

GREEN ENERGY AND ANAEROBIC DIGESTION

Blue Spruce Farm, Bridport, Addison County, VT

Objectives:

- Farm odor reduction
- Electrical power generation
- Reduce purchased bedding material
- Enhance environmental and social benefits
- Build a practical and cost-effective anaerobic digester

Description of System:

Blue Spruce Farm in Bridport, Vermont, owned by Earl, Ernie, and Eugene Audet, began generating power from a new anaerobic digester in January of 2005. Blue Spruce Farm is the first dairy in Vermont to participate in Central Vermont Public Service Corporation's (CVPS) Cow Power Program. The plug-flow mixed digester (HRT = 21 days) is fed manure from 1,200 cows. The operation has succeeded in odor reduction as well as generating an income from electrical power sales. The opportunity to sell all the electricity wholesale to CVPS has added to the value of the project immensely. The farm uses post-digested separated manure solids for freestall bedding and is selling excess solids for \$4-6/ cubic yard.

Outcome/Status:

Biogas is used to fire an engine-generator set that produces three-phase power. The engine-generator set generates 285 kW with the engine turbo engaged and 180 kW without it. The power sales at 8 cents per kWh are \$136,000 annually.

Digester effluent is separated with a Bauer screw press solid-liquid separator. Separated solids are stockpiled until needed and the separated liquid is piped to a long-term storage. The offset for bedding costs is \$50,000 - \$60,000 annually.

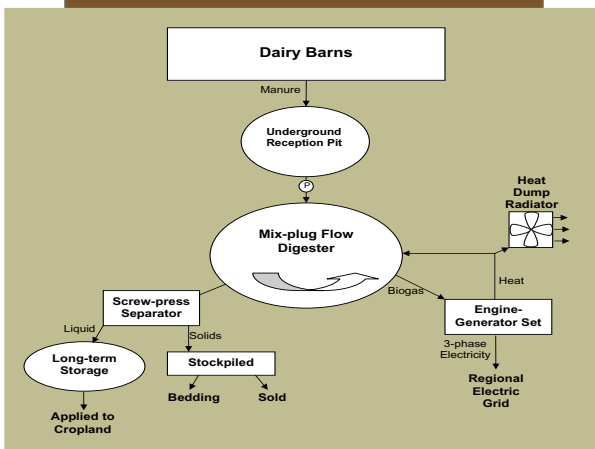
Overall, the system has been successful. The engine-generator set has a 96% run time at 180 kW. Maintenance takes about 5-10 minutes three times a day and the digester has operated with few problems. Currently 31% of the separated solids are used to bed about half of the herd, including fresh and pre-fresh cows. The farm received grants ranging from \$200,000 to \$400,000.

Further Information

Earl Audet, Owner
 1796 Route 22A, Bridport, VT 05734
 Curt Gooch, Manure Treatment Specialist, PRO-DAIRY
 Phone: 607-255-2088, Fax: 607-255-4080, cag26@cornell.edu
 Pamela Stefanek, Vermont Conservation District, Pam.Stefanek@vt.nacdnet.net



Holding tanks for two-stage liquid-solid separation



Digester Goal:
 To build a practical and cost-effective anaerobic digester