



# Vander Haak Dairy

Lynden, Washington

**Winner: Outstanding Achievement in Renewable Energy**

## Cross-industry partnership helps advance dairy technology

After assuming ownership of his family's 65-year-old dairy in 2012, Steve Vander Haak plans on his children succeeding him. That's why solving key industry challenges has added importance at Vander Haak Dairy.

Today, 500 cows produce 14 million pounds of milk annually at the dairy. An anaerobic digester – Washington's first, installed in 2004 – converts their manure and food waste from nearby food processors into energy and other saleable products. The following best practices detail how Vander Haak implemented this successful program while meeting his business needs. His success proves that leading renewable energy practices are viable long-term solutions.

## Best Practices

### 1 Anaerobic digester

#### Summary

Vander Haak sought a solution to many challenges: improving nutrient management, reducing environmental impact, improving social relations with neighbors, generating renewable energy, diversifying income streams, increasing profitability and solving practical problems. The answer? Implementing a dairy digester in 2004.

#### Key benefits

The digester was the first demonstration site for full application of emerging technology to recover nitrogen, ammonia and phosphorus from digested manure. Today, 70 percent of manure solids are removed, and Vander Haak recovers 600,000 pounds of ammonium sulfate fertilizer and 3 million pounds of phosphorus-rich solids, both of which can help in crop production.

The phosphorus recovery contributes to Vander Haak's goal of reducing environmental impact, because this method is much more sustainable than more traditional mining practices used to unearth this element. In addition, the digester generates a more environmentally friendly alternative to peat moss and reduces carbon emissions by 17,000 pounds each year.



## 2

## Partnerships

### Summary

Implementing breakthrough technology is no small feat – and not one that can be done alone. Vander Haak's digester is the fruit of partnerships with Washington State University's Center for Sustaining Agriculture and Natural Resources, as well as the Andgar Corporation. Vander Haak's willingness to serve as a test bed for digester technology and communicate his results in combination with the expertise and resources of his partners were instrumental in building the digester.

In addition, the Vander Haak digester system uses both cow manure and food waste to generate power, requiring Vander Haak to form partnerships not only with 15 to 20 food waste suppliers but also with the municipal staff members needed to obtain the appropriate permits for this activity.

### Key benefits

Today, Vander Haak's digester is reliably profitable, and his successes and lessons learned are used as models for other farmers. Washington State University published more than a dozen academic papers based on Vander Haak's digester program, and Andgar developed and built 11 additional digesters, which generate 15,420 kilowatt hours of electricity, thus preventing more than 400,000 pounds of carbon dioxide emissions each year. Andgar also created its Specialty General Contracting digester division as a result of its work with Vander Haak.

Through the partnerships with food processors, 18 million pounds of food waste are diverted from landfills each year.

When Vander Haak began this project, now a decade ago, his vision was to develop an approach that others could follow and serve as a catalyst for a broader increase in renewable energy nationwide. His efforts are well-communicated through Washington State University Extension materials, and Vander Haak continues to host on-farm tours highlighting the role of his dairy digester.

Vander Haak continues to focus on further improvements and ongoing research. In fact, Vander Haak Dairy has the equivalent of one full-time employee focused on continuous improvement and new product development. Through this effort, the dairy's been able to upgrade power output by 25 percent and identify a string of new products and technologies. And the work isn't over. As Vander Haak will tell you, a digester project is never complete. There's always opportunity to do more.



The Sustainability Awards are part of the U.S. Dairy Sustainability Commitment, an industrywide effort to measure and improve the economic, environmental and social sustainability of the dairy industry. The award program recognizes dairy farms, businesses and collaborative partnerships for their contributions to healthy people, healthy products and a healthy planet and showcases that sustainability makes good business sense. An independent panel of judges evaluates all nominations based on the program's or project's results as measured by triple-bottom-line success – economic, environmental and social. For more information, please visit [USDairy.com/Sustainability/Awards](http://USDairy.com/Sustainability/Awards).