

# University Case Study

University of Wisconsin Oshkosh - Oshkosh, WI



Digester Reference

The University of Wisconsin Oshkosh installed North America's first industrial-scale dry fermentation anaerobic digester in 2011. This BIOFerm™ Dry Fermentation system - dubbed Biodigester I or "BDI" - serves as a living, learning laboratory for students and faculty while furthering the University's goals of a sustainable campus with net zero environmental impact.

### Feedstock

Sourced under agreements between the University and its suppliers, BDI diverts approximately 8,000 tons/year of:

- Food waste
- Yard waste
- Crop residuals

### Plant Dimensions and Process

Total footprint is 19,000 ft<sup>2</sup> (storage area 2,000 ft<sup>2</sup>, mixing area 7,800 ft<sup>2</sup>).

Four fermentation vessels - each 70' x 23' x 16.7' - undergo a maximum of 13 material exchanges/year with 150 tons of fresh material/exchange. Each cycle is ~28 days.

### Odor Control

An enclosed mixing lobby is ventilated with ~2.6 air exchanges/hour to prevent odors from escaping into the environment. Process air is then treated and released to the atmosphere via a biofilter.

### Financials

\$3.5 million capital investment.

- Federal government grant: \$500,000
- WI Focus on Energy grant: \$232,587

### Power Production

370 kW<sub>el</sub> continuous power engine (combined heat and power unit), rated at 86.76% efficiency, with a capacity of:

- 370 kW electrical
- 495 kW thermal

Average annual energy production:

- 2,479,000 kWh electrical
- 10,859 MMBTU thermal

The estimated energy from the CHP could:

- Provide electricity to 220 homes
- Heat 247 homes per year

### Emissions Reduction

Methane produced and used is equivalent to the avoided release of:

- 9,641 metric tons CO<sub>2</sub> equivalent

Electricity generation from these renewables is equivalent to reducing:

- 2,339 metric tons CO<sub>2</sub>/year from a conventional bituminous coal facility, or,
- 1,372 metric tons CO<sub>2</sub>/year produced from a natural gas facility

### Technology Choice

BIOFerm™ Dry Fermentation anaerobic digestion technology, in contrast to wet technology, operates at a higher solids content (25% and above).

Material also stays stationary within dry fermentation chambers, no additional liquid input is required, and feedstock is moved via front-end loader rather than pumped as a slurry.

### About BIOFerm™

Based in Madison, Wisconsin, BIOFerm™ Energy Systems is a North American provider of turnkey gas processing and anaerobic digestion systems.

We additionally offer a spectrum of biogas services, such as: gas marketing, financing, project development, regulatory and financial oversight, power purchase agreement assistance, and consulting engineering.

Our company has experience from the installation of over 900 PSA systems (including ~90 Carbotech PSA gas processing plants) and over 450 anaerobic digestion facilities worldwide.