

# WHAT IS A BIOGAS DIGESTER?

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

**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  $\text{H}_2\text{S}$  and then can be used for:

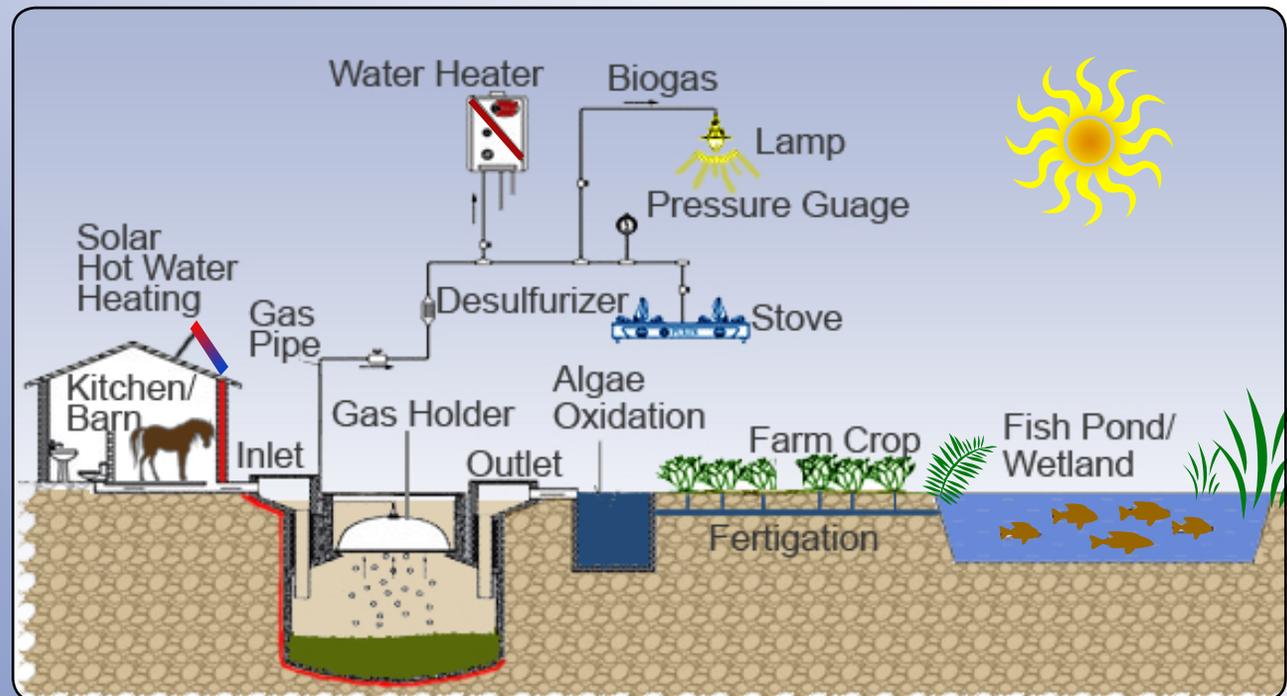
- cooking
- heating
- lighting
- running an internal combustion engine
- refrigeration

The  $1\text{m}^3$  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 (1m<sup>3</sup>)
- Small farm (3-10m<sup>3</sup>)
- Integrated community (10-100m<sup>3</sup>)
- Agro-industrial plant (100-2000m<sup>3</sup>)

## HIGH CALORIE FEEDSTOCKS

Size of Biogas Plant	Daily Feedstock		Approximate Biogas Yield		Energy Value (BTUs)
	Kg	lbs	m <sup>3</sup>	ft <sup>3</sup>	
0.5 m <sup>3</sup>	0.5	1	0.3	11	6600
1m <sup>3</sup>	1	2.21	0.6	22	13,200
3m <sup>3</sup>	3	7	2	72	43,200
6m <sup>3</sup>	6	13	4	144	86,400
8m <sup>3</sup>	9	21	5	166	99,600
10m <sup>3</sup>	10	20	6	216	129,600
100m <sup>3</sup>	100	200	60	2160	1,296,000

## TYPES OF FEEDSTOCKS:

### High Calorie:

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

### Traditional:

- Manure from any animal
- Municipal or Domestic Sewage
- Leaves
- Grass
- Straw



# 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.



(The mold to cast 3, 6, 8, and 10 cubic meter digesters)

## CONTACT US

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LIVING ARTS SYSTEMS



# BIOGAS DIGESTERS

Harnessing  
 Nature's  
 Ancient Process  
 for  
 Energy and Fertilizer

"...the most valuable of all arts will be the art of deriving a comfortable subsistence from the smallest area of soil."

—Abraham Lincoln, 1859