

PUXIN family size biogas system

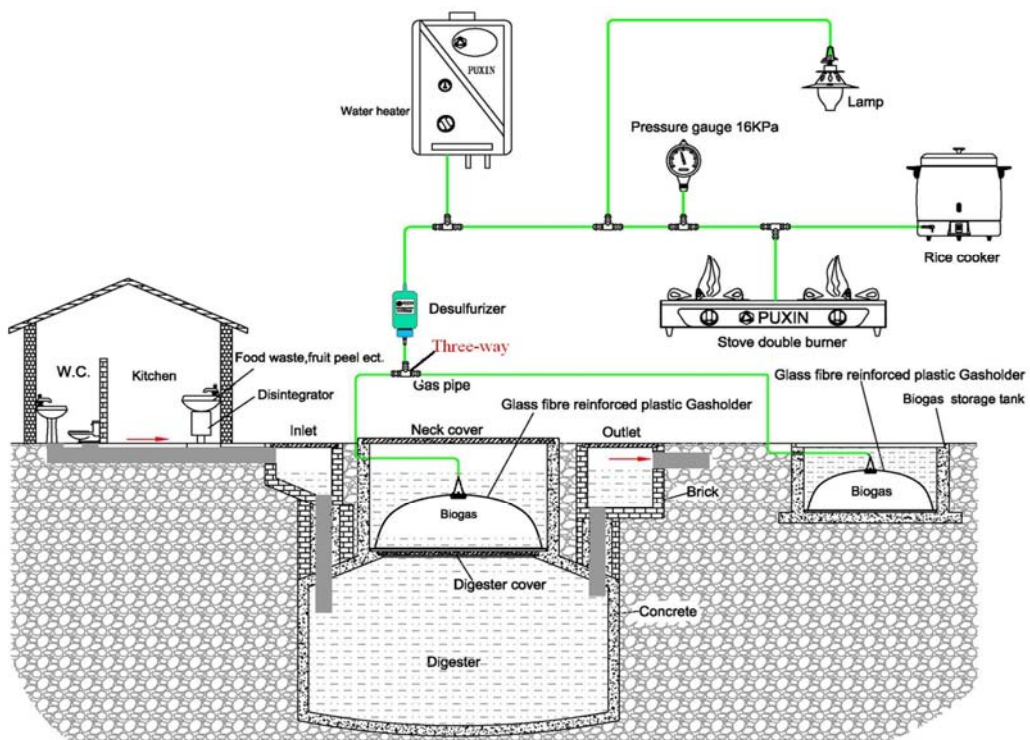
The family size biogas system is composed of one or several 10m³ biogas plants formed into a unit, the pipe system, the gas purify devices and the appliances. The family size biogas system is mainly applied to family house to treat sewage and food waste.

Our products include: the steel mould that is equipment used to build the concrete digester of the 6 or 10m³ Puxin biogas plant, the glass fiber gasholder that is a components of the 6 or 10m³ Puxin storage biogas plant, the biogas transport system, the biogas appliances (stove, water heater, rice cooker, lamp etc.), and small power biogas generators

The steel mould is composed of a number of steel mounding boards. By using a steel mould a 6 or 10 m³ puxin biogas digester can be build in two days, or 150 in a year. The steel mould is reusable and can be used for many times, last over ten years.

The glass fiber reinforced plastic gasholder is 1.0 m³ that is one of the main components of the puxin biogas plant, and it can last over 10 years.

For family size biogas system we sell all the equipments and products needed to build the biogas system to our customers, train the technicians for them, and our customers build the biogas application system themselves.



With 10 m³ family size Puxin biogas plant as per the above drawing, enough biogas can be provided to 2 families of 4 persons each for cooking and lighting.

The digester is made of concrete.

By making use of steel mould with outer 10 m³ to construct, which is can be reusable for many times:



The construction material needed to install the 10 m³ digester:

Material	Q'TY
Smashed stone	4.0 M3
Sand	3.5 M3
Cement	1400 Kgs
Brick	100 Pcs
Plastic pipe	4 Meter
Concrete bar	8 Kgs

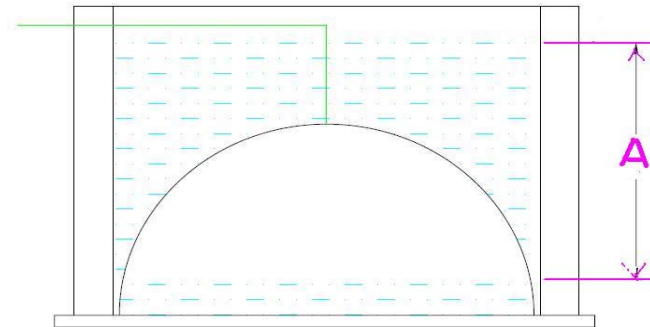
Storage system:

Main component

1. concrete tank
2. glass fiber reinforced plastic gasholder



The working principle of storage tank is performed by the pressure, produced by water inside of tank.

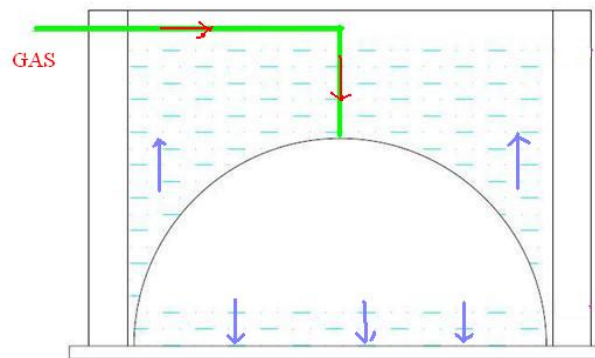


The pressure is caused by the distance between water level of gasholder and water level of concrete tank

The pressure change when storage biogas or using biogas:

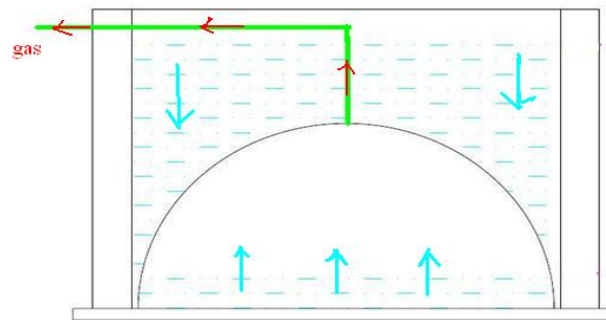
1. Change of water level when storing biogas:

The water level of concrete storage tank is increasing; the water level of gasholder is decreasing at the same time.



2. Change of water level when using biogas:

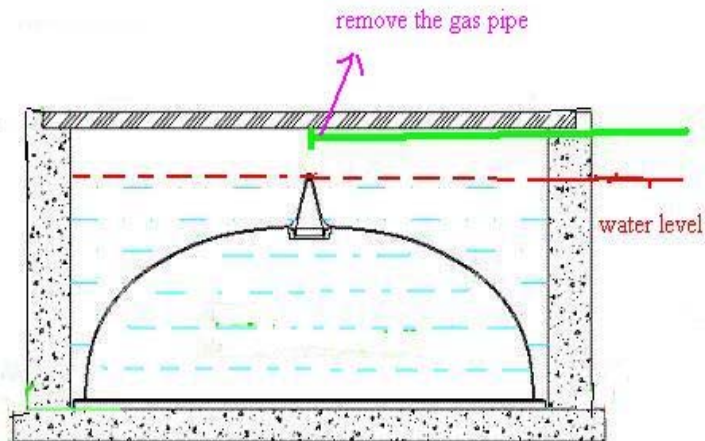
The water level of storage tank is decreasing; the water level of gasholder is increasing at the same time



The most important point when using the storage system at the first time, is to push the air in the gasholder out, before storage biogas, in order to avoid the biogas inside of gas holder to explode because of mixing with air and not to burn because of low concentration

The way:

Removing the gas pipe which connects the gasholder, and then feeding water in the storage tank until above the gasholder, showing:



Raw material needed to produce 1 cubic meters biogas

	Water content (%)	Dray material gas production rate (m3/kg)	raw material needed to produce 1 cubic meters biogas (kg)	
	A	B	Dry material	Fresh material
Pig Manure	82	0.25	4.00	22.23
cow Manure	83	0.19	5.26	30.96
Chicken Manure	70	0.25	4.00	13.34
Human Manure	80	0.30	3.33	16.67
Rice Straw	15	0.26	3.84	4.53
Wheat Straw	15	0.27	3.70	4.36
Corn stalks	18	0.29	3.45	4.21
Fresh grass	76	0.455	2.20	9.17
Water Hyacinth	93	0.31	3.23	46.15

The following data are basis on **theoretical value**

Take 100 kg pig manure for example, according to the above table

Calculating:

$$\text{Waste} * (1 - A) * B \text{ -----} \rightarrow 100 * (1 - 82\%) * 0.25 = 4.5 \text{ m3 biogas}$$

So 100 kg pig manure can be produce about 4.5 m3 biogas

Data:

- ① 10 m3 puxin biogas systems can generate 5 m3 biogas if the waste is enough,
- ② 23 kg pig manure can produce 1 m3 biogas——→ 23 * 5 = 115 kg pig manure
30 kg cow manure can produce 1 m3 biogas——→ 30 * 5 = 150 kg cow manure

So the suitable quantity of dung which 10 m3 biogas plant needs is **115 kg pig manure or 150 kg cow manure.**