

Carbotech Pressure Swing Adsorption (PSA) Gas Upgrading

American-Based Gas Upgrading Company with Trusted German Technology



Gas Upgrading

Based in Wisconsin, BIOFerm Energy Systems is a turn-key provider of “flange-to-flange” gas upgrading systems in North America.

Our comprehensive Carbotech Pressure Swing Adsorption (PSA) gas upgrading systems uniquely include all upgrading components, such as:

- Compression
- Thermal oxidizer
- Gas chilling
- Sulphur removal
- Booster blower
- Industry-standard control system over all equipment
- Complete system performance guarantee

Once biogas is upgraded to RNG, it may be injected into the natural gas grid or used as fuel in the form of CNG/LNG.

BIOFerm's project's have a typical delivery time of 12 months from order received to gas injection due to our skid-ready design.

These systems create value for a variety of applications, such as:

- Landfills
- Wastewater treatment plants
- Municipalities
- Agricultural operations
- Food processors
- Other producers of biogas

Key Features of Carbotech PSA

- Typical CH₄ recovery >99%
- Capable of handling high-N₂ gas
- Pre-manufactured/tested/assembled
- Skid-ready, reducing installation costs
- Capable of meeting stringent pipeline requirements
- Removes O₂ from the gas
- In-house volatile organic compound (VOC) removal technology
- No increased CH₄ losses over time
- Low operating costs
- Modular approach
- High processing efficiency

See back of flyer for complete technology comparisons.

Carbotech PSA Process Steps

Our gas upgrading process includes the following steps:

1. Raw biogas is compressed
2. Cooling system removes condensed water vapor
3. Activated carbon removes trace components
4. Conditioned biogas is channeled through PSA adsorbers filled with carbon molecular sieves for adsorption
5. Adsorption removes CO₂, H₂O, H₂S, NH₃, siloxanes, odors and parts of O₂ and N₂
6. RNG is produced
7. RNG is injected into the grid, or further upgraded to CNG

About BIOFerm™

Based in Madison, Wisconsin, BIOFerm™ Energy Systems is a North American provider of turnkey gas processing and anaerobic digestion systems.

We additionally offer a spectrum of services, such as: gas marketing, financing, project development, regulatory and financial oversight, power purchase agreement assistance, and consulting engineering.

Our company has experience from the installation of over 900 PSA systems (including ~80 Carbotech PSA gas processing plants) and over 450 anaerobic digestion facilities worldwide.

Carbotech

VIESSMANN Group

Gas Upgrading Technology Comparison

System Comparison and Characteristics

Comparison Parameter	Gas Upgrading System				
	Carbotech PSA	Generic PSA "X"	Water Scrubbing	Chemical Scrubbing	Membrane Separation
Turnkey system with all upgrading components	X				
No chemicals necessary	X	X			X
No process water added	X	X		X	X
Low operating and maintenance costs	X	X	X		
Can process large range of gas flows (250 cfm and up)	X	X			X
Able to separate both O ₂ and N ₂ from biogas	X	X			
High CH ₄ yield and no methane loss over time	X	X			
High efficiency	X				
Lowest market power consumption	X				
Small footprint	X	X			X
No heat required	X	X	X		X
Capable of meeting stringent North American pipeline requirements	X	X			
Skid ready system	X	X	X		X
Low system complexity	X				X
Short commissioning/start-up times for a quick-to-market product	X				