

Biogasclean MBR - removal of high H₂S loads from biogas produced from molasses ethanol wastewater

**BIO
GASCLEAN**

the key to efficient
and successful
utilization of biogas



Key features of **Biogasclean MBR** (patent pending):

- **The MBR (Moving Bed Reactor)** is especially developed for biogas produced from waste waters with high organic loads (>130,000 mg/l COD) where the biogas has high H₂S loads (10,000-30,000 ppm) in combination with low calorific values (50-55% CH₄).
- **Gas bubbles through liquid with MBR media.** The raw biogas is – after injection of air - bubbled through the liquid containing the high-surface MBR media.
- **H₂S oxidized to elemental sulfur.** Due to the continuously agitation of the liquid from the gas flow and the spray system the sulfur flakes float in the liquid until they are discharged with the effluent from the MBR tanks.
- **Foam control.** The foam produced by bubbling the gas through the liquid is controlled by injection of small amounts of palm oil based on online process parameters monitored by the PLC.
- **MBR versus biological and chemical scrubbers:** Lowest CAPEX and OPEX of any H₂S removal technologies for biogas with 10-30,000 ppm H₂S.

Plant: *Power Solution
Technologies (PSTC)
Thailand*

Capacity: *3,000 m³/h
15,000 ppm H₂S*





Plant: Thai Roong Ruang Energy, Thailand

Capacity: 2,100 m³/h
15,000 ppm H₂S

	Biotrickling	MBR
Main process	H ₂ S (gas) + 2 O ₂ (gas) => H ₂ SO ₄ (liquid)	H ₂ S (gas) + ½ O ₂ (gas) => S (solid) + H ₂ O (liquid)
Media type	Fixed bed	Moving bed
Tank volume	100%	25-30%
Service per tank	6-9 day/year	1-2 day/year
Initial start-up	48-72 hour	0.5-2 hour
O₂ consumption	100%	25%
O₂ after scrubber	1.5-2%	1%
CH₄ dilution	12-21%	7-8%
pH of effluent	1-3 (org. liquid pH 7)	7 (org. liquid pH 7)
Sulfur recovery	Not possible	Possible by means of sedimentation, cyclones or centrifuges
Gas pressure of outlet	Typically 10-30 mbar	Up to 150 mbar (no further compression needed)

Biogasclean A/S

Biogasclean is specialized in biological desulfurization of biogas without the use of chemicals. We develop, manufacture and supply fully automated gas cleaning systems for H₂S removal combining low operating costs with high availability. Our track record comprises mid 2018 more than 235 plants in operation or under construction in 40 countries. Biogasclean supplies clean gas to more than 540 MW gas engines and boilers and removes sulfur from biogas upgrading units.



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