

GREEN VALLEY DAIRY – KRAKOW, WI

SYSTEM DESIGN

Green Valley Dairy installed three above-ground, complete mix digesters to treat the 120,000 to 150,000 gallons of manure that are produced each day on their farm. Co-owner Guy Selsmeyer said the digester system has had very good biogas production and has generally produced more biogas than the farm could use.

To increase digestion, manure is preheated using a remote heat exchanger and fed continuously into the digesters. Biogas is dehumidified using a condensate trap and chiller with added oxygen and burned to generate electricity and heat. Green Valley Dairy established a sell-all contract with We Energies, who buys the electricity produced at the farm. Recovered waste heat from the generator sets is used to maintain a digester temperature of 102°F, and additional waste heat is used for heating the calf barns, shop, and other buildings. Excess biogas is flared. The farm also has a backup boiler that can run on biogas to heat the digesters or pre-heat manure, which is important because the dairy uses digested solids for bedding.

PROJECT BENEFITS

- Odor and pathogen reduction
- Electricity and heat production
- Digester effluent utilized as organic, generally pathogen-free nutrients for fertilizer use and animal bedding

A solids separator is used to separate solids from digester effluent. Additionally, recovered heat is used for heating the digester, buildings on the farm, and pre-heating or thawing manure in the winter. The farm produces approximately 120 tons of biosolids per week using half for on-farm bedding and selling the rest to neighboring dairies. The farm also gets carbon credits for avoided methane emissions.



Photo: Energy Center of Wisconsin

“Before we installed the anaerobic digester, we were handling manure as a waste product when what we should have been doing is handling it as a value-added product.”

—Guy Selsmeyer
Co-owner, Green Valley Dairy

- **Population Feeding Digester:** 3,400
- **Baseline System:** Storage Lagoon
- **Co-Digestion:** Milking Parlor Wash Water
- **System Designer:** Biogas Direct, LLC (1st two digesters), Northern Biogas, LLC (3rd digester)
- **Biogas Use:** Cogeneration
- **Generating Capacity:** 1200 kW
- **Receiving Utility:** WE Energies, Inc.