ANAEROBIC DIGESTION

Lower Costs by Retrofitting an Existing Manure Storage Pit to Digest Manure

Spring Valley Dairy Schodack, NY

OBJECTIVES

Anaerobic digestion of dairy manure has many advantages for farms, including reducing manure odors, reducing pollutant effects and the potential to generate power. A new anaerobic digester system has a high capital cost, making it generally cost prohibitive to farms smaller than approximately 500 cows. This project will build and test a low-cost farm anaerobic system which will use the existing manure storage pit as a digester. Electric power will be generated for use on the farm.

DESCRIPTION OF SYSTEM

Dubara Company Inc. has developed a ‘Manure Storage Activation System’ which introduces anaerobic bacteria into existing manure storage structures through a controlled seeding process. Unlike other digesters, this patented system does not require building a new structure for manure digestion. The system uses a series of small-scale seeding digesters which regularly inject anaerobic bacteria in the existing storage pit to promote methane production. A cover over the entire pit captures methane produced from the stored manure. Since Spring Valley Dairy uses sand bedding, the system includes a sand removal system. A diesel generator has been adapted to operate on both methane and diesel fuel. Gas production and hence electric power generation are expected to be greater in the summer than in the winter. Electricity produced will be sent to the grid with net metering, allowing months with surplus energy production to offset the months with lower production. Waste heat from the generator will be used to increase manure temperature in the pit to increase methane production.

OUTCOME

Construction of the system is nearly complete. The Activation System, cover and generator have been installed, and the system has been demonstrated to be effective in dramatically reducing manure odors and solids. Capital costs of this digester system have proven to be far less than alternatives. The system will be fully operational when electrical connections and negotiations with the utility regarding hook-up are completed, and the generator begins to produce heat to increase methane production.

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