

ANAEROBIC DIGESTION

COMBINED HEAT AND POWER

Emerling Farms

Perry, Wyoming County, NY



Digester and separator building



Gas utilization building interior



Approximately 10 gallons per day of used restaurant grease are added to the digester

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|------------------------------------|---|
| Digester type | Plug-Flow |
| Digester designer | RCM Digesters, Inc. |
| Influent | Raw manure |
| Stall bedding material | Separated manure solids |
| Number of cows | 1,100 dairy cows |
| Cover material | Soft top (Hypalon 45) |
| Design temperature | 100°F |
| Estimated total loading rate | 48,000 gallons per day |
| Treatment volume | 1.2 x 10 ⁶ gallons |
| Estimated hydraulic retention time | 20 days |
| Solid-liquid separator | Yes; separated manure solids used for stall bedding |
| Biogas utilization | Caterpillar engine with 230-kW generator |
| Carbon credits sold/accumulated | No |
| Monitoring results to date | No; currently being monitored with ASERTTI protocol |

Farm Background

- Emerling Farms, Inc. is a second and third generation family farm operated by John and Betty Emerling and son Mike and his wife Elizabeth.
- The farm was started in 1960 with 25 cows.
- The farm raises forage crops on 1,800 acres of land
- The primary reason Emerling's chose to construct a digester was to offset electrical power cost.
- The farm received funding from the New York State Energy and Development Authority (NYSERDA) as well as from the United States Department of Agriculture (USDA) Rural Development program

Lessons Learned

- The system should have been fully designed prior to starting construction. Constant changes to engineering designs resulted in construction delays.
- Formation of a crust within the digester has caused problems. Restaurant grease waste has been added with a goal of reducing crust build up. Similar volumes of a by-product from a bio-diesel plant are added from time-to-time.
- Two smaller engine-generator sets might be better than one large unit. Some of the maintenance requires down time and consequently results in the need to procure power from the local utility, increasing the farm's stand-by demand charge.



PRO-DAIRY

