

WHITELYN FARMS

A Dairy Farm Case Study

Mathias Ag Program

Dorothy White of Whitelyn Farms milks 260 dairy cows in Hydes, Maryland. Like many dairies throughout the United States, recent years of low milk prices and high feed costs have meant challenging times for the profitability of the dairy. Dorothy understands that implementing energy efficiency measures will help her farm save money, and a grant through the Kathleen A.P. Mathias Agriculture Energy Efficiency Program provided a means for her to install necessary upgrades to her farm.

Whitelyn Farms spends about \$27,000 on electricity each year, and Dorothy knew that some energy efficiency improvements could reduce this bill. Through an energy audit provided through the Kathleen A.P. Mathias Agriculture Energy Efficiency Program, she learned that the planned improvements could save 32% of her energy use. Dorothy installed the following equipment, which will make a big difference to the farm's bottom line:

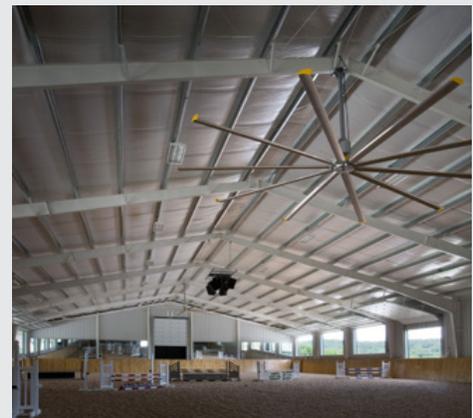
Milking vacuum pump variable speed drives (VSDs)

are digital controllers that regulate the speed of the milking vacuum pump motor. The VSD measures how much vacuum the system requires and regulates the speed of the pump motor. The result is a pump and motor that work only as hard as they need to rather than running at a constant high speed. This reduction in pump and motor use leads to energy savings.



High volume, low speed (HVLS) fans

move large volumes of air with large fan blades (20 ft. diameter) moving at low speeds. It would take several traditional high speed low volume circulation fans to move the same amount of air as one HVLS fan. The HVLS fans also have much higher efficiency ratings than traditional circulation fans. This allows the farm to eliminate several fans, resulting in significant energy savings.



As shown in Table 1, these two measures pay for themselves in 10.6 years and will provide the farm with many years of energy and cost savings.

Table 1: Implemented Efficiency Measures and Associated Savings

Recommended Measure	Electric Savings (kWh)	Estimated Annual Energy Cost Savings	Installed Cost	Estimated Payback in Years
Milking Vacuum Pump Variable Speed Drive Replace (2) existing 7.5 horsepower vacuum pumps with (1) 10 horsepower motor and rotary lobe vacuum pump equipped with a variable speed drive. The 10 horsepower motor is a 3-phase motor.	25,849	\$3,490	\$16,853	4.8
Ventilation Replace (32) 20,000 CFM, 3 amp existing circulation fans with (10) 120,000 CFM fans with a wattage no greater than 1200 watts.	40,186	\$5,425	\$77,446	14.3
Totals	66,035	\$8,915	\$94,299	10.6

Dorothy looks forward to saving money on her electric bill. As an added bonus, the variable speed drive will make the milking parlor quieter by reducing the pump noise. “It’s wonderful to have these new technologies that will save me money each year,” said Dorothy.

Small and mid-size dairies like this one are the backbone of Maryland’s agricultural sector, and energy efficiency is one way to ensure they continue to operate and preserve the character of rural Maryland.