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### **Biogas From Sewer**

Biogas is a fuel gas made from sewer and biomass such as food waste, grass and straw, sewer etc. during the anaerobic fermentation process.

Biogas contains about 55% - 70% methane (CH<sub>4</sub>), and some carbon dioxide, some water, some hydrogen some carbon monoxide and some hydrogen sulfide (H<sub>2</sub>S).

The heat value of biogas is 5142 Kcal/m<sup>3</sup>

In the Digester, conditions needed for biogas production are:

- 1- Strict absence of Oxygen.
- 2- Temperature between 8 – 65 Deg. C. Higher the temperature the more active methane bacteria, and the higher biogas production.
- 3- Neutral or slightly alkaline environment, a pH value between 6.8 and 7.5

For a 10 m<sup>3</sup> biogas digester plant to keep a 5 m<sup>3</sup>/d biogas production, 150 kg cow manure is needed daily.

The liquid from biogas plant can be recycled.

Biogas residue is good organic fertilizers.

Raw material needed to produce 1 cubic meter biogas:

Cow Manure 5.26 kg dry = 30.96 kg fresh

Chicken Manure 4 kg dry = 13.34 kg fresh

Human Manure 3.33 kg dry = 16.67 kg fresh

For more information visit PUXIN website

For production of 1 MW from a digester, approximately 200 Tons of sewer (human manure) daily is needed.

## *Our Offer*

If the environmental problem of sewer is solved by converting sewage into biogas or electricity, it will become a source of income and help the environment.

Here, by showing basic pictures and description, we propose a system for sewage to produce electricity, agricultural and best fertilizer.

For detailed explanations, please visit CHAMCO and PUXIN websites, but in the following pages a brief description of different options is explained.

First, a small system for a single home, residential unit that is installed instead of a sewage well or septic tank.

Second, for several residential units or apartments that replace sewage wells or septic tanks with a system to produce biogas or electricity.

This system can be used in cattle farms or chicken farms to generate electricity from animal waste.

Third, a plan to convert the city's sewage into biogas and electricity. Ninety percent of the facilities for this plan is installed, underground in the parks adjacent to the towns, and only a small room where the control and management system is located is visible.

*Small system for a single home, residential unit that is installed instead of a sewage well or septic tank*

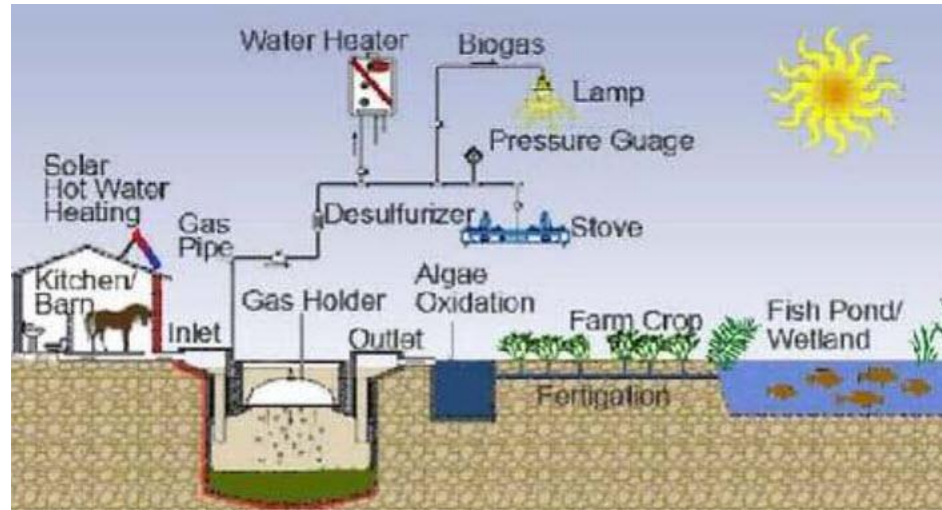
1. Product Description (Digester color is in black)



1.feeding pump, 2.digester, 3.slurry pool, 4.biogas stove

*System for several residential units or apartments that replace sewage wells or septic tanks with a system to produce biogas or electricity.*

This simple picture shows how a digester works



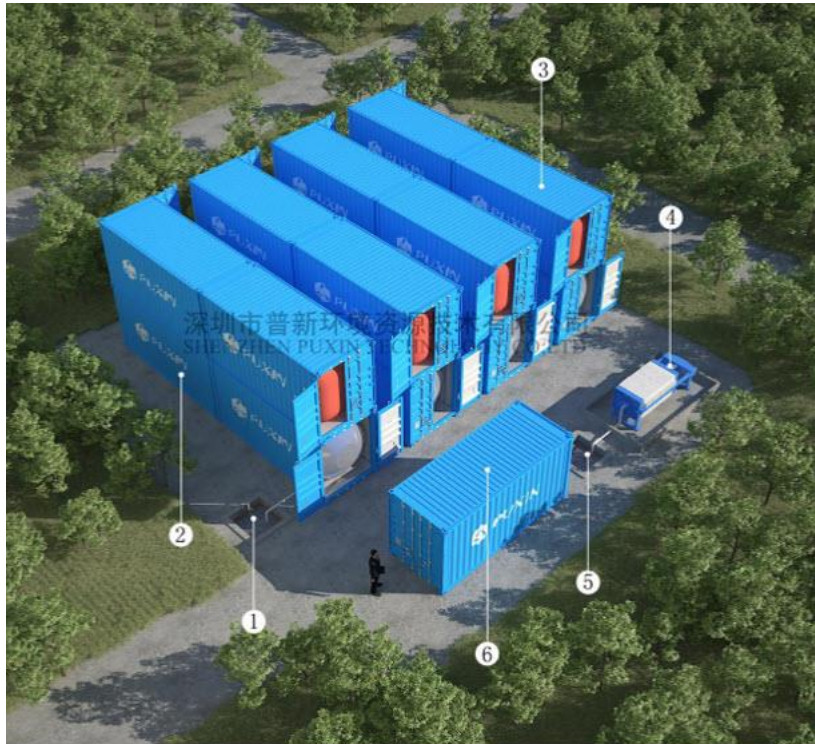
When amount of daily sewage is specified, a system will be designed and offered.

This YouTube video shows the construction procedure of this digester.

<https://www.youtube.com/watch?v=1nHV6QirISQ>

## *Container System*

The container system, which has all the components of the a digester inside the container is ideal for fast installation next to apartment buildings, residential housing complex, hotels, entertainment centers, etc. of any size, which require one or many containers.



1. Concentrated sludge tank, 2. Constant temperature anaerobic reaction tank,
3. Biogas storage device, 4. Digested sludge dewatering device,
5. Digested sludge pool, 6. Heating system and control room

## *System for big Cities*

Adding multiple digesters underground in the parks of cities, is our ways to build sewer system, where the land area expensive.

