

## CASE STUDY:

## *Farm of the Future: the Haubenschild Farms Anaerobic Digester*

Kari Rudd, The Minnesota Project.



The Haubenschild family business is a lot more than a dairy farm; it's a renewable energy generation plant, a research facility, and a model for the future of agriculture in a society committed to clean air, drinkable water and curbing global warming.



*Haubenschilds: Dennis, Bryan, Marsha, Tom*

The Haubenschilds installed their biogas digester in 1999. The total upfront cost of \$355,000 was offset by their knowledge that the project would eventually pay for itself and would also benefit the environment.

“Manure is a valuable resource that we need to use to its fullest extent,” says Dennis Haubenschild. The family has certainly taken full advantage of this resource, so plentiful on their 800-cow dairy farm near Princeton, Minnesota.



*Digester engine with heat recovery system*

The digester works by moving manure through a covered, 350,000-gallon in-ground concrete tank. The manure is heated by pipes suspended inside the digester, creating the conditions needed for biogas. The biogas is captured and used to power a 130kW internal combustion engine generator, which creates electricity. The hot water used in this process goes to heat the barn floor after it's recovered from the generator's cooling jacket.

The clean energy innovation doesn't stop there, however. Some of the biogas created in the Haubenschilds' digester is routed to a new research facility on the farm, to power a 5kW fuel cell.

The Haubenschilds have partnered with the Minnesota Department of Agriculture, The Minnesota Project,

CERT's Partners: Minnesota Department of Commerce, The Minnesota Project, University of Minnesota Regional Sustainable Development Partnerships, The Rural Minnesota Energy Board, Metropolitan counties Energy Task Force, Resource Conservation and Development Council.

Clean Energy Resource Teams  
and the University of Minnesota  
Biosystems and Agricultural  
Engineering Department to conduct  
fuel cell research using biogas from  
the farm's anaerobic digester.

February 2005 was the first time the  
fuel cell was operated using biogas,  
and researchers have found that  
emissions are essentially undetectable.

The energy produced by the fuel cell  
will keep increasing as University of  
Minnesota researchers continue to  
improve the quality of the methane  
derived from the Haubenschilds'  
biogas. They do this by removing  
impurities such as moisture, carbon  
dioxide and hydrogen sulfide.



Recently, The Haubenschild Farms'  
environmentally sound energy choices  
have really paid off. The Dairy has  
become one of the first in the country  
to sell carbon credits on the Chicago  
Climate Exchange.

Because the dairy is too small to work  
directly with the exchange, Dennis  
Haubenschild partnered with  
Environmental Credit Corporation, a  
credit aggregator that sells carbon  
credits to the Chicago Climate  
Exchange, as well as directly to power  
companies, industries, and other

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parties. The Environmental Credit  
Corporation certified and registered  
the Haubenschilds' carbon credits with  
the Chicago Climate Exchange and  
later traded them for cash.

The number of carbon credits the  
Haubenschilds were able to trade was  
based on the amount of methane that  
does *not* enter the atmosphere, thanks  
to their anaerobic digester.

Haubenschild Farms provides an  
excellent model for the future of  
farming by showing others that  
through renewable energy  
development, farms can be  
economically viable because they are  
environmentally sustainable.

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*For farmers interested in ECC's  
carbon credit program, contact:*

*Jim Jensen*

*814-235-1623*

[jjensen@envcc.com](mailto:jjensen@envcc.com)

*or visit ECC's website at:*

[www.envcc.com](http://www.envcc.com)

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