

Biogas Products

Biogas Industry Experts  Stainless Steel Fabrications



Hydrogen Sulphide Removal

Media, biological & chemical solutions for biogas



Removing H₂S from biogas

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 convert into sulphuric acid, which is highly corrosive to your engine and other parts of your mechanical plant.

If you expose your engine to sulphuric acid, you will see a considerable reduction in your engine life.

It's also likely that you will not be covered by your manufacturer's warranty - which often specifies a maximum of 250ppm H₂S in your biogas, in order to receive full cover.

If you want to protect your engines life span, reduce your maintenance costs, increase your engine's reliability and be compliant with your manufacturer's warranty, you must remove or significantly reduce the amount of H₂S in your biogas.

Biogas Products Ltd design and manufacture a range of H₂S scrubbers using the following solutions:

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BIOLOGICAL SCRUBBERS (HIGH H₂S LOADING)

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

Consumables: Effluent/water, electricity, nutrients
Discharge: Wastewater (potential fertilizer)

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CHEMICAL SCRUBBERS (MEDIUM TO HIGH H₂S LOADING)

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

Consumables: Sodium hydroxide, electricity, water
Discharge: Wastewater

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MEDIA SCRUBBERS (LOW H₂S LOADING)

Can be installed as a stand alone H₂S removal process or as standby/addition to an existing scrubbing process. This type of scrubber provides instant start up protection. This solution is economically viable when the combination of biogas flow and H₂S loading requires a low annual volume of replacement media.

Consumables: Replacement media
Discharge: None

Biological Solution

AWT BIOROCK™

The acid resistant scrubbing tanks are packed with AWT BIOROCK™ media.

Within these tanks, we can create, the perfect environment for sulphur oxidation bacteria to grow and multiply.

Once the biogas passes upwards through the tanks, the hydrogen sulphide (H₂S) is converted to sulphate through a series of oxidations.

AWT Biorock™ provides the ideal surface for the support and growth of the sulphur oxidation bacteria. It also has the following features:

- ✓ stable and inert - for long life (20 years);
- ✓ light and strong - ideal for deep beds;
- ✓ high porosity and surface area - ideal for biological growth;
- ✓ stone voidage allows continual irrigation, ensuring the biomass is fully wetted for peak performance;
- ✓ >99% H₂S and mercaptan removal at steady loading is achievable.

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



Chemical Solution

Our H₂S Chemical scrubbers are particularly effective on sites with a medium to high H₂S loading.

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

The raw biogas flows upwards through the media packed vertical tower. Simultaneously, the recirculated sodium hydroxide solution is sprayed downwards through the media, absorbing the hydrogen sulphide (H₂S) from the biogas.

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

Other benefits include:

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



Media Solution

AWT TRI-OX™

AWT TRI-OX™ media neutralises the hydrogen sulphide and reduces odours, corrosiveness and sulphur emissions from your biogas. AWT TRI-OX™ media also has many other useful properties:

- ✓ removes H₂S in aerobic and anaerobic gas flows
- ✓ dry granular form which is safe and easy to handle
- ✓ environmentally safe for easy disposal
- ✓ non-flammable and safe from exothermic reactions
- ✓ works on demand and can remain in standby mode
- ✓ can handle 100% relative humidity conditions
- ✓ spent media can be used as soil conditioner
- ✓ system can remain in standby mode for years.

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



Polypropylene tanks for lower gas pressures



Steel tanks for higher gas pressures

**MADE IN
BRITAIN**



All of our products are
designed and manufactured
in the UK but can be delivered
all over the world.

Contact

You will find us at:

Biogas Products Ltd.
Unit 10 Cookley Wharf Industrial Estate,
Brierley Hill, West Midlands DY5 3UP

You can contact us on:

Tel: 01384 262 202 Email: info@biogasproducts.co.uk

www.biogasproducts.co.uk