DS-BMR: High Flow & High H_2S Applications

Desulphurisation - Bio Moving Bed Reactor

The Biological Moving Bed Reactor (BMR) is Biogasclean's patented technology for efficient desulphurisation of biogas with very high hydrogen sulphide concentrations, handling inlet levels of up to 40,000 ppm H_2S. The system delivers reliable outlet concentrations of <50 ppm H_2S, providing a robust and cost-efficient solution with competitive CAPEX and OPEX.

How it works

Raw biogas is introduced at the bottom of the reactor and bubbled through a process liquid containing active sulphur-oxidizing bacteria. A biologically active foam layer forms at the liquid surface, creating a dynamic moving bed environment. Within this reactor, microorganisms utilize hydrogen sulphide (H_2S) as an energy source, oxidizing it into elemental sulphur. The treated biogas exits the system with significantly reduced H_2S levels. The process operates in a controlled, closed-loop system, ensuring stable biological conditions and consistent performance.

Desulphurisation Applications

- Power generation in gas engines and Combined Heat & Power (CHP) systems
- Treatment of high-sulphur biogas from vinasse or wastewater in ethanol distilleries (molasses or cane juice)
- Upstream treatment prior to biogas upgrading systems

Key Highlights of the DS-BMR system

- Designed for high H_2S load removal with competitive CAPEX and OPEX
- Fully automated operation with PLC-based control
- Rapid start-up, with operational stability achieved within hours
- Compact footprint, requiring typically 25–30% less tank volume compared to alternative technologies
- Closed-loop design with no emissions or odour issues
- Backed by extensive operational know-how and field-proven experience

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Technical Specifications	
Process Tecnique Unit (PTU)	Installed in a skid-mounted unit, it contains the equipment necessary for safe, automatic operations. It includes gas blowers, a gas pre-cooling system, an air blower system and a liquid supply system. The PLC-based control system as well as the frequency converters are installed in an airconditioned control room.
Reactors and cleaning	Comprise one or more insulated tanks made of high-quality fibreglass. Depending on the H_2S volume, we can provide either prefabricated or field erected tanks.
Packing media	After injecting air or oxygen, the raw biogas is bubbled through the liquid containing the high-surface MBR media. The packing media is floating in the scrubber liquid, and no special cleaning is required.
Foam control	The foam produced by bubbling the gas through the liquid is controlled by injecting small amounts of palm oil controlled by automatic process parameters monitored by the PLC.
Desulphurisation	Removing H_2S to below 50 ppm from up to 40,000 ppm.
Certifications	CE marking

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