EVALUATION OF BIOGAS-FUELED POWER GENERATION SYSTEMS

Livestock in New York State produce more than 15,000,000 tons of manure per year. Improper management can lead to nutrient runoff, watershed pollution and well contamination. As a result of new regulations for large concentrated animal feeding operations (CAFO’s), farmers are facing increased expenses to properly manage manure.

Due to system size and efficiency requirements, large farms and groups of farmers are looking at anaerobic digester systems as a means of treating manure. Most farms with large digesters, like the one pictured above at Matlink Dairy Farm, Chautauqua County, use the digester biogas to fuel power-generation equipment. This output reduces farm electricity purchases and costs.

Five digesters are now operating in New York State, and NYSERDA funding has been approved to assist with the construction of sixteen more. The economic viability and the potential for its widespread adoption, without outside funding support, depends on system long-term reliability. The cost-effectiveness and life cycle of digester systems interests not only farm operators, but the buyers of their power generation.

This project provides funding to sample materials and record operation data needed to evaluate performance of five selected digester systems for a two-year period. Tests will include the recording of data on energy production, use and availability, analysis of nutrient concentrations that are important for environmental management, and testing of pathogens important for solid byproducts and liquid effluent recycling to crop fields. Opportunities for system optimization will be identified and tested. This will be done in collaboration with the AgSTAR methane-recovery program sponsored by US EPA, DOE and USDA.

“This project can only help to improve the viability of these systems on dairy farms.”

–Peter Wright, PRO-DAIRY