

# ANAEROBIC DIGESTION

## Combined Heat and Power with a Fiberglass Hard-Top

Aurora Ridge Dairy

Aurora, NY



The Aurora Ridge Dairy rests high above Cayuga's waters east of Aurora, NY. Owners Bill and Penny Cook desire to handle manure in the most efficient, environmentally responsible and neighbor-friendly manner. Plans for 2004 include: an anaerobic digester with combined heat and power (CHP); a CAFO-compliant bunk-silo leachate and storm water system; and a new, 10-million gallon effluent lagoon. The digester and CHP system will treat and recover energy from approximately 1,800 adult Holstein cows and 1,200 calves and heifers.

Aurora Ridge plans to further process digester effluent to prepare solids appropriate for use as bedding, composting or land spreading. In addition, the Cooks plan to make the most economical use of heat and power available from the CHP system, both for existing operations and new uses. An interesting feature of the project will be two greenhouses for a horticultural enterprise. The greenhouses will use lighting and winter heat from the CHP system, as well as nutrients from separated digester effluent.

The digester system will feature twin, parallel-track, plug-flow digesters capped with fiberglass covers. The fiberglass design will be a first for farm digesters in the United States. The system will self-pressurize and clean itself of scum and crust formations, avoiding the need for gas compressors, and solving the problem of crust development associated with soft-top designs.

Prime mover selection for the CHP system has not been finalized, but tentatively will feature twin, naturally aspirated Cat G3406 engines set up for full (>50% fuel input energy) heat recovery. Output from twin synchronous generators is expected to be about 130 kW each. There will be sensors and controls to fully integrate operation of the digesters and engines, either of which will be capable of operating on either digester.

The project also will showcase a trial installation of a unique water purification system capable of sequestering phosphorus and producing water of a quality suitable for direct stream discharge.

Construction will commence by early spring 2004, followed by startup in the fall. Funding sources include programs of NYSERDA and USDA. Design and project management are by Cowpower.

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“This digester system will set a new standard for farm resource recovery in New York State”

- Dave Palmer,  
Cowpower

