td>
<td>40 - 75%</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>25 - 55%</td>
</tr>
<tr>
<td>Water vapor</td>
<td>0 - 10%</td>
</tr>
<tr>
<td>Trace gases</td>
<td>0 - 5%</td>
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</tbody>
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Agricultural Fertilizer
EISENMANN’S TECHNOLOGY

Eisenmann Developed a Proprietary Two-Stage Anaerobic Digestion Plant

✓ Wet – Low Solids
  • Ag/Manure
  • Industrial
  • Municipal

✓ Dry – High Solids
  • Ag Residue
  • Institutional/Commercial
  • Municipal
  • Industrial
Simplified Process Flow Diagram
Plug Flow High Solids Anaerobic Digestion System
Main Digester

EISENMANN’s main digester for substrates with high solids and dry matter content

- EISENMANN expertise
- High solids fermentation by means of plug flow process
- Mesophilic (80 to 104 F) or thermophilic (120 to 140 F) digestion process
- Horizontal, rectangular digester
- Precast concrete components
- Horizontal agitator shaft for mixing
Utilization of the Digestate

Digestate produced can be utilized as valuable organic soil amendments that can replace fossil fuel based fertilizers (containing nitrogen, phosphorus, potash and sulfur)

- **Separation of solids from the digestate**
  - Press cake – compost (dry content 30 - 35%TS)
  - Press water – liquid fertilizer (dry content 2 - 15% TS)
- **Spreading on fields and grassland**

EISENMANN also offers a process for treating digestate to produce dry fertilizer and dischargeable water
Combined Heat and Power (CHP) Plant

Biogas-driven combustion engine powers generators that produce electricity

Functions…

Generation of electricity – to be fed into the power grid
Waste heat – used to heat the digester and industrial processes
Organic waste makes up >25% of materials sent to landfills in US

Eliminating methane emissions from compostable organics is equivalent to removing 20% emissions from US coal fired power plants

Strained Municipal budgets are driving State and Local Governments to develop and implement new policies to promote organics diversion

Chart source: USEPA 2010 Facts and Figures – Municipal Solid Waste In the United States
FIRST GENERATION ENERGY
AUGUSTA SITE PLANS

18 acre site selected and under contract
Mike Padgett
HWY

.5 miles from Starbucks plant which will provide 75% of feedstock

Other suppliers: (LOI)
Fort Gordon, FLP

Power Purchase Agreement with Green EMCs

Site Plan Approved
FIRST GENERATION ENERGY
CONYERS SITE PLANS

8 acre site Old Covington Road
Pratt Industries
MRH Supply of 75% of Feedstock
Golden State Foods
National Grocery Chain
Power Supplied by Snapping Shoals
Current Status

- Permits received in July 2014 for both facilities by EPD.
- Pads are set and construction targeted to begin September 2014.
- Both sites are on the same timeline.
- Plan is to begin receiving material end of summer to early fall 2015. Must have waste for incubation period.
Programs and Capabilities

First Generation:

Processing Capabilities - 65,000 Tons/Year/Facility

- Limited Capacity so those signing up in advance will receive guaranteed capacity

- De-Packaging Capabilities
Programs and Capabilities Continued

M-PASS Environmental:

Bulk Service

Cart Service
M-PASS Programs Continued

Waste & Recycling Audits

- Historical Review

- Independent Viewpoint - No Ties to Landfills or Recycling Facilities

Team of Experienced Industry Experts

- Detailed Analysis

- Site Survey & Assessment

Recommendations & Implementation
M-PASS Environmental will be happy to send you a copy of this presentation or provide additional information to you.

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