

BIOLOGICAL METHANATION PILOT PLANT

Biological methanation is a process in which microorganisms convert carbon dioxide (CO₂) and hydrogen (H₂) into methane (CH₄) with the help of specific microorganisms. A distinction is made between in-situ and ex-situ methanation. Both processes can be reproduced using the pilot plant. The plant offers an ATEX-compliant design, a high level of safety equipment and a maintainable sparking system for H₂.

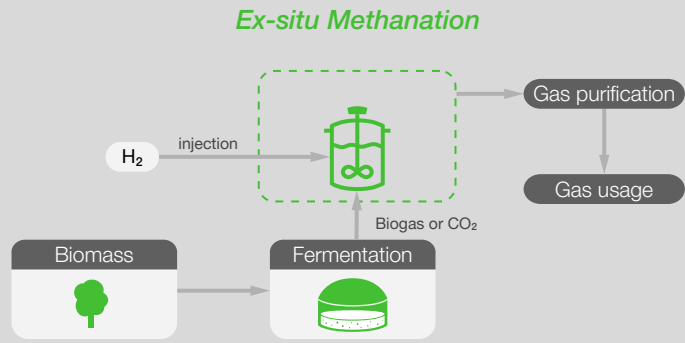


Components overview

- ① Feeding tunnel with valve & control sensor
- ② Reactor with heating and isolation
- ③ Gas distribution system with MFC
- ④ Feeding and discharge pump
- ⑤ Sparkling system / injection points
- ⑥ Sensor for inertization monitoring
- ⑦ Agitator
- ⑧ Tuning fork sensor (level monitoring)
- ⑨ Gas circulation pump cabinet with drum gas meter
- ⑩ SENSOcontrol data acquisition and control unit
- ⑪ Main switch cabinet with control unit

Technical data

Reactor dimensions	Volume: approx. 1.000 l; inner diameter: 800 mm; height: 2.000 mm
Material / configuration	1.4571; 1.4404 or similar
Max. allowed temperature	60°C - others on request
Agitator speed range	30 - 60 rpm; gear box motor 1,5 kW; IP 55
Space requirements	Width: 400 cm; depth: 250 cm; height: 300 cm without buffer / waste tank



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Gas quality measurement system

Analyzer 1	CH ₄ 0-100 vol% with IR sensor; CO ₂ 0-100 vol% with IR sensor; O ₂ 0-100 vol% with EC sensor; H ₂ S 0-5000 ppm with EC sensor
Analyzer 2	H ₂ 0-20.000 ppm with EC sensor - protection system against excessive H ₂ concentration; H ₂ 0-100 vol% with thermal conductivity sensor



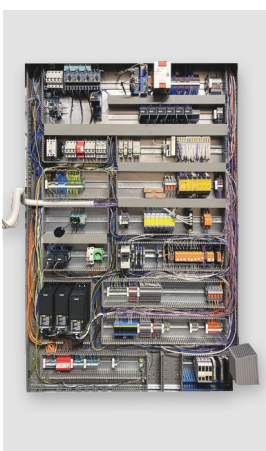
Sparkling system

Sparkling points	6 pieces with exchangeable armature for H ₂ -sparkling
MFC-system	0,1 - 5 Nm ³ /h - other on request
Gas piping	Stainless steel with valves



Gas circle pump / gas amount meter / sensors

Gas amount meter	Range 2-120 l/h; display; stainless steel housing w. electrically conductive drum
Circle pump	Flow rate 7,5 l/min; gas circulation to the injection points
Level sensors	Pressure / radar / safety level - tuning fork sensor



Main switch cabinet

The biological methanation pilot plant contains a state-of-the-art main switch cabinet with numerous functions and features:

- ✓ Dimensions: 0,5 x 1,2 x 2 m (L x W x H)
- ✓ Switch cabinet with air conditioning
- ✓ Frequency converters for agitator/ pumps
- ✓ Safety control unit for safety functionality's (level; heating; status valve funnel; ...)
- ✓ Control unit for the main process/ membrane valves
- ✓ Main switch board
- ✓ ATEX components
- ✓ Lightning protection unit

Information on biological methanation pilot plant



The equipment features will be defined with the quotation.

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