

Industrial/Municipal Waste Management with Biogas



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Anaerobic Digestion (AD) Plants in Wisconsin

Industrial	28
Municipal	60
Total	88



Waste Handled By AD Plants in Wisconsin

Industrial (28)	
Flow	14.3 mgd
Serves	963,000 pop. eq.
Energy	30 MW
Municipal (60)	
Flow	390 mgd
Serves	4 million people
Energy	20 MW

AD Plant Impacts

- ▶ Direct employment
- ▶ Secondary employment
- ▶ Material and equipment
- ▶ Reduced utility costs
- ▶ Reduced sludge handling costs



AD's Budget-Reducing Features

- ▶ Electrical energy from waste
- ▶ Thermal energy from waste
- ▶ Less waste to handle
- ▶ Less chemicals needed
- ▶ Less operating attention



Wisconsin AD Examples

- ▶ Industry – Packaging Corp. of America in Tomahawk
- ▶ Municipality – Sheboygan POTW
- ▶ Joint systems
 - Beaver Dam POTW/Kraft Foods
 - City Brewing/Gundersen Lutheran Hospital



Packaging Corp. of America

Tomahawk, Wisconsin

- ▶ Containerboard and packaging products
- ▶ 535,000 tons per year
- ▶ Over 400 employees in a town of 3,600 people
- ▶ Over 3% energy from biogas



Sheboygan POTW *Wisconsin*

- ▶ Nearly 50,000 people in 2011
- ▶ Handles 12 mgd of wastewater
- ▶ Produced 107,000 ft³/d in 2002
- ▶ Produced 475,000 ft³/d in 2011
- ▶ Nearly sustainable POTW (90–95%)



Beaver Dam POTW/Kraft Foods *Wisconsin*

- ▶ Nearly 18,000 people in 2011
- ▶ Handles 5.6 mgd of wastewater
- ▶ Produced 40,000 ft³/d in 2002
- ▶ Kraft Foods produces cream cheese
 - Discharges 240,000 gpd to POTW
- ▶ In 2012, will produce 190,000 ft³/d
- ▶ Expect to be completely sustainable



City Brewing/Gundersen Lutheran *La Crosse, Wisconsin*

- ▶ City Brewing produces a wide range of beverages
 - 2.5 mgd of brewery wastewater produces about 450,000 ft³/d of biogas
- ▶ Gundersen Lutheran Hospital is a non-profit healthcare network
 - Working toward 100% sustainability
 - Cogeneration system produces 633 kW of power
 - Covers 8–10% of their campus needs



AD is Good for All

- ▶ Lowers operating costs = more competitive
- ▶ Reduces wastes and emissions = “green” image
- ▶ Improves sales = more profitable
- ▶ Environmentally prudent = a good feeling!



Goals for WI AD

- ▶ Conversion of wastes to resources
- ▶ Localized energy self-sufficiency
- ▶ Growth of AD industry manufacturing
- ▶ Export of AD expertise



Thank You!

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