

ANAEROBIC DIGESTION

COMBINED HEAT AND POWER

Sheland Farms

Ellisburg, Jefferson County, NY



Vertical complete-mix digester with engine building in background



Engine-Generator set



FAN separator

Digester type	Vertical Complete Mixed
Digester designer	Siemens Building Technologies, Inc.
Date commissioned	Summer 2007
Influent	60% raw manure blended with 40% pre-digested screw-press solid-liquid separator liquid effluent
Stall bedding material	Separated manure solids treated by a rotary drum composter and little to no green sawdust
Number of cows	560 total cows
Rumensin® usage	Yes
Dimensions (diameter, height)	30'x 35'
Cover material	Hard top
Design temperature	100°F
Estimated total loading rate	14,000 gallons per day
Treatment volume	238,000 gallons
Estimated hydraulic retention time	17 days
Solid-liquid separator	FAN screw-press
Biogas utilization	Caterpillar engine with 125-kW generator
Carbon credits sold/accumulated	No
Monitoring results to date	None available to date; H ₂ S study in progress

Farm Background

- > The farm property has been in the family for over 100 years, and has grown significantly from 50 milking cows in 1963, to 560 total dairy cows at the present time.
- > Cows are housed in one 6-row freestall barn, and are milked three times a day.
- > Digester effluent is recycled to a land base of 1,100 acres, used to raise forage crops.
- > Lactating cows and heifers are fed Rumensin®
- > After receiving grant funds from several sources, digester construction began the fall of 2005 with commissioning in the summer of 2007.
- > The farm sought a solution to both increasing electrical and purchased bedding costs, and determined anaerobic digestion would help meet these goals.

