

FERMADOR CSTR Technology

About BIOFerm Energy Systems

Based in Madison, Wisconsin, BIOFerm Energy Systems is an experienced provider of turnkey renewable energy systems, including anaerobic digestion, gas upgrading, and solar energy. From project conception to commissioning, optimization and training, BIOFerm handles every aspect of the entire process. Our range of biogas solutions allows for seamless integration into a variety of different operations, including landfills, municipalities, wastewater treatment plants, food processors, agricultural operations, and more. BIOFerm is committed to providing successful renewable energy projects to our clients and ensuring that our technologies will produce the results agreed upon by offering the industry's most thorough Performance Guarantee & Warranty.



System Overview

FERMADOR is a continuous stirred tank reactor (CSTR) and is designed to economically process food waste, biosolids, agricultural waste, liquid manure, energy crops, and more. This system ideally operates with feedstocks between 6-15% total solids content, and can process 6,000+ tons/year. FERMADOR tanks are made of reinforced concrete and equipped with large, internal paddle mixers. For cost-effective removal of hydrogen sulfide, biological desulfurization can be integrated into the digester's gas storage.



Key Advantages

- Low parasitic energy consumption
- Fully automated operation
- Operator-friendly system
- Industry proven components with low maintenance
- Short construction time
- Scalable by tank size and number as needed



Technical Components

- Paddle mixers with energy-efficient drive units for optimal and continuous gas production
- Hydronic heating on tank wall uniformly heats substrate
- Interior concrete coating reduces maintenance
- Integrated biological desulfurization
- Dual-membrane roof system provides gas storage
- Robust feeding system
- One building for all technical equipment
- Pressure relief valve is frost-proof and low maintenance



Optional Expansions

- Liquid digestate separator
- Final storage for liquid and solids
- Solids dryer
- Gas upgrading to RNG/CNG/LNG
- Co-substrate (food waste and FOG reception and/or dosing equipment to boost gas production)
- Talk with your BIOFerm contact about what other expansion options are right for you

FERMADOR CSTR Case Study

Rosendale Dairy Pickett, Wisconsin

Rosendale Dairy, home to 8,500 cows, installed an anaerobic digester in 2013 to generate renewable energy from manure and tackle environment concerns. The system was built as a partnership between the University of Wisconsin-Oshkosh (UWO) and Rosendale Dairy. About 350 tons of manure per day are processed in the digester to meet the Power Purchase Agreement.



Plant Dimensions and Process

Rosendale Dairy's biogas plant consists of two FERMADOR digesters, together occupying 10,053 ft². As part of their plant they also have a pump building that is 506 ft², a mechanical building with an area of 1,080 ft², and a separator mezzanine covering 420 ft². All together the total footprint of the Rosendale Dairy plant is 12,059 ft².



Power & Energy Production

- 1.426 MW biogas engine
 - 1.426 MW electrical capacity
 - 1.5 MW thermal capacity
- Average annual energy production
 - 12.5 million kWh electrical
 - 45,300 MMBTU thermal
- Estimated energy from the CHP could
 - Provide electricity to 1,107 homes/year
 - Heat 1,031 homes/year



Environmental Benefits

- The methane produced and used is equal to the avoided release of 44,602 metric tons of CO₂ per year
- Electricity generation from these renewable sources is equivalent to reducing
 - 11,786 metric tons of CO₂ per year from a conventional bituminous coal facility
 - 6,912 metric tons of CO₂ per year from a natural gas facility



Financials

\$7 million capital investment for the anaerobic digestion portion.