

ANAEROBIC DIGESTION

CO-DIGESTION OF FOOD WASTE

Patterson Farms

Auburn, Cayuga County, NY



View of digester cover



Southern perspective of digester



Engine-generator set in gas utilization building

| | |
|------------------------------------|---|
| Digester type | Complete mixed |
| Digester designer | RCM Digesters, Inc. |
| Influent | Raw manure, food waste (cheese whey) |
| Stall bedding material | Separated manure solids |
| Number of cows | 1,000 dairy cows |
| Rumensin [®] usage | Yes; used on all dairy cows and all heifers |
| Dimensions (W,L,H) | 30'x104'x19' |
| Cover material | Flexible; multi-laminate |
| Design temperature | 100°F |
| Estimated total loading rate | 45,000 gallons per day |
| Treatment volume | 1.2 x 10 ⁶ gallons |
| Estimated hydraulic retention time | 22 days |
| Solid-liquid separator | Yes; Vincent screw-press separator |
| Biogas utilization | Caterpillar engine with 250-kW generator |
| Carbon credits sold/accumulated | Yes; Chicago Climate Exchange |
| Monitoring results to date | No; Currently being monitored with ASERTTI protocol |

Farm Background

Patterson Dairy Farms, Inc. has been a family farm for the past seven generations, and is now owned and operated by Mrs. Connie Patterson with her son, Jon, and his wife Julie, along with Dairy Manager Bob Church.

- Odor emissions became an issue in 2000 after constructing an earthen manure storage.
- After receiving grant funds from several sources, digester construction started in August 2004; the digester was commissioned in October 2005.
- The farm selected a Complete-Mix digester for the added flexibility of handling organic waste from outside sources.

Lessons Learned

- It is important to research funding opportunities and permitting requirements prior to construction.
- Using farm labor to construct a digester can be a cost savings method, and help the farm to understand key components of the system.
- Accepting food waste provides revenue from tipping fees which can make the project economically feasible.
- There is no company/organization to provide complete technical support of a digester system - this is an issue that needs to be addressed.
- Uncovered food waste storage pits release significant odor; it is necessary to have these pits covered.
- Biogas hazards and safety requirements should be fully understood.

