

SINGLE STAGE PSA CASE STUDY



Guymon, Oklahoma

High Plains Bioenergy/Seaboard Foods

High Plains Bioenergy (HPB) and Seaboard Foods, a major North American Food Processor, installed a Pressure Swing Adsorption (PSA) gas upgrading plant from BIOFerm Energy Systems to generate renewable natural gas (RNG) for pipeline injection. HPB traditionally fueled boilers with gas generated from anaerobic digestion of pork processing waste, but identified gas upgrading and grid injection as a sustainable alternative use for their gas to enable the highest return.



Project Background

Customer: HPB/ Seaboard Foods
Seaboard Foods: Processes 5.5 million hogs/year
Gas Source: Covered anaerobic digestion lagoons
Location: Guymon, Oklahoma
Gas Upgrading Technology: Single Stage PSA
Operational: July 2017



Project Gas Upgrading Specifications

Single Stage PSA: BUP2000
Plant Footprint: 7,200 ft²
Gas Utilization: Pipeline Injection
Energy Content: >950 BTU/scf
Pipeline Requirements: Exceeds DCP pipeline specs
Raw Gas Capacity: 1,200 scfm
Raw Gas: 68% CH₄, 24% CO₂, >4,000 ppm H₂S
Product Gas: 850 scfm



Skid-Ready PSA Installation Includes:

- >Fully integrated control system
- >Biogas Filtration
- >Biological Sulfur Removal Unit
- >Biogas Compression
- >Deoxygenation to a level of < 10 ppm O₂
- >Gas Chilling
- >Booster Blower



Fuel Output

RNG: ~400 million scf/year
Gas gallon equivalent: 5.5 million (GGE)/ year