Getting Biogas to the RNG Market: The Process of Generating Biogas for Fleet Transportation

Environmentally Friendly, Economical Alternative to Diesel & Fuel Oils
Webinar Instructions

- Please utilize the QUESTIONS function of the control panel to ask questions at any time during the presentation.

- This webinar will be available at www.bwen.com in the On-Demand Webinar Library.

- Handouts available to download from Control Panel Handout Tab.
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Agenda

What You Will Learn:

• Understanding the EPA’s Renewable Fuel Standard (RFS) and Renewable Identification Numbers (RINs) – economic feasibility?

• Biogas and PSA gas upgrading systems

• How to overcome common challenges of upgrading biogas to renewable natural gas quality:
  • Typical biogas impurities from various biogenic sources
  • Handling high-nitrogen or hydrogen sulfide biogas streams
  • Pressure Swing Adsorption - biogas upgrading operational requirements
  • Meeting typical North American pipeline requirements

• Case Studies: Food Processor and Wastewater Treatment Plant Biogas Upgrading

• Overview of Broadwind-SAFE and biogas compressor equipment offerings

• Best practices for selecting the right compression equipment to meet fleet needs

• Using Mobile Biogas Refueling to Fuel Remote Vehicle Fleets

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Getting Biogas to the RNG Market
RFS and Renewable Natural Gas

2 March 2017
## Quick Reference - Definitions

- **LNG** – Liquefied Natural Gas
- **CNG** – Compressed Natural Gas
- **RFS** – US EPA Renewable Fuel Standard
- **RIN** – Renewable Identification Number (RFS credit)
- **QAP** – third party Quality Assurance Plan for RFS
- **COA** – Certificate of Analysis (biogas quality)
- **LCFS** – Low Carbon Fuel Standard
- **NGV** – Natural Gas Vehicles
Overview

• RFS Registration
• Environmental Credit Values
• RFS Regulatory Updates
RFS RIN Generation – The Basics

- An entity affiliated with a landfill or digester must register with RFS to generate RINs with an applicable pathway.
  - Gas capture and clean-up for common carrier pipeline transport where applicable and path to LNG/CNG distribution and use for motor vehicle fuel must be established
  - Contracts for marketing from starting point to end use in place – displacement mechanism historically used for getting gas to the final destination, such as California
- RINs are generated on the biomass-based portion of gas used for transportation fuel.
  - 1 RIN = 77000 BTU (lower heating value)
  - Rule of thumb is 11.7 RINs per standard MMBtu
  - D3 (cellulosic), D5 (advanced) or a mix of D3/D5 RINs based on cellulosic content
## RFS Pathways – Digester and Landfills

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Feedstock</th>
<th>Production Process Requirements</th>
<th>D-Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable Compressed Natural Gas, Renewable Liquefied Natural Gas, Renewable Electricity</td>
<td>Biogas from landfills, municipal wastewater treatment facility digesters, agricultural digesters, and separated MSW digesters; and biogas from the cellulosic components of biomass processed in other waste digesters</td>
<td>Any</td>
<td>3</td>
</tr>
<tr>
<td>Renewable Compressed Natural Gas, Renewable Liquefied Natural Gas, and Renewable Electricity</td>
<td>Biogas from waste digesters</td>
<td>Any</td>
<td>5</td>
</tr>
</tbody>
</table>

*Source: 40 CFR 80.1426(f) Table 1*
*cellulosic diesel also technically qualifies as biomass-based diesel
**Agricultural digesters** means anaerobic digesters that process predominantly cellulosic materials, including animal manure, crop residues, and/or separated yard waste.

**Predominantly cellulosic materials** means materials with at least 75% cellulosic content. Fuels made from feedstocks which do not meet the minimum 75% cellulosic threshold but contain some portion of cellulosic materials are eligible for generation of cellulosic and non-cellulosic RINs using an apportionment method based on testing.

[https://www.biocycle.net/2013/05/13/anaerobic-digestion-in-the-united-kingdom/](https://www.biocycle.net/2013/05/13/anaerobic-digestion-in-the-united-kingdom/)
Registered RIN generators: source gas producer, fuel provider, supply chain marketer – RIN generator must have supply chain oversight

Supply chain typically involves natural gas marketers where – gas transfer must be documented contractually as well as physically (pipeline map) from source to sink

Environmental attribute marketing can also be part of the supply chain
Basic RFS Registration Components

- Description of renewable fuel and process to produce biogas; pipeline map where applicable
- Applicable air permits and/or other information attesting to production and/or nameplate capacity
- Contracts or affidavits tracking the gas from source to motor vehicle fueling with affirmation that the CNG/LNG will only be used for transportation fuel under RFS
- Separated food waste or yard waste plan where applicable
- For mixed cellulosic and non-cellulosic feedstock content (less than 75% cellulosic), data and analysis indicating the cellulosic content
- RIN generation protocol, CDX/EMTS account registration
- Third-party independent, professional engineering review
RFS Demand – California is the Top Destination for Biogas for NGVs

RFS and LCFS - Biogas for NGV

LCFS NGV Fuel (Bio/Non-Bio)
### Credit Values – Historic Volatility and Current Snapshot

**Snapshot – Feb 13, 2017**

<table>
<thead>
<tr>
<th>Credit Type</th>
<th>RIN (D3)</th>
<th>RIN (D5)</th>
<th>LCFS (CI = 35, HDV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value per Credit</td>
<td>$2.675</td>
<td>$0.93</td>
<td>$95.50</td>
</tr>
<tr>
<td>Credits per MMBtu</td>
<td>11.7</td>
<td>11.7</td>
<td>0.0685</td>
</tr>
<tr>
<td>Value per MMBtu</td>
<td>$31.29</td>
<td>$10.88</td>
<td>$6.54</td>
</tr>
</tbody>
</table>


---

**Advanced RIN Price History**

[Graph showing advanced RIN price history from June 2009 to April 2016]
Clarity on what “pipeline quality gas” means

- Contaminants, components other than hydrocarbons and inert gasses, removed to pipeline quality specifications
- Blending with non-renewable gas could still be used to meet heat content/inert gas specifications

Clear statement that RINs must be generated only on BTUs that are derived from renewable biomass and that are subsequently used for transportation fuel

- Other blended gas used to meet specs may not be counted for RIN generation
Additional registration requirements regarding pipeline quality gas
   – Certificates of Analysis (COAs) before and after gas clean-up, both before and after the blending of other gas where applicable
   – Commercial pipeline specifications and any granted waivers from pipeline
   – Requests for alternative methods to COAs would be considered

Ongoing gas quality testing requirements for RIN generation
   – Inline gas chromatography or an approved sampling protocol

Additional QAP requirements
   – QAP must check for testing protocols
The proposed rule indicates that source of biogas, the biogas producer, would need to be a registered RFS entity.

- Often the RIN generator is a different party (gas marketer, CNG/LNG distributor) than the biogas producer
- The proposed registered party would be the landfill or digester owner
- Third party engineering review would be required in the proposed framework
- No additional product transfer documentation, attestations or recordkeeping requirements proposed but comments sought on additional requirements

Proposing to improve the RFS registration requirements for engineering reviews by requiring site visits to take place when the facility is producing renewable fuel

Comments for consideration on the proposed rulemaking must be received within 60 days of publication in the Federal Register
Carbotech PSA - Biogas Upgrading

BIOFerm™ Energy Systems
A Company of the Viessmann Group
March 2, 2017
Viessmann Group
The Company

1917
Company foundation of the Viessmann family enterprise

11,600
Employed workforce

$2.5
Billion dollars Viessmann Group turnover

22
Production companies in 11 countries

74
Countries with sale activities and distribution partners

120
Branches world-wide

56
Percent of the turnover derived from export activities
**BIOFerm™ Energy Systems**  
North American Anaerobic Digestion & Gas Upgrading

| Expertise          | Turnkey anaerobic digestion systems  
<table>
<thead>
<tr>
<th></th>
<th>Turnkey gas upgrading systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>Industry's best performance guarantee</td>
</tr>
</tbody>
</table>
| Experience        | 450+ anaerobic digestion             
|                   | 900+ PSA installations               |
| Reputation        | High repeat business                 |
Biogas and Biogas Upgrading

Where does it come from?
What is it?
What can I do with it?

- In an anaerobic environment with the presence of bacteria, organic matter will undergo a Physical, Chemical and Biological Process

- With the right temperature, bacterial Anaerobic Digestion will take place while converting the complex organic matter into much simpler gaseous compounds.

- Anaerobic digestion generates Biogas with a high fraction of CH₄ and CO₂ and a small portion of some other gases (NH₃, H₂, H₂S, etc.).

- Cleaned and upgraded biogas, called Renewable Natural Gas (RNG), is achieved through the removal of CO₂ and other impurities in the Biogas.

- Conditioned biomethane is ready-to-use:
  - Gas Grid Injection
  - CHP Cogeneration
  - CNG-Vehicle Fuel
Biogas and Biogas Upgrading

**Process**

- **Compression & Cooling**
  - Water Scrubber: 8-10 bar
  - Chemical Scrubber: 0.1-0.3 bar
  - PSA: 3-5 bar
  - Membrane: 8-10 bar

- **H₂S Removal**
  - Water
  - Scrubber

- **Methane enrichment**
  - Air
  - Regen. Tower
  - Gas Drier

- **Gas Drying**
  - Heat
  - Gas Drier

**Biogas**

- **Water Scrubber**
  - Scrubber
  - Regen. Tower
  - Gas Drier

- **Chemical Scrubber**
  - Scrubber
  - Regen. Tower
  - Gas Drier

- **PSA**
  - PSA
  - Regen. Tower
  - Gas Drier

- **Membrane**
  - 2-Step Membrane
  - Regen. Tower
  - Gas Drier

**Biomethane**

- H₂S Scrubber
- Off-Gas Cleaning System

**Environmental Regulations**

- Off Gas treatment prior disposal
- Biogas
- Biomethane
- ZETECH
- Off-Gas Cleaning System

**Environmental Regulations**

- Environmental Regulations
- Biomethane
- ZETECH
- Off-Gas Cleaning System
## Biogas Upgrading Technologies Available

<table>
<thead>
<tr>
<th>Comparison Parameter</th>
<th>Gas Upgrading System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnkey system with all upgrading components</td>
<td>X</td>
</tr>
<tr>
<td>No chemicals necessary</td>
<td>X</td>
</tr>
<tr>
<td>No process water added</td>
<td>X</td>
</tr>
<tr>
<td>Low operating and maintenance costs</td>
<td>X</td>
</tr>
<tr>
<td>Capable of processing range of gas flows, including low (&lt;350 cfm) and high (&gt;1,500 cfm) flows</td>
<td>X</td>
</tr>
<tr>
<td>Able to separate both Oxygen and Nitrogen from biogas</td>
<td>X</td>
</tr>
<tr>
<td>High methane yield and no methane loss over time</td>
<td>X</td>
</tr>
<tr>
<td>High efficiency</td>
<td>X</td>
</tr>
<tr>
<td>Lowest market power consumption</td>
<td>X</td>
</tr>
<tr>
<td>Small footprint</td>
<td>X</td>
</tr>
<tr>
<td>No heat required</td>
<td>X</td>
</tr>
<tr>
<td>Capable of meeting stringent North American pipeline requirements</td>
<td>X</td>
</tr>
<tr>
<td>Skid ready system</td>
<td>X</td>
</tr>
<tr>
<td>Low system complexity</td>
<td>X</td>
</tr>
<tr>
<td>Short commissioning/start-up times for a quick-to-market product</td>
<td>X</td>
</tr>
</tbody>
</table>
# PSA Gas Upgrading

## Typical Gas Qualities & Gas Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Typical Biogas</th>
<th>Biomethane from PSA</th>
<th>Example Pipeline Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methane</td>
<td>CH(_4)</td>
<td>50 - 70 Vol.-%</td>
<td>96.5 - 98 Vol.-%</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>H(_2)</td>
<td>&lt; 100 ppm</td>
<td>&lt; 200 ppm</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>CO(_2)</td>
<td>28 - 45 Vol.-%</td>
<td>1.5 - 2.5 Vol.-%</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>N(_2)</td>
<td>0 - 0.8 Vol.-%</td>
<td>0 - 0.8 Vol.-%</td>
</tr>
<tr>
<td>Oxygen</td>
<td>O(_2)</td>
<td>0 - 0.2 Vol.-%</td>
<td>0 - 0.2 Vol.-%</td>
</tr>
</tbody>
</table>

**Trace Elements**

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Sulphide</td>
<td>H(_2)S &lt; 500 ppmv</td>
</tr>
<tr>
<td>Ammonia</td>
<td>NH(_3) &lt; 300 ppmv</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>C(_x)H(_y) &lt; 100 ppmv</td>
</tr>
<tr>
<td>Water</td>
<td>H(_2)O Saturated</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Energy Characteristics**

<table>
<thead>
<tr>
<th>Calorific Value</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>(H_{\text{S,N}})</td>
<td>505 - 707 BTU/ft(^3)</td>
</tr>
</tbody>
</table>
Biogas Upgrading
Carbotech PSA (Pressure Swing Adsorption) Process

Features:
- Completely integrated system
- Power Consumption:
  - 0.16-0.24 kWh/m³ Biogas
- Methane Recovery:
  - >98.5 - 99%
- Product Gas Quality:
  - 90-99% CH₄
- Pressure:
  - 1 – 10 bar(g)
Biogas Upgrading
Carbotech PSA Model Block Diagram

Biogas
1 psig, 90°F

Pre-cooling
70°F

Compression
135 psig

Drying
40°F

VOC removal
70°F

Directly from digester or gas holder

Reduce water content to avoid condensation during downstream compression

Single-stage heat exchanger with water knock out

Compress gas to increase partial pressure of CO₂ / VOC for downstream removal

Oil injected screw compressor (high flow, low maintenance)

Cool gas to condense water, oil and VOC and reduce adsorbent loading

Multi-stage heat exchanger with water knock out

Remove VOC, HCFC and siloxane through activated carbon adsorption

Heat regenerated dual activated carbon bed to ensure high level VOC removal

Directly from digester or gas holder

Reduce water content to avoid condensation during downstream compression

Single-stage heat exchanger with water knock out

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Remove VOC, HCFC and siloxane through activated carbon adsorption

Heat regenerated dual activated carbon bed to ensure high level VOC removal
**Biogas Upgrading**  
Carbotech PSA Model Block Diagram

- **Biogas**  
  125 psig, 70°F

- **Desulfurization**  
  140°F

- **Cooling**  
  70°F

- **2-Stage PSA**  
  CO₂/N₂/O₂ removal  
  120 psig  

- **CO₂ Offgas**  
  Vent/combust/liquefy

- **product gas**  
  90 psig, 70°F

Heat up gas and remove H₂S through activated carbon chemical sorption

Cool gas to provide optimum inlet conditions to PSA

Remove CO₂, air and residual water by PSA and supply product gas to pipeline specs

Optional Deoxygenation Unit

Continuous High BTU/scf product gas

Dual activated carbon bed in lead/lag configuration to ensure H₂S removal

Single-stage heat exchanger

Optional grid injection unit (i.e., booster compressor)
BIOFerm™’s Gas Upgrading Solutions
Carbotech PSA Gas Upgrading for Varying Raw Gas Streams

Landfill Gas Upgrading

Sewage Gas Upgrading

Agricultural Biogas Upgrading

Grid Injection Units
### PSA Gas Upgrading
Typical Gas Qualities & Gas Regulations

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| Trace Elements     |                |                     |                          |                          |
|--------------------|----------------|---------------------|--------------------------|
| Hydrogen Sulphide  | H$_2$S         | < 500 ppmv          | 0 - 0.25 gr/100cf        | < 0.25 gr/100cf          |
| Ammonia            | NH$_3$         | < 300 ppmv          | < 1 ppmv                 | Varies                   |
| Hydrocarbons       | C$_x$H$_y$     | < 100 ppmv          | < 10 ppmv                | n.a.                     |
| Water              | H$_2$O         | Saturated           | Dew-point -76°F @ 1 bar  | Dew-point <15°F @ injection pressure |

| Energy Characteristics |                |                     |                          |                          |
|------------------------|----------------|---------------------|--------------------------|
| Calorific Value        | H$_{S,N}$      | 505 - 707 BTU/ft$^3$| 970 - 990 BTU/ft$^3$     | > 967 BTU/ft$^3$         |
Unique Raw Gas Considerations:

- High N\textsubscript{2} or ‘air’ content (>5% N\textsubscript{2})
  - Typical of Landfills
- High H\textsubscript{2}S concentrations (400+ ppm)
  - Manure Digesters
  - WWTP/Landfills
- High VOC/Siloxanes
  - Landfills
Carbotech Gas Upgrading
PSA Systems
Carbotech Gas Upgrading
PSA 3D Drawing BUP2000

- RNG Buffer Tank
- H₂S removal
- LFG Inlet Separator
- Compressor
- Chiller
- Radiator
- Vacuum Pumps
- Control Room
- 40' Double Container
- 6-bed PSA
BIOFerm™ Gas Upgrading Solutions
Upgrade Biogas to Grid Entry

Biogas Production & Upgrading

Biomethane Conditioning & Grid Injection Unit

Biomethane to the Grid
Case Study – Carbotecth PSA BUP2000
US Food Processor Gas Upgrading Facility

Project Profile
• Large US food processor fueled boilers with biogas, but identified gas upgrading/natural gas grid injection as highest return alternative
• Customer: High Plains Bioenergy (HPG)/Seaboard Foods
• Location: Guymon, OK

Input Material
Biogas from anaerobic digestion of pork waste

Plant Data:
• Biogas capacity: 1,200 scf/minute
• Annual production: 440 million scf RNG
• Product gas: ~96% methane, despite high oxygen + nitrogen in raw gas
Case Study – Carbotech PSA BUP2000
US Food Processor Gas Upgrading Facility

Technology:
• Carbotech PSA – BUP2000
• Complete, integrated gas upgrading system:
  – Biogas filtration
  – Biogas compression
  – Biogas upgrading to natural gas pipeline requirements
  – Off-gas treatment
  – Control system over entire package
  – Performance guarantee
Case Study – Carbotech PSA
Henriksdal Wastewater Treatment Plant Gas Upgrading

• Upgrades biogas from one of the world’s largest underground wastewater treatment plant using Carbotech PSA BUP3000

• Raw Biogas Capacity = 3,000 Nm$^3$/hour (1,760 scfm), 61% CH$_4$

• Product Gas = 1,860 Nm$^3$/hour (1,100 scfm), 97% CH$_4$

• H$_2$S, VOC, Siloxane Removal; Tail-gas RTO; Methane capture >99%,
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Bringing Biogas to RNG Marketplace

Powered by

Broadwind®

SAFE
Gas designed for you

BUILT IN AMERICA
Strategic Partnership

• Exclusive packager for North America
• Lead sales and distribution
• Continuous improvement, supply chain optimization expertise
• Nationwide service network, spare parts stocked at locally for same or next day delivery

• Core compression technology
• Worldwide long term experience in compression systems
• Advanced engineering and product design
• Proactive approach to customer’s needs

Shared competencies bringing worldwide CNG expertise to North America

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• Founded in 1975
• Installations in more than 47 countries
• Over 3600+ compressors installed around world
• Production facilities surface: 280,000 ft²
• ISO 9001 certified since 2002
• World wide authorized GE HSR compressor package and parts/service provider
• Part of Landi Renzo, Innovative and diversified technology group since 2012
3600+ compression systems across 47 countries

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Our Major Customers

We work with global industry leaders

Building on our commitment to customers, every day.
Getting RNG to Market

Feedstock

Farm

Wastewater

Landfill

Biogas production

Biogas upgrading

CNG

CNG

CNG

CNG
Pipeline Injection Option

Biogas upgrading

CNG Compression

Compression into pipeline

CNG

CNG

CNG

CNG
Mobile Pipeline Option

Biogas upgrading

Module remains onsite

Hydraulic booster compressor

Compression into trailer

Gas transport module
Mobile Fueling Option

Biogas upgrading

Mobile fueling unit

Compression into mobile fueling unit

CNG
Onsite Fueling Option

Biogas upgrading

Compression into onsite storage

CNG storage
Either type can be used

CNG delivery to vehicles
General Specifications

• Suction pressure: 10 - 1000 psig
• Discharge pressure: up to 4500 psig
• Flow rate: 235 - 4300 scfm
• Power: 150 - 600 HP

ICE Gas Drive  Electric Drive
CNG Boost™ – Hydraulic Compressors

Standard Features & Specifications
- Suction pressure: 290 - 3600 psig
- Discharge pressure: up to 4500 psig
- Power: 20 - 100 HP
- Number of cylinders: 2
- System cooling: Liquid
- Drive: Electric motor or gas drive
- Enclosure: Optional
- Available as mobile solution with electric motor or internal combustion engine drive

Benefits
- Up to 90% storage utilization
- Up to 19GGEs per minute
- Minimal maintenance
- Negligible oil consumption
- High reliability with superior performance

Maximize Mobile Module Utilization with CNG Boost

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CNG Fuelink™ – Mobile Compressors

Mobile Refueling Compressor Module

Dispenser Panel & Internal Views

Trailer Mounted w/ Integrated Storage & SMARTSTORE Unit Views

Designed to Delivery Total Portability

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Package Features

Standard

• Plug-n-Play installation, requires electrical power and gas connections
• Controls and motor starters provided in separate area on the compressor enclosure
• Priority or time-fill panel provided inside compressor enclosure
• System meets North American and International design standards

Optional

• Duplex compressors in one enclosure, separate filters, valves, controls, etc., provide full redundancy
• Extreme cold weather package (below -20C)
• Sound dampening

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Cylinders are non-lubricated, a liquid coalescer is placed on the discharge side of the system

- Limited oil carryover in the gas stream
- Reduced oil consumption
- Reduced vehicle maintenance caused by oil carryover
System Cooling

System is liquid cooled

- Permits higher compression ratio while cooling discharge temperature to acceptable levels
- Reduced ring wear and increased seal life
- More efficient control of gas temperature in different ambient conditions
- Air to liquid cooler more easily maintained than gas to air cooler
- Liquid cooling reduces complexity of interstage piping allowing easier access for maintenance
- Liquid coolers are off the shelf components, field repairs are possible

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All compressors are rigidly connect to the motor with self aligning system

- Torsionally rigid lamellar joint couples compressor to prime mover
- No power loss due to flexible coupling or rubber joints
- Maintenance free, tough coupling to the motor, eliminates wear of soft rubber joints
- No field alignment required
All skids are placed on vibration dampers

- No need for a foundation design to handle dynamic compressor loads
- Simpler placement of compressor package
- No vibrations conveyed to the ground or to other equipment in compressor enclosure
- No need for grouting of skid or enclosure
- All of the above result in installation costs
Interstage pressure and temperature transducers included on all models
  • Quickly detect valve or cylinder malfunction

Vibration transmitter included on all models
  • Provides early warning of potential mechanical failure
Remote monitoring is included as a standard offering

- All compressor parameter can be monitored remotely
- Web based interface
Maintenance and Servicing

• 24/7 Service and Support
• Training
• Scheduled Maintenance
• On-site Service Calls
• Upgrades
• Access to Parts
• Online Monitoring
• Technical Support
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Webinar Summary

• Market conditions for Biogas/RNG today
• EPA: RINs grants and funding to improve economic feasibility
• Biogas and PSA Upgrading systems
• Challenges of generating pipeline quality gas
• Real world case studies
• Compression equipment options for on-site, off-site or mobile fueling

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SCHEDULE A WALKTHROUGH OF OUR CNG SKID
Thank you for your participation today!

WANT TO SCHEDULE A BIOGAS CONSULTATION?

- **Steven Sell**, BIOFermEnergy Systems – [sels@biofermenergy.com](mailto:sels@biofermenergy.com) (Biogas & PSA Upgrading Systems)

- **Susan Olson**, Genscape – [solson@genscape.com](mailto:solson@genscape.com) (RINs)

- **Mario Pirraglia**, SAFE North America – [mpirraglia@safenorthamerica.com](mailto:mpirraglia@safenorthamerica.com) (CNG Compression for on-site, off-site mobile fueling or pipeline injection)

- **David Walters**, Broadwind | SAFE CNG – [david.walters@bwen.com](mailto:david.walters@bwen.com) (CNG Compression for on-site, off-site mobile fueling or pipeline injection)

For more information:


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Reach us by phone: 708-780-4800

Reminder: Please utilize the QUESTIONS function of the control panel to ask questions.