

# SMALL ANAEROBIC DIGESTERS

Midwest farmers are critical to protecting air and water quality, reducing energy imports and creating jobs by producing renewable energy. If able to utilize anaerobic digestion technology, Minnesota dairy producers have the potential to stimulate economic development for farmers and rural communities as well as result in a net benefit to the environment.

A dairy farm with a 100-cow herd uses on average 65,000 kWh annually. Dairy farms as a consumer of energy have many activities vital to everyday operation that are dependent upon electricity usage including; barn and parlor lighting, barn ventilation, milk cooling equipment, vacuum pumps, manure handling and feeding equipment. The opportunity to offset the farm's electricity costs by utilizing anaerobic digester technology could add tremendous value to the whole farm operation through lower electricity costs.

## WHY SMALL DIGESTERS?

- Until now, anaerobic digestion technology has proven economically feasible and profitable only on farms with over 300 cows.
- 96% of Minnesota dairy farms have between 50-200 cows
- There is a clear need to establish viability of digester technology for the typical Minnesota dairy farm.

## BENEFITS OF DIGESTERS:

- Odor control
- Renewable energy production
- Pathogen reduction
- Greenhouse gas reduction
- Reduction in total oxygen demand
- Reduced cost for bedding
- Distributed generation of electricity

## TYPICAL INVESTMENT:

- As energy costs rise, so do the costs of digesters.
- A typical investment in a digester ranges from \$400,000 to as high as \$2,000,000
- Operating a simpler system can reduce costs and be most beneficial to small and medium dairy producers.

## THE JENNISSEN PROJECT:

The Minnesota Project partnered with a variety of state, university, and producer entities to facilitate a pilot project to determine the economic viability of a modified digester design, beyond systems that are already commercially viable, such as a covered lagoon, complete mix, and plug flow on a dairy farm in Minnesota.

Details of the Jennissen Farm

- Size: 150 cows, Jennissen's are expanding herd to 170 cows
- Buildings/remodeling, Jennissen's are also expanding onto their bard
- Investment: Digester, engine and materials estimated at \$250,000



*The*  
MINNESOTA  
PROJECT

Partners: The Minnesota Project, Minnesota Milk Producers, University of Minnesota Departments of Biosystems and Agricultural Engineering and Applied Economics, Minnesota Department of Agriculture, Agricultural Utilization Research Institute, Stearns County Soil and Water District