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## HOLSUM DAIRY (ELM ROAD) – HILBERT, WI

DAIRY FARM IN WISCONSIN – UTILIZING LOCAL FOOD PROCESSING WASTES TO ENHANCE WASTE STREAM

### SYSTEM DESIGN

Elm Road Dairy is the newer of two Holsum dairies operating a digester in Wisconsin. Manure at the dairy is scraped and collected three times each day. Waste from three area food processing industries is added to the waste influent stream and sent to two plug flow digesters.

In 2007, the farm installed two concrete, below-grade two-stage mixed plug flow™ digesters with fixed concrete covers. The digesters operate at a temperature between 95°F and 100°F and have a hydraulic retention time of 22 days. The system, designed by DVO, Inc., utilizes passive gas-induced mixing and has return of activated sludge to help sustain bacteria colonies.

Biogas generated from the digester is dehydrated by running it through a condensate trap and chiller, and then sent to two 600 kW engine generator sets for electricity production. All electricity produced on the farm is sold to the Wisconsin Public Service Corporation under a sell-all contract. Recovered heat is used to heat the digester, milking parlor, office, shop, and holding and transfer areas. The facility has an on-site dual fuel boiler for backup heat that can run on either biogas or diesel.

Two Fan screw presses are used to separate digester effluent. The farm produces approximately 16 tractor trailer truckloads of digested solids each week. The facility uses about one third of the fibrous solids for bedding and sells the rest to other dairies.

### PROJECT BENEFITS

- Revenue from waste tipping fees
- Sale of excess gas and solids helps recover capital investments
- Electricity and heat production



Photo: Energy Center of Wisconsin

- **Population Feeding Digester:** 4,000
- **Baseline System:** Storage Tank or Pond or Pit
- **Digester Type:** Two-Stage Mixed Plug Flow™
- **Co-Digestion:** Food waste (non-farm food processing waste from 3 industries)
- **System Designer:** DVO Inc.
- **Biogas Use:** Cogeneration
- **Generating Capacity:** 1,200 kW
- **Receiving Utility:** Wisconsin Public Service Corp.