

COCCUS® Plant System

Biogas Systems for Feedstock with Low Solids Content



Plant Systems

COCCUS® is a complete mix anaerobic digester that is operated at the mesophilic temperature range. It is designed for input materials with low solids content (between 8 – 12%). The tank is a reinforced concrete design with 2 or 3 large REMEX® paddle mixers. The drive motor of the mixer is mounted onto the outside wall of COCCUS® so that only the polyamide bearings are located inside the fermenter. The tank is heated through hydronic heating installed onto the interior tank wall. Biological desulfurization is integrated into the wooden roof structure of the gas storage which provides for a cost effective removal of a large part of the hydrogen sulfide.

Technical Components

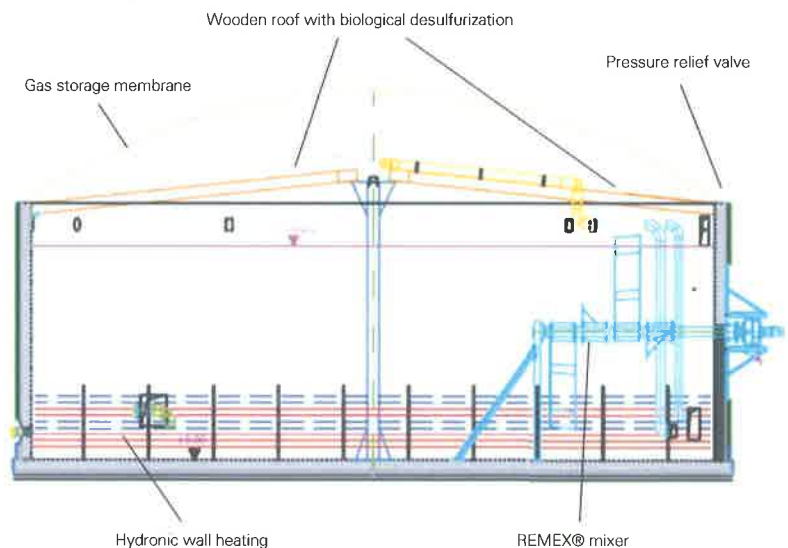
- Paddle mixers with energy efficient drive units for optimal mixing to support continuous gas production
- Hydronic heat distribution on interior of digester tank wall uniformly heats substrate
- Concrete coating in gas space protects concrete and reduces maintenance cost
- Integrated biological desulfurization in wooden roof structure
- Dual membrane roof system provides gas storage at constant pressure
- Robust feeder for individually tailored feedstock charging
- All technical equipment installed in one building
- Frost-proof and low maintenance pressure relief valve

System Advantages

- Low parasitic energy consumption
- Industrial grade components
- Fully automated operation
- Professional plant control systems with PLC technology
- Short construction time
- Quality components result in low maintenance
- Scalable

About BIOFerM™

BIOFerM™ Energy Systems is a member of the Viessmann Group, a \$2.5 billion family owned business since 1917. Viessmann has installed over 30 dry AD and 250 wet AD facilities through the biogas companies of the Viessmann Group. BIOFerM™ Energy Systems was founded in Madison, WI in 2007 and now offers all biogas technologies of the Viessmann Group.



Agricultural Applications

Biogas Plants Starting at 85 kW

The COCCUS® system provides the ideal technology to treat dairy manure and other liquid waste streams from animal farming applications. The system is fully scalable starting with different tank sizes and the option to combine multiple tanks. The smallest COCCUS® tank can treat manure from approximately 500 dairy cows and has a minimum electric capacity of 85 kW.

Nutrient Management

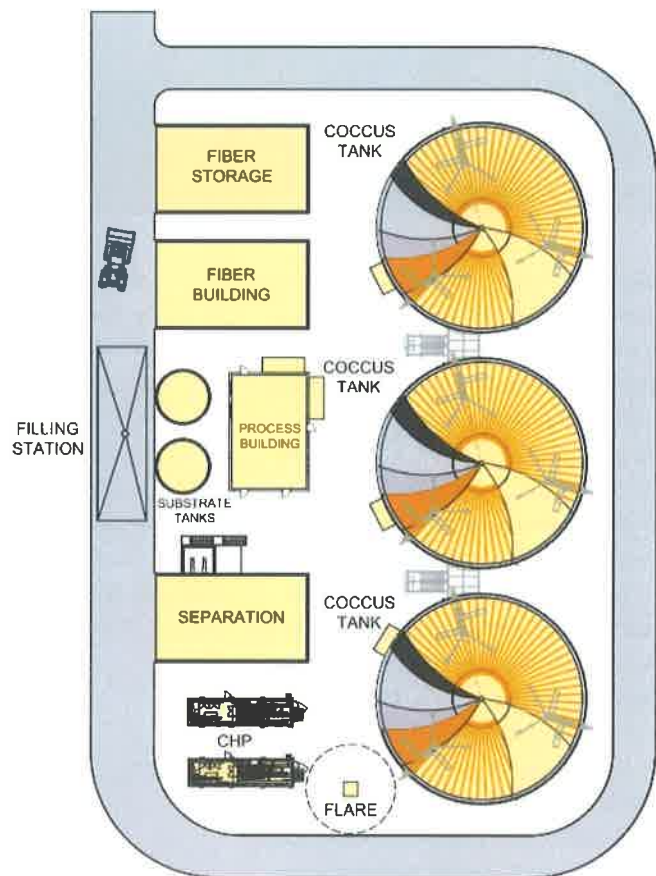
Nutrients are conserved and improved through the digestion process and protein degradation results in a more readily available nitrogen for plants. Organic nitrogen is converted to ammoniacal nitrogen and organic phosphorous is converted into orthophosphate making it a superior fertilizer than untreated manure. The NPK ratio in the effluent is consistent with that of the untreated manure. The solid and liquid effluent can be separated to concentrate streams of phosphorus and nitrogen and the solids can either be used as a fertilizer or as bedding for barns.

Energy Independence

Creating renewable electricity and heat makes a farm operation energy independent and protects from fluctuating energy prices. Electricity can be used to power farm equipment and adjacent buildings. The process heat can be used to further dry the solids into a saleable compost material and generate additional revenue for the operation.

Optional Equipment

- Liquid digestate separator
- Final storage for liquid and solids
- Solids dryer
- Gas upgrading for LNG
- Vogelsang QuickMix chopper pump
- Co-substrate (food waste and FOG reception and dosing equipment to boost gas production)



Animal	# of Animals	Estimated continuous kW Output	Plant Size
1400 lbs Dairy Cow ¹	500	85 - 140	1 COCCUS Tank
1400 lbs Dairy Cow ¹	1,000	165 - 265	1 COCCUS Tank
1400 lbs Dairy Cow ¹	5,000	820 - 1,320	2-3 COCCUS Tanks
420 lbs Swine ²	5,000	75 - 120	1 COCCUS Tank
420 lbs Swine ²	10,000	150 - 240	1 COCCUS Tank

¹ Typical COD conversion efficiency of 30 - 50%

² Typical COD conversion efficiency of 50 - 70%