

SYSADVANCE

SHAPING THE FUTURE OF TECHNOLOGY




sysadvance®

ENERGY

N₂ | O₂ | O₂ VSA | MEDICAL O₂ GENERATORS | BIOGAS | H_e | H₂ | SF₆ PURIFICATION



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THE COMPANY

SYSADVANCE is a technology company founded in 2002.

Today we develop and manufacture on-site gas generators and gas purifiers, as well as integrated solutions for compressed air and technical gases.

SYSADVANCE product portfolio comprised Nitrogen Generators, Oxygen Generators, including Medical Oxygen 93 and VSA Oxygen Generators, solutions for purification of biogas, Helium, Hydrogen and SF6, as well as a wide range of "turn-key" customized engineering solutions.

SYSADVANCE successful projects are the reflection of the quality and dedication of our highly specialized human resources.

Today, SYSADVANCE offers solutions for several industries and sectors such as: chemical and pharmaceutical, electronic components, metal works, aquaculture, water treatment, engineering, automotive, food, wine, aviation, marine, energy, medical, oil and gas, among others.

SYSADVANCE is present today in more than 40 countries, rendering a solid growth as result of a strategy oriented for creating value to our clients, based on superior technology, quality and reliability of our products, as well as continuous innovation.



ENERGY

The world is changing and together with such move, a multitude of challenges arise. Within those, the search of renewable sources of energy. These new pathways to energy should be able to provide the necessary power to keep the pace of development without endangering the environment.

SYSADVANCE's technology draws the path towards a circular economy and energy transition, thus contributing to a sustainable growth.

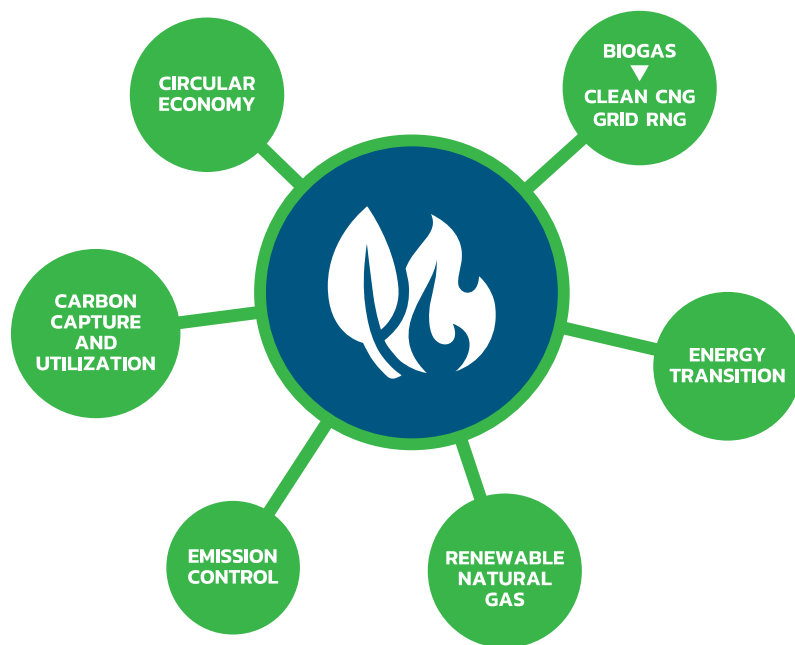
Leaders in gas adsorption technology, SYSADVANCE makes Renewable Natural Gas a reality with our METHAGEN system, not only for anaerobic digestion projects but also for landfill gas with a proprietary double stage process.

In addition, the METHABOOST technology, an exclusive add-on to the METHAGEN system, deploys 3 in 1 unbeatable benefits – 100% Methane Recovery, Zero Emissions and the CO₂ total recovery on the process, delivered up to 99% purity.

The CARBOGEN series recovers and purifies CO₂ from biogas and flue gas processes, ensuring the most efficient Carbon Capture and Utilization (CCU) scheme.

SYSADVANCE, is fully committed towards a cleaner and more sustainable world, backing up with its global clients.

05



METHAGEN^{AD}

Anaerobic Digestion



METHAGEN^{AD}

Anaerobic Digestion

DESCRIPTION

METHAGEN is a system, based on VPSA (Vacuum Pressure Swing Adsorption) technology designed to purify biogas from Anaerobic Digestion feed-stock like:

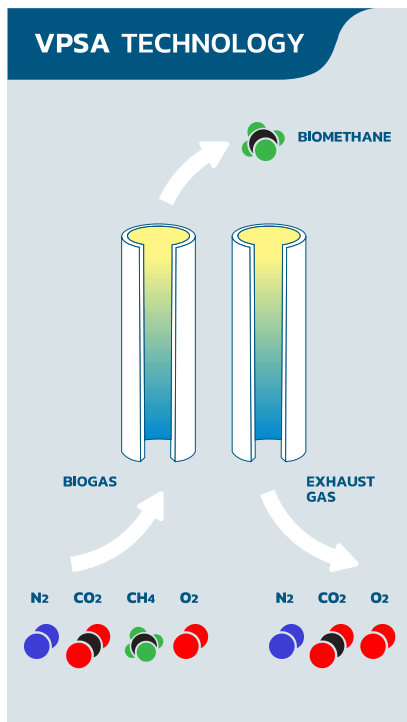
- Waste Water treatment plants
- Food and organic municipal waste
- Agricultural waste

VPSA TECHNOLOGY

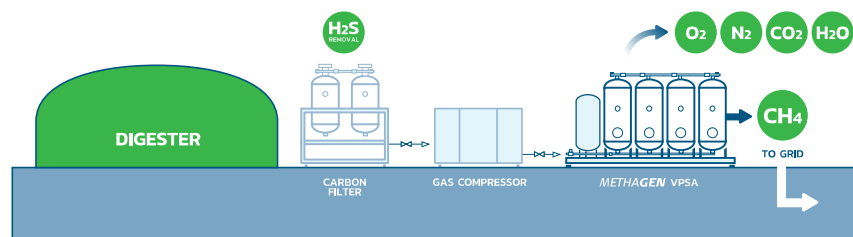
After being previously dried and desulphurized, compressed biogas is fed to the METHAGEN Upgrading Unit that makes use of VPSA technology to remove CO₂, N₂, O₂ and residual H₂O from the gas stream.

The METHAGEN system contains a set of columns packed with selective adsorbents. Each adsorption column undergoes a cyclic sequence of pressure steps, to produce a continuous flow of high-purity, dry and pressurized biomethane.

The adsorbent regeneration step is assisted by a vacuum system to enhance the process efficiency. The residual methane desorbed during the regeneration step is recycled back to the biogas inlet reservoir, resulting in a methane recovery rate close to 99%. The METHAGEN operation is fully automated and controlled by a PLC. The biomethane composition is continuously monitored by a multi-gas analysis system.



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METHAGEN^{AD}

Anaerobic Digestion



ADVANTAGES

- 100% CH₄ recovery ► Zero emissions
 - METHABOOST option
- Lowest opex ► 0.22 kWh/Nm³ of biogas
- Lowest capex
- High CH₄ purity ► up to 99%
- High recovery ► up to 99.96%
- Efficient O₂ and CO₂ removal
- N₂ reduction capability
- Dry process
 - no water or chemicals
- Non-cryogenic tech
- Water removal
 - Dewpoint < 50 ppmv H₂O
- High reliability/ high availability
- Simple installation and operation
- Small footprint
- Fast plant operational readiness
- Quick start and stop
- 4.0 Enabled ► remote control & dynamic reporting
- Full turnkey upgrading solution
- CO₂ recovery option (CCU)

METHAGEN^{AD}

Anaerobic Digestion

PERFORMANCE

MODEL	Biogas inlet flow range	Biomethane flow range	Approx. Footprint (WxL)	Absorbed Power**
AD - XP1	50 – 100 Nm ³ /h	28 – 56 Nm ³ /h	13m x 9m	12 – 24 kW
AD - XP2	85 – 170 Nm ³ /h	45 – 95 Nm ³ /h	13m x 9m	21 – 41 kW
AD - XP3	125 – 250 Nm ³ /h	67 – 139 Nm ³ /h	13m x 9m	30 – 60 kW
AD - MP1	180 – 360 Nm ³ /h	100 – 200 Nm ³ /h	13m x 12m	43 – 86 kW
AD - MP2	250 – 500 Nm ³ /h	139 – 278 Nm ³ /h	13m x 12m	60 – 119 kW
AD - LP1	350 – 700 Nm ³ /h	195 – 390 Nm ³ /h	13m x 15m	83 – 166 kW
AD - LP2	425 – 850 Nm ³ /h	237 – 473 Nm ³ /h	13m x 15m	101 – 202 kW
AD - LP3	500 – 1000 Nm ³ /h	278 – 557 Nm ³ /h	13m x 15m	119 – 237 kW
AD - LP3+*	600 – 1200 Nm ³ /h	334 – 668 Nm ³ /h	13m x 17m	143 – 285 kW

* Larger capacities are available with a modular approach to the existing models.

** Total absorbed power including pre-treatment.

Please contact SYSADVANCE for further information. Models and specifications are subject to change without notice.

09

METHABOOST

100%
CH₄
RECOVERY

METHABOOST option is a post-treatment stage based on Vacuum Swing Adsorption (VSA) technology enabling the recovery of residual methane from the off-gas stream of the METHAGEN process.

METHABOOST is an efficient alternative to expensive catalytic oxidation systems, RTO (Regenerative Thermo Oxidation) or low PCI boilers.

METHABOOST enables near 100% recovery, zero methane loss/emission and pure CO₂ production.

METHABOOST is specially recommended for CO₂ inertization of batch digesters.



METHAGEN^{LF}

Landfill Gas Upgrading

CH₄

LANDFILL GAS UPGRADING



METHAGEN^{LF}

Landfill Gas Upgrading

DESCRIPTION

METHAGEN LF is a proprietary technology developed by SYSADVANCE to purify biogas with high contents of N₂ and O₂.

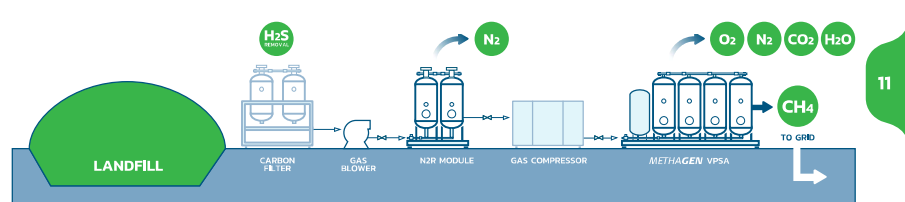
This system was designed specifically to Landfill sites wanting to produce High BTU/HHV Renewable Natural Gas.

This system can also be utilized in Oil&Gas industry, to purify contaminated Natural gas (with N₂/O₂/CO₂).

TECHNOLOGY

METHAGEN LF is a 2 stage VPSA, where the first stage is optimized to remove N₂ and the second stage promotes the separation of CO₂ and O₂ from CH₄.

This approach allows the process to adapt to the steep variations on feed stream contaminant concentrations without compromising the output gas quality.



METHAGEN^{LF}

Landfill Gas Upgrading



METHAGEN^{LF}

ADVANTAGES

- High Nitrogen removal capacity from 20% of air down to 3%
- Lowest opex ► 0.30 kWh/Nm³ of biogas
- Lowest capex
- Efficient O₂ and CO₂ removal
- Dry process – no water or chemicals
- Water removal
 - dewpoint < 50 ppmv H₂O
- Non-Cryogenic
 - no need for liquid N₂
- High reliability/ high availability
- Fast plant operational readiness
- Excellent process response to air (N₂ + O₂) steep variance
- Quick start and stop
- 4.0 Enabled
 - remote control and dynamic reporting
- Full turnkey upgrading solution

METHAGEN^{LF}

Landfill Gas Upgrading

