

## Biogas CHP Demonstration

A plug-flow digester will be built and the biogas produced will be used to generate heat and electric power.

### BACKGROUND

Allenwaite Farms, Inc. is a family owned corporation that has been in operation for 25 years. The farm has been in the family for six generations and seventh generation is now actively becoming part of the business. AWF is located 40 minutes north of Albany in southern Washington County on 20 acres of land in the Hudson River valley, 1450 acres are tillable. Currently the farm milks just under 500 cows, and has another 490 young stock animals. The herd average for 2001 was 26,300 lbs. of milk produced (per cow) and milk shipped totaled 1.24 million lbs. for the year. The farm is planning an expansion to coincide with the digester and combined heat and power projects, where the number of milking animals will increase to between 1200 to 1500 cows. The expansion will take place over three years during which the number of employees needed will increase to at least twenty full time and five part time. The Contractor's current utility connection is adequate for their

### OBJECTIVE

To demonstrate biogas fueled combined heat and power application using an improved plug flow digester.

### DESCRIPTION

There are two activities intertwined to make this a "Waste to Energy" project. First, a plug flow digester will be built. It will differ from other plug flow digesters now in operation in that in addition to digesting manure, it will be capable of digesting silage leachate and waste milk. The digestion of these wastes will produce biogas, which will be used to power a genset to produce a reliable heat and energy source for the farm. Previously, digestion of these wastes beyond cow manure has been avoided as these wastes are often inconsistent and require substantial heating and conditioning before being sent to a digester. This digester will be built with a conditioning unit with a much higher heating and mixing capacity than existing digesters to allow the incorporation of these wastes. The heat from the generator will be used to heat this unit. In addition to heating the conditioning unit, heat from the generator will heat the digester, the new parlor, office space

### BENEFITS

This project will reduce both peak load and annual electricity usage by 140 kW and 1,100 MWh, respectively. Net annual cost savings exceed \$56,000.

<b>Funding</b>	<b>Encumb to Date</b>	<b>Pending</b>	<b>Total Anticipated</b>
Allenwaite Farms	\$328,650.00	\$0.00	\$328,650.00
NYSERDA	\$328,650.00	\$0.00	\$328,650.00
<b>TOTALS</b>	<b>\$657,300.00</b>	<b>\$0.00</b>	<b>\$657,300.00</b>

<b>Manager</b>	Kear, Edward
<b>Contracts</b>	STD-7303
<b>Contractors</b>	Allenwaite Farms
<b>Technologies</b>	Agriculture, Cogeneration
<b>Cities</b>	Schaghticoke
<b>Counties</b>	Washington