

Case Study

Rosendale Dairy, UWO Biodigester II - Picket, WI



References

Rosendale Dairy, the largest dairy in Wisconsin with 8,500 cows, became the home of a biodigester system at the end of 2013. The biodigester was installed by the University of Wisconsin - Oshkosh (UWO) and utilizes the dairy's manure to generate renewable energy and tackle environmental concerns. In addition, the project also includes the creation of a public education center and a research laboratory accessible to UWO staff and students and the public. The project is the third biodigester built in collaboration between UWO and BIOFerm™ Energy Systems.

Feedstock

- The biodigester is fed approximately 240 tons of dairy manure per day

Plant Dimensions

Component	Footprint
Two Combined COCCUSTanks	10,053 ft ²
Pump Building	506 ft ²
Mechanical Building	1,080 ft ²
Separator Mezzanine	420 ft ²
Total	12,059 ft²

Financials

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

Power Production

- 1.4 MW_{el} continuous power generator (combined heat and power unit, CHP):
 - 1.4 MW electrical capacity
 - 1.5 MW thermal capacity
- Average annual energy production:
 - 12.5 million kWh electrical production
 - 45,300 MMBTU thermal production
- The estimated energy from the CHP could:
 - Provide electricity to 1,107 homes
 - Heat 1,031 homes per year

Emission Reduction

- The methane produced and used is equivalent to the avoided release of:
 - 44,602 metric tons CO₂ per year
- Electricity generation from these renewable sources is equivalent to reducing:
 - 11,786 metric tons CO₂ per year from a conventional bituminous coal facility
 - OR
 - 6,913 metric tons CO₂ per year produced from a natural gas facility

About BIOFerm™

BIOFerm™ Energy Systems is a member of the Viessmann Group, a \$2.5 billion family owned business founded in 1917. Viessmann has installed over 350 AD facilities through the biogas companies of the Viessmann Group. BIOFerm™ Energy Systems was founded in Madison, WI in 2007 and offers all biogas technologies of the Viessmann Group.



Technology Feature: REMEX® Paddle Mixer



The Rosendale Dairy biodigester achieves optimum fermentation through the deep, slow and continuous agitation of the REMEX® Paddle Mixer inside the tanks. This low power consuming mixer ensures homogenous horizontal and vertical mixing, low maintenance requirements, low failure rates, robustness and durability, and the elimination of sinking and swimming layers. The process results in well mixed effluent for post-digestion nutrient recovery systems.

University Applications

Benefits from the University of Wisconsin - Oshkosh and Rosendale Dairy Partnership

Training for Future Leaders

This biodigester project forges the way in higher education and training as the only facility in the United States designed to also be a teaching center for the development of skilled technicians, scientists and engineers for the biogas and renewable energy industry, and animal husbandry.

With the addition of the Rosendale Dairy Biodigester to UW O's existing biodigester collection—a compact biodigester and dry fermentation biodigester—UWO continues to lead campuses around the nation in sustainability through waste-to-energy and to expand training opportunities for students and the community.



University Benefits from Biogas

Universities can benefit greatly from biogas projects through partnerships with neighboring waste operations, such as the relationship between UWO and Rosendale Dairy.

Benefits to UWO and community from the biodigester project include:

- The establishment of a UWO student/faculty-operated public education center for the education of
 - K-12 students
 - UWO students and educators
 - Environmental science/engineering residents
 - A hands-on, real-life laboratory experience for career development
- A significant portion of the University's goal of reaching carbon neutrality by 2025 is fulfilled through renewable biogas/electricity generated from this biodigester and sold back to the grid

On-Campus AD

Campuses around the nation can also decrease their environmental impact through the installation of their own biodigester for organic waste generated at the university using compact biodigesters (for campuses with limited footprints) or dry fermentation biodigesters.



- 1 Public Education Center
- 2 COCCUS digestion tanks
- 3 Dairy free stall barns
- 4 Separated fiber storage
- 5 Technical room
- 6 Solid/liquid dosing station
- 7 CHP unit