

FREUND FARM – EAST CANNAN, CT

SYSTEM DESIGN

Freund Dairy installed a plug flow digester during a complete rebuild of the waste management system in 1997. The purpose of digester installation was to improve manure handling during the winter months while also recovering energy. The farm needed the ability to separate fiber from manure during winter months and to store the liquid filtrate for irrigation. Hot water from the biogas boiler heats the digester.

Cows are pastured in the summer and kept in the barn during the winter. The 62-foot digester currently receives approximately 3,600 gallons of manure each day from 250 cows. After failure of the original flexible cover, the Freunds built an uninsulated aluminum-framed greenhouse structure over the digester to collect and contain the biogas.

A screw press separates the coarse fiber from the digester effluent, which is then used as bedding material and for producing biodegradable planting pots (Cow Pots). Sale of the Cow Pots has helped offset the capital cost of the digester. The liquid effluent is stored in a storage pond. Gas captured by the digester fuels a 400,000 Btu/hour boiler that, in turn, heats the Freund's digester, milking center, farmhouse, and offices.

PROJECT BENEFITS

Solids Freund Farm's digester includes the following benefits:

- Provides Dairyland Power Cooperative a competitively priced renewable energy source for their customers
- Odor is virtually non-existent, reducing impact on abutting residential property
- Manure treatment and nutrient application complies with manure management regulations, saving additional investment
- Separated solids provide material for the production of Cow Pots, which produces a value-added product and helps pay for the digester system



Photos (above and below): Freund Farm

- **Population Feeding Digester:** 250
- **Baseline System:** Storage Lagoon
- **Digester Type:** Horizontal Plug Flow
- **System Designer:** RCM International, LLC
- **Biogas Use:** 14,000 ft³/day
- **Biogas Use:** Boiler/Furnace Fuel