**What is a Biogas Digester?**

**Biogas.** (n) gas generated from anaerobic fermentation of organic matter: combustible methane (CH$_4$), inert carbon dioxide (CO$_2$) and corrosive hydrogen sulfide (H$_2$S).

**Digester.** (n) sealed tank heated by solar hot water to host biogas and fertilizer generation.

**Why Biogas?**

- **Stored Solar Energy**
  There is no other proven renewable energy approach that can simply and economically produce a storable fuel gas.

- **Transition**
  Biogas digesters are an effective way to connect with a current solar economy, as opposed to an economy solely fueled by fossil fuels.

- **Efficiency**
  Money, time, and energy are already being spent to treat organic material, why not extract value in the process?

- **Opportunity**
  Small-scale biogas digesters are a relatively under-developed sector for small farms, individual households, integrated communities, and many agricultural applications.

**How does it work for you?**

The feedstock is mixed/shredded with water to a slurry and added to the digester on a regular basis (automation features are available). Methane-containing gas and high-grade liquid fertilizer are produced continuously once the archaea culture has been established. The gas is scrubbed free of H$_2$S and then can be used for:

- cooking
- heating
- lighting
- running an internal combustion engine
- refrigeration

The 1m$^3$ domestic models are made from plastic tanks and are delivered ready for use.

The larger digesters are cast underground with concrete using a steel mold. The fixed-dome gasholder fits within the cast digester and provides hydraulic gas pressure that can be piped up to one kilometer.

**Quick Facts:**

- 100 billion lbs. of US food production is wasted. That’s about $5.6 billion Dollars in biogas potential!
- fertilizer from the digester produces crops with 8-12% more yield than those fertilized with manure alone.
- during 2006 in Sweden, 54% of gaseous fuels used in vehicles was biogas.
Which size is right for you?

- Domestic household (1m³)
- Small farm (3-10m³)
- Integrated community (10-100m³)
- Agro-industrial plant (100-2000m³)

High Calorie Feedstocks

<table>
<thead>
<tr>
<th>Size of Biogas Plant</th>
<th>Daily Feedstock Kg</th>
<th>Approximate Biogas Yield m³</th>
<th>Energy Value (BTUs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 m³</td>
<td>0.5</td>
<td>0.3</td>
<td>6600</td>
</tr>
<tr>
<td>1m³</td>
<td>1</td>
<td>2</td>
<td>13,200</td>
</tr>
<tr>
<td>3m³</td>
<td>3</td>
<td>7</td>
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<tr>
<td>6m³</td>
<td>6</td>
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<td>8m³</td>
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<td>21</td>
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<td>10m³</td>
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<td>20</td>
<td>129,600</td>
</tr>
<tr>
<td>100m³</td>
<td>100</td>
<td>200</td>
<td>1,296,000</td>
</tr>
</tbody>
</table>

Types of Feedstocks:

High Calorie:
- Food Scraps
- Starches
- Sugars
- Fats/Oils
- Over-ripe fruits
- Coffee/Tea leaves
- Flour
- Spoiled grain
- Rhizomes
- Algae
- Water Hyacinth

Legacy of Biogas

Anaerobic archaea are one of the oldest life-forms on Earth and have been converting organic matter into methane and other gases (biogas) for millions of years. The dwindling natural gas deposits around the Earth are nothing other than byproducts of these life-forms from the era of the dinosaurs. Human-created Biogas Digesters are a long standing legacy of Asian village technology and are also well-developed in the European Union.

Living Arts Systems stands on the shoulders of a hundred years’ worth of Chinese fixed-dome, hydraulic-pressure digester development. We provide for North America an extremely refined, scaleable, and accessible digester. The process is simple and old, the application is cutting-edge and new.

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“...the most valuable of all arts will be the art of deriving a comfortable subsistance from the smallest area of soil.”
—Abraham Lincoln, 1859