

Manure Digester Technology

100,000 People rely on Seneca Lake for safe drinking water
Currently Seneca Lake is experiencing an influx of nutrients.
Excess nutrients could have long lasting negative effects
Dissolved oxygen levels will become depleted and the lake
will become eutrophic

- Solid manure contains 11 lbs of N, 5 lbs of P and 4 lbs of K per ton
- 1 lb of P can grow 500 lbs of algae
- One dairy cow will produce 223- 260 lbs of N, 40-69 lbs of P and 88-146 lbs of K per year
- Average dairy farm of 1000-5000 cows will produce 60 -375 tons of manure per day
- Larger operations (over 15,000 cows) produce over 500 million tons annually

Types of Manure Digesters:

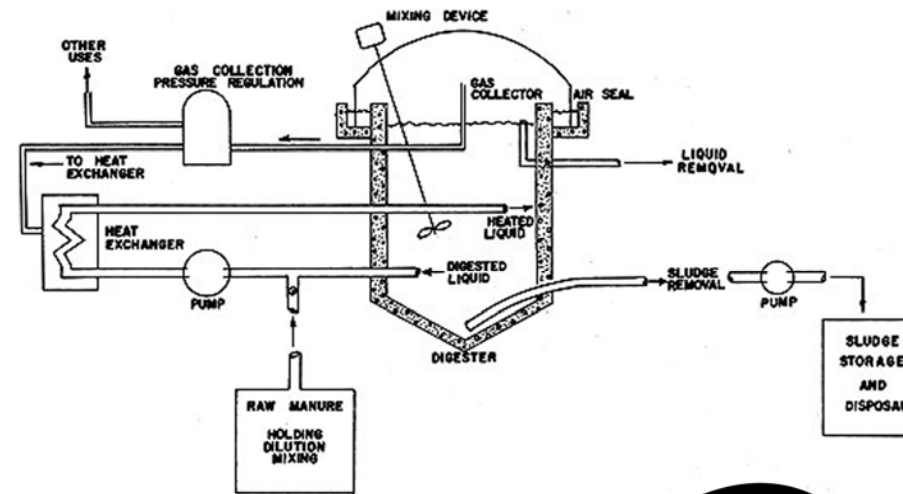
Covered Lagoon: basic retention pond with a custom tarp covering gas is collected through a pipe at the top that is connected to a generator.

Plug Flow: Rectangular concrete tank with an airtight cover. Manure is heated to approx 100 F.

Fixed Film: Concrete or steel tank with a plastic media called a biofilm. Biofilm supports a thin layer of anaerobic bacteria and maintains a concentrated population of microorganisms that produce methane during anoxic conditions.

Complete Mix: Concrete or steel tank where manure is mixed by an impeller. The impeller keeps the manure solids suspended to allow the material to break down more efficiently.

Complete Mix Diagram



Locally

Lawnhurst Farms

- 2000 acres within the Flint Creek watershed and Seneca Lake Watershed
- 1300 Milking cows 1700 young stock beef cattle
- Manure production of 35000 gallons per day
- Plans to install a 1 million gallon complete mix system
- Cost of 3 million
- In addition to manure they will add fats, apple pumice, whey and waste feed
- Produce enough electricity to power the farm and heat the dairy
- Solids are dried and used for bedding

Advantages to using a manure digester

- Odor control
- Weed seed destruction
- Pathogen destruction
- Nutrient stabilization
- Easier separation of effluent
- Easier handling of manure
- Methane/Electricity Production
- Bedding Material
- Allows nutrients to be spread over larger distances