

Cayuga County Regional Digester Facility

Location:	City of Auburn, Cayuga County, New York
Customer:	Cayuga Soil & Water Conservation District
Type:	Municipal
Feedstock:	Dairy Manure & Foodwaste
Capacity:	625kW Electric + 625kW Heat



Aerial diagram of digester facility location

Digester Facility at the end of 2008

This building is for the generator room, pump room, electrical room and truck bay for loading and unloading.



Manure, food processing waste, grease fat and effluent storage tanks.

Office building

NRCS Agreement 68-3A75-6-121

The objective of this proposal was for the Cayuga County Soil & Water Conservation District (SWCD) to construct and operate a regional above ground mesophilic “hydraulic-mix” anaerobic digester which would process 39,000 gallons of manure daily. The digester would also process food processing waste and restaurant grease fat. Manure would be trucked from EQIP eligible farms. Once the manure was processed the liquid effluent would be returned to the farms. The solid fraction of the manure would be composted by the SWCD for use on conservation projects or resale. The methane gas produced by the digestion process would be captured and used to produce heat and electricity for the County Public safety Building, County Nursing Home and the Natural Resource Facility, which are located on the same campus.

The estimated cost of the project was \$3,071,000 to be funded with grants and in-kind services from the SWCD. The SWCD received the following grants: NYSERDA—\$1,000,000; USDA Rural Development—\$500,000; EPA—\$750,000, NRCS CIG—\$500,000 and NYS Department of Ag & Markets—\$60,000 for a total of \$2,810,000. Construction of the main building began in the Fall of 2006, followed by the construction of the office shell in 2007. In 2008 the tanks were constructed. The SWCD was working on trying to close the funding gap with no success. The consulting firm Eco Technology dissolved. We continued to work with one of the consultants who started his own firm Blue Electron. At the end of 2008 construction stopped. This required us to request extensions on our grant funding.

In the Fall of 2009, the SWCD was awarded funding under the American Reinvestment and Recovery Act. (ARRA). We had three months to have all of the design work completed, the project bid and contracts signed in order to receive a contract for the ARRA funds. We hired Seeler Engineering to complete this task. The project was divided into eight components: Genset, Electrical High Voltage, Plant Electrical and Instrumentation, General Construction, Digester Tank, Insulation, Process Piping/Mechanical and SWCD Force Account.

Construction resumed in the spring of 2010. It is still ongoing with a commissioning date proposed for June 2011. Tasks completed to date:

1. Genset—delivered and in place. Piping completed
2. Electrical High Voltage—High voltage electrical line installed. Transformers and switch box substation installed. Aggregation to the County Public Safety Building, County Nursing Home and the Natural Resource Facility completed.
3. Plant Electrical and Instrumentation—Electrical room piping to the generator completed. Generator electrical connection completed. Electrical panels installed.
4. General Construction—Modifications to meet code completed. Masonry walls and ceilings painted. Interior room framing completed. Concrete work for main building completed. ADA compliant work completed.
5. Digester Tank—Foundation completed. Inner and outer steel structure 90% complete.
6. Insulation—Storages have been insulated. Digester tank to be insulated upon commissioning.
7. Process Piping/Mechanical—Radiator installation completed. Piping is ongoing. Gas holder tank is constructed and tested. Desulphurization tank is scheduled for delivery in April. Heat exchangers in tanks installed in the storage tanks. The B251 tank has been set on its pad.
8. SWCD Force Account—Installed gas line, installed drain water pipe, implemented water distribution to building, connected heating pipe system, insulated heating pipe, set caissons for pipe supports, constructed foundation pads for B251 tank, blower, and desulphurization unit, and other minor masonry work.

To be completed:

1. Construction of the digester tank
2. Insulation of the digester tank
3. Placement of the membrane on gas holder tank.
4. Installation of the B251 unit and the desulphurization unit.
5. Mechanical piping
6. Hydrotesting the digester tank and installation of heat exchangers.
7. Software and electrical testing

Receiving the AARA funding brought new challenges to the project. The cost rose from \$3,071,000 to over \$9,000,000. This was due to:

1. "Buy American" clause in the contracts.
2. Cost of raw materials (steel) increased.
3. Short time frame allotted for design and bidding of contracts
4. Meeting code regulations of the ARRA funding. This meant some reconstruction of the main building.

Even though this project has taken several years, the original farmers are still on board and have signed manure supply contracts. We are working with NYSEG on a power purchase agreement, which is being reviewed by legal counsel. We have an RFP developed for the trucking of manure and digested effluent. Satellite storages have been constructed on the participating farms. We look forward to the commissioning of the facility in June 2011.



Installation of poles for the high voltage line



Installation of conduit from pole



Transformers





Delivery of the genset



Generator Electrical Connector



Heat piping



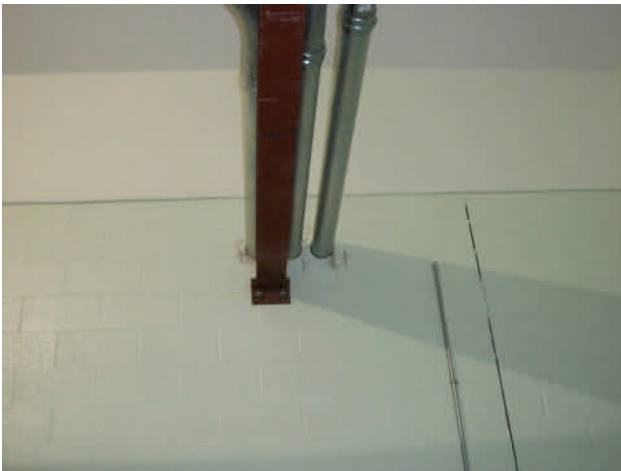
Generator



Walls in the Main Building



Painting Ceiling in Main Building



Electrical Room Piping to Generator



Pump Room Hydrotest



Generator room makeup air duct system & lighting



Generator room louvers—outside



Control Panel Electrical Room



Control Panel right Side



Control Panel Electrical Room



Generator Room Lighting



Generator Building Transformer Landing Cable



Truck Bay Lighting



Tank Insulation



Power Control System Conduits



Yard piping—heat loops to vault & buildings

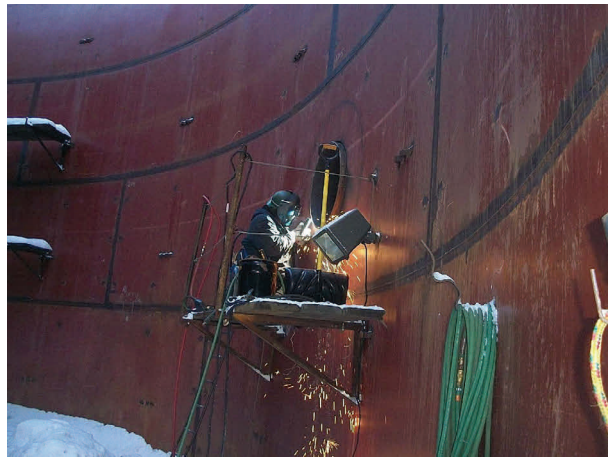
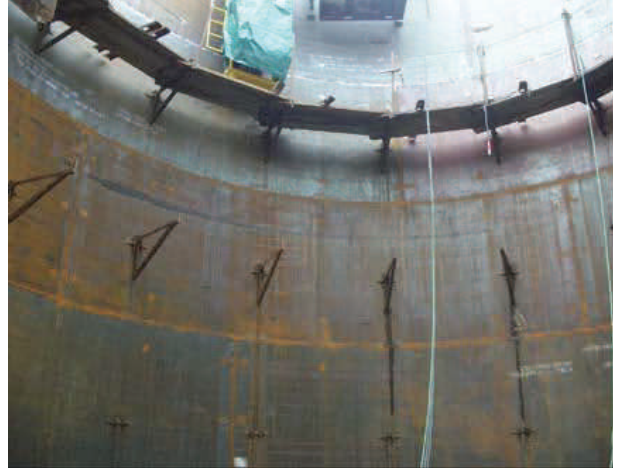


B251 Tank Foundation—Flowable Fill Cover



Natural Gas Piping

Digester Tank Construction



Digester Facility on March 30, 2011

