www.biogasproducts.co.uk

BIOGAS Products

Biogas Industry Experts — Stainless Steel Fabrications

MADE IN BRITAIN

Engineering & Manufacturing

solutions for the production, storage, cleaning and utilisation of Biogas.

Biogas Products Ltd are a leading UK manufacturer and provider of biogas equipment to the wastewater, agricultural, industrial and renewable energy industries.

Established in 2008, by owners Martin Newey and Tony Smith, Biogas Products Ltd has a 'design and manufacture first' ethos. Their combined knowledge and expertise has enabled them to provide well-engineered and cost effective solutions for their growing list of clients.

For our latest company updates follow our Linked In company page.

The following pages showcase the range of products designed, manufactured and installed by Biogas Products Ltd. Our products, services and expertise is not limited to what is shown in this brochure so please get in touch to discuss your requirements further. All products are manufactured to the client's specification.

Biogas Storage

Biogas Products Ltd install, repair and maintain membrane biogas storage systems. All our equipment is UK designed, engineered and manufactured.

MEMBRANE GAS DOME

Our PVC double membrane biogas dome can be installed to any new or refurbished steel or concrete digester tank, whatever their shape or size.

The Biogas Products' design includes an optional, but recommended, centre support post and netting to prevent the dome from deflating into the contents of the digester.

- Size: Up to 30m diameter
- Shape: Circular and rectangular options
- Long service life
- H2S resistant
- UK design and manufacture
- Maintenance free

MEMBRANE GAS HOLDER

Membrane gas holders are the most flexible, economical, reliable and efficient biogas storage solution. Features of our UK designed and manufactured gas holders include:

- Up to 6000m3
- 5-50mbar operating pressures
- 1/2, 3/4 sphere or rectangular shapes
- H2S resistant
- High quality membranes
- Long service life
- Maintenance free

Biogas Conditioning

Biogas produced by Anaerobic Digestion is considered a 'dirty' gas and will require an element of cleaning before it can be used in an engine.

By carefully controlling the temperature of biogas, after it leaves the digester, you will remove water and reduce the relative humidity. Which in turn will protect your engines life span, reduce your maintenance costs, increase your engine's reliability and ensure compliance with your engine manufacturer's warranty.

BIOGAS COOLING SYSTEMS

Biogas from a digester is 100% water saturated. Cooling biogas, to a predetermined dew point, removes a significant amount of water. Reducing the temperature or drying biogas has a number of benefits including:

- Increased engine efficiency
- Prevents corrosion of pipework
- Complies with engine manufacturer's warranty
- Reduces maintenance costs
- Extends engine oil life

A tube/shell heat exchanger uses cold water supplied by a industrial grade water chiller to cool the biogas and water discharged is collected in a condensate pot.

However, cooling alone does not reduce the relative humidity of biogas, you must reheat the biogas in order to achieve this (see our biogas reheater).

BIOGAS REHEATER

Once your biogas has been cooled and its water content reduced, it must once again be reheated in order to reduce the relative humidity. This process can occur naturally across the gas booster system or it can be reheated using a tube shell, hot water to biogas heat exchanger.

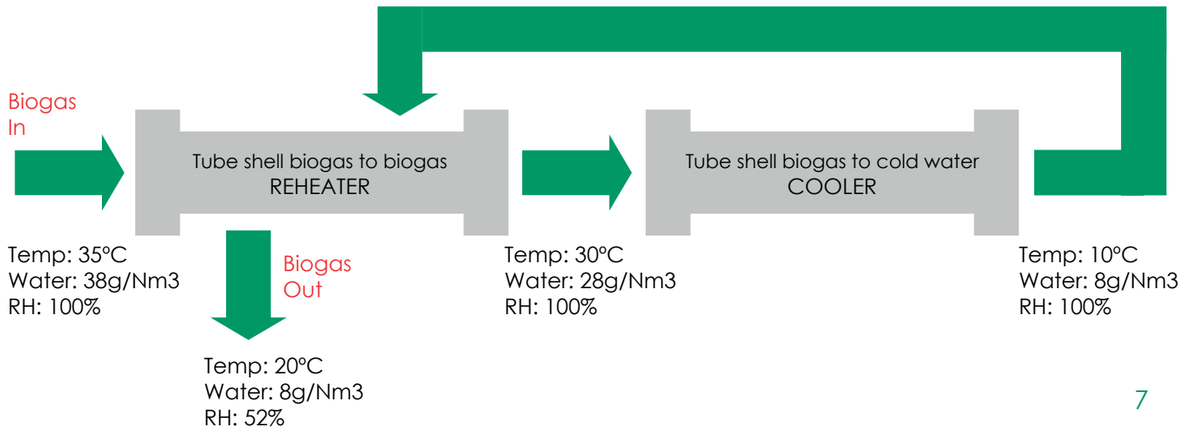
Our hot water to biogas heat exchangers can be designed to utilise incoming hot gas or hot water from the CHP engine or, if this is not available, a hot water boiler can be installed.

BIOGAS DEHUMIDIFIER

Cooling and reheating in one, a standard biogas dehumidifier consists of 2 tube heat exchangers. A biogas to biogas heat exchanger for biogas reheating, and, a biogas to cold water heat exchanger for biogas cooling.

Cold water is provided by an industrial grade chiller. The heat exchangers are manufactured in 316 Stainless Steel. The relative humidity of the biogas is set by using the inlet biogas temperature to reheat the cooled exit biogas.

TYPICAL DEHUMIDIFIER DESIGN



H2S Biogas Scrubbing

Biogas is made up mainly of methane, carbon dioxide and potentially traces of hydrogen sulphide. We remove hydrogen sulphide from biogas for a number of reasons:

- ✓ So that methane can be recovered, free from sulphides, for use as a fuel.
- ✓ To reduce sulphur dioxide emissions during combustion.
- ✓ To protect pipes, engines and mechanical components.

If there is hydrogen sulphide (H2S) present in your biogas at the point of combustion, it will be converted into sulphuric acid, which is highly corrosive to your engine and other parts of your mechanical plant.

Biogas Products provide the following solutions for the removal of H2S from biogas.

CHEMICAL SOLUTION

(MEDIUM TO HIGH H2S LOADING)

Ideal for sites that already have an available supply of sodium hydroxide, chemical scrubbers can handle variable H2S loadings and offer instant protection on system start up.

The single stage, counter-current, process uses sodium hydroxide, also known as caustic soda, to reduce the content of hydrogen sulphide in the biogas.

This process is reliable and efficient and you will have cleaner, less corrosive biogas as a result.

Key benefits:

- small footprint
- well proven process
- easily retrofitted
- instant start up after plant shutdown
- ideal for variable H2S loadings

BIOLOGICAL SOLUTION

(HIGH H2S LOADING)

Ideal for sites that have a constant H2S loading and a supply of effluent/water with nutrient addition.

The acid resistant scrubbing tanks are packed with BIOROCK media, providing the ideal surface to support the growth of sulphur oxidation bacteria.

In some instances it's possible to utilise effluent or liquors, separated from the digested sludge, as a wetting media. However, it must be free from particles and not contain any chemicals.

MEDIA SOLUTION

(LOW H2S LOADING)

Proves economically viable when the combination of biogas flow and H2S loading requires a low annual volume of replacement media.

TRIOX-BG grade media neutralises the hydrogen sulphide and reduces odours, corrosiveness and sulphur emissions from your biogas. Can be installed as a stand alone H2S removal process or as standby/addition to an existing scrubbing process.

Biogas with an oxygen content will provide optimum performance and removal efficiency of the media. Air injection can be considered.

SILOXANE REMOVAL

Siloxanes are usually prominent in biogas generated on landfill or sewage sites, as a result of contaminents such as personal care products and lubricants.

Activated carbon media is used to absorb siloxanes from the biogas.

Similarly to the Media Solution for H2S removal, the media is stored in a polypropylene, stainless steel, or steel painted tank and is available in a single tank or lead/lag tank installation.

Digester Refurb

Anaerobic Digesters are critical assets and require regular maintenance and eventually some form of refurbishment.

We can replace or repair the following:

- Viewing windows
- Verticle shaft mixers
- Gas mixing systems
- various steel fittings
- concrete coatings.


Before


After

SLURRY TANK CONVERSION

It is possible to convert existing steel slurry tanks into primary or secondary digesters. Firstly, a structural check needs to be completed to assess the integrity of the tank, as additional loading from a pressurised gas dome will need to be supported.

After the initial cleaning and preparation work, a single PVC membrane liner is fitted to the inside of the tank. A centre post with support ropes is installed to prevent the gas dome from falling into the tank.

We install a suitable gas mixing system to maximise the gas production. Finally a membrane biogas dome is added to the roof of the tank for biogas collection and to provide the system gas pressure.

Before


After

Steel Pipework

PIPEWORK SYSTEMS

We specialise in the design, manufacture and installation of gas pipework systems for both natural gas and biogas sites.

Our manufacturing capabilities can produce pipework up to 500mm diameter using various grades of steel. For biogas sites we recommend using 316L ‘marine grade’ stainless steel which is resistant to the corrosive properties of biogas.

All our pipework is visually inspected and pressure tested before delivery and installation on site. Radiographic weld testing can also be provided. Complete system pressure testing is conducted on site and nitrogen purging can be provided if required.

To discuss anything relating to your biogas plant or for general stainless steel fabrications please get in touch using the contact information on the back of this brochure.

For a detailed list of recent work undertaken, please visit our website:
www.biogasproducts.co.uk/projects

MADE IN BRITAIN

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