



Case Study: Van Der Hyde Dairy, Inc. (Anaerobic Digester)

Since the Van Der Hyde's first contact, Matson Consulting has been working to answer their questions about expanding their farm and the installation of an anaerobic digester*. The dairy had come to a point where the waste from their dairy cows was becoming the biggest constraint to their growth. They were unsure whether a good business decision would be to use the digester to solve their waste problem, and allow them to continue their expansion. The various concerns addressed, while specific to anaerobic digestion, were no different than the concerns raised by any other project idea. Matson Consulting brought in their specialists, as well as outside expertise, to guide the Van Der Hyde's through the initial project, as well as an additional project to determine uses for the solids produced by the digester.



The Van Der Hyde Experience

Van Der Hyde Dairy, Inc. is a family owned and operated dairy in Southern Virginia. The Van Der Hyde's were worried about the environmental implications of a possible expansion in his dairy herd and curious about the new government programs offering incentives for alternative sources of energy. They contacted Matson Consulting to discuss the possibility of installing a bio-digester.

Garry, his wife Kathleen, and their sons, Roy, Larry and Kyle, were also worried about the risks that a new venture like this could mean for their business. Because the traditional lagoon system that Van Der Hyde Dairy had been using was causing odor issues in the surrounding community, the waste from the dairy cows was the biggest constraint they had to growth and future viability.

Our Work with Van Der Hyde

As with any new business idea or venture, Garry and his family had many questions: Would they produce enough manure to be profitable? How complicated was it to operate a bio digester? Did they have sufficient organization and human resources at the farm to make the venture a success? What could happen if sales did not grow after investment in the new technology? Should they diversify into other types of farming? What was the cost to operate a bio-digester? What bio-digester technology provider would be the best fit for their situation? Should they use a plug-flow digester, complete mix digester, or some other system? Where could they find funds to



help finance the venture? What were the permits and costs involved? Was the venture even financially feasible? All of these issues could be solved through the use of proper tools.

Feasibility Study

The first step was to create a feasibility study that would identify the costs and benefits of the new venture. This project involved the coordinated effort of our specialists in areas such as financial analysis, organizational business structure, human resources, technological and regulatory aspects of energy, and others. Matson Consulting is committed to providing the best possible information, and so an outside expert on waste processing and bio-energy was enlisted to help with the study.

Feasibility studies are not just about determining if a business can be feasible or not. It is our opportunity to get to know our clients, and focus the study itself on answering the right questions. Initiation of the feasibility study involved several visits to Van Der Hyde Dairy by our experts. Once all the necessary information was gathered, a financial model was created. The key financial drivers identified by the model were tested through sensitivity



analysis and the results were discussed with the Van Der Hydes. This model provided the basis for a rational, financial discussion regarding the various affects that an expansion of the dairy and addition of a bio-digester would have. The conclusion of the feasibility study indicated that the project was indeed financially feasible.

Funding

Since 2001, Matson Consulting has created over one hundred feasibility studies for agricultural, value-added, and bio energy ventures; however, in addition to **feasibility studies**, we also develop **business plans** and **grant proposals**. We have successfully worked with clients throughout the United States; the studies and grant proposals we produce have helped clients obtain grant funding, investments, and bank loans.

The fact that the feasibility study was completed by an independent third party gave credence to the project, and allowed the Van Der Hydes to receive grants and loans to build the digester. After successfully assisting with the Van Der Hyde's initial expansion operation, Matson Consulting further assisted in the procurement grants to explore uses for the digested solids



produced by the digester. In all, Matson Consulting, in conjunction with other partners, were able to help the Van Der Hydes acquire approximately **\$2,000,000 to fund their projects.**

Additional Benefits

In addition to the information that the feasibility study provided, and the grants and loans that the Van Der Hydes were able to procure, Matson Consulting was able to identify several other areas where the digester could impact Van Der Hyde Dairy in a positive way:

- **Money Savings.** The dairy saved money by using the solids from the digestion process for cow bedding, rather than continuing to purchase sawdust for their cows.
- **Additional Income.** Once the digester reaches a certain production point, the dairy would be able to sell the excess energy produced by the digester back into the local power grid.
- **Improved Herd Health.** Due to the sterile nature of these digested solids, infections such as mastitis were dramatically reduced in the cow herd.
- **Alternative Income.** Potential sale of the unused digested solids as soil amendment.
- **Elimination of odor.** The dairy is in close proximity to urban development, and the odor created from spreading untreated cow manure was removed.

Our successful partnership with Van Der Hyde Dairy, Inc. continues to this day.

***About Anaerobic Digesters:**

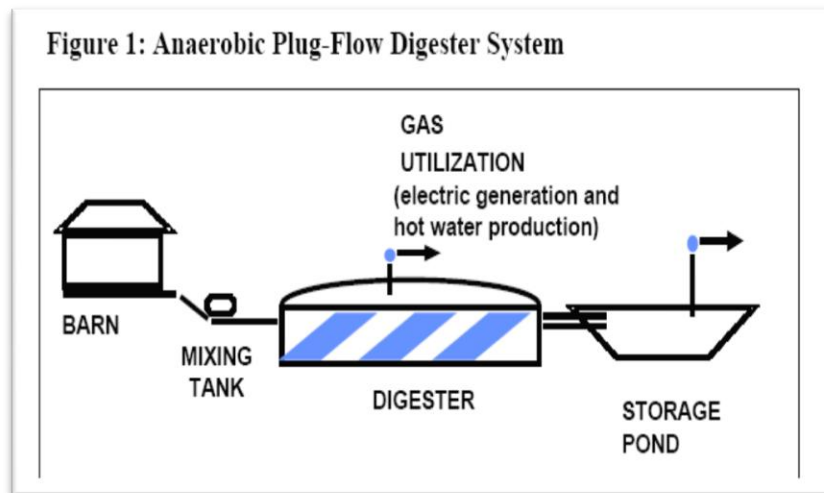
Since sustainability has become an area of major concern for everyone, farmers worldwide are adapting production techniques. Services that rely on non-renewable sources of energy, such as oil, have increased their prices due to scarcity, so new alternative energy products and their corresponding futures markets have emerged.

Bio-digesters offer an alternative energy option to the lagoon system (a system in which manure is left to naturally clean itself and then eventually used for irrigation and recycling on the farm) currently used by many dairy farmers.

With a bio-digester, dairy farms can generate their own electricity and save on energy costs. In addition, if the farm is large enough, it may produce enough excess energy to sell to a power company and generate additional income.

Cow manure management has evolved through time and there are several methodologies and various costs associated with it. Some external costs, like the cost of global warming from cow manure greenhouse gas emissions, have become part of the cost-benefit analysis of farmers. Science and technology continue to evolve and provide new tools and options that farmers can use to deal with this issue; it is now possible to gain environmental benefits as well as profits from the treatment of manure.

A major new tool in the treatment of manure is the Anaerobic Digester. Bio-digesters offer an alternative energy option to the lagoon system (a system in which manure is left to naturally clean itself and then eventually used for irrigation and recycling on the farm) currently used by many farmers.



How Does a Bio-Digester Work?

Energy is generated through a process of anaerobic digestion. This digestion consists of a biological process in which biodegradable organic matter is broken down by bacteria into various biogases (methane, carbon dioxide and others); a generator then uses these gases to produce energy.

The non-presence of oxygen is

necessary for the anaerobic digestion to occur; some additional factors that influence the efficiency of energy production through anaerobic digestion are temperature, moisture, and the quality and nutrient content of the manure.