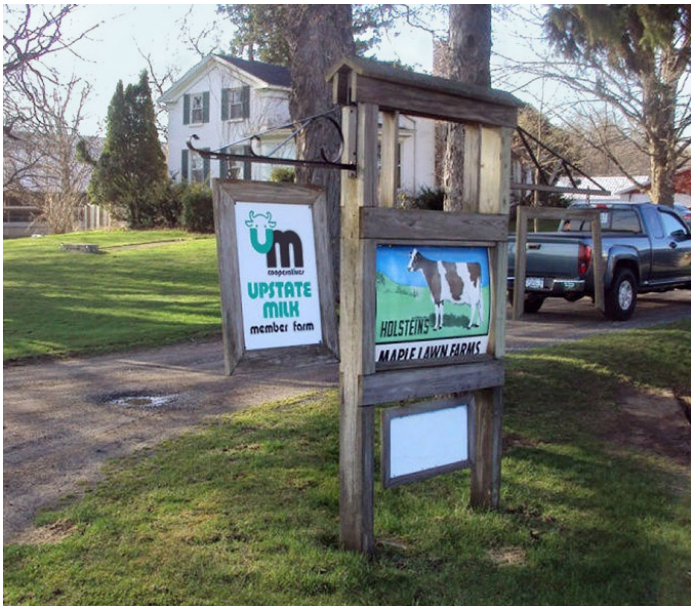
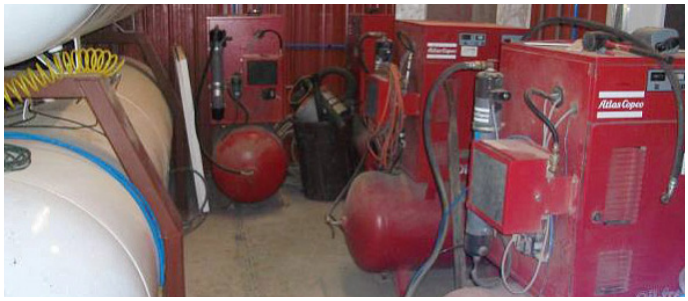
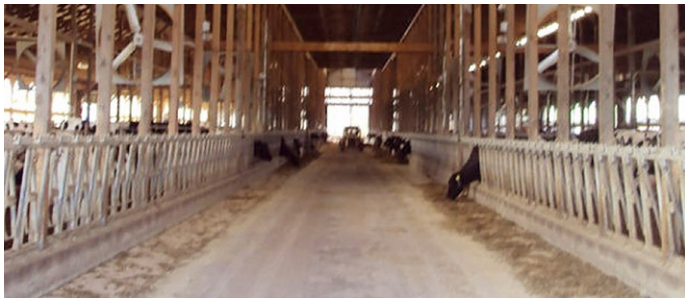
Increasing the energy efficiency of a milking system reduced maintenance costs for dairy farm







Left: Maple Lawn Farms. **Top right:** Compressors and air tanks. **Bottom right:** Main cow barn.
(Photo credits: LaBella Associates PC for NYSERDA)

In 1929, the Wolf family moved to Wayne County, NY, and started Maple Lawn Farms. After son John Wolf graduated with a bachelor's degree in animal science from Cornell University in 1998, he returned home to help run the family's 1,110-acre dairy farm in Lyons, NY. As the farm's operations manager, he works alongside his parents, brother, five full-time employees, and several seasonal and part-time employees.

To increase herd health and reduce labor costs, the farm installed one of the largest robotic milking systems in New York State for the farm's 450 cows, which produce more than 10 million pounds of milk annually.

The New York State Energy Research and Development Authority (NYSERDA) helped offset the cost of installing a new compressor on the milking system. This new compressor significantly decreased the farm's equipment replacement and maintenance costs and increased energy efficiency, saving John and his family countless headaches and thousands of dollars per year.

Recommendations

Maple Lawn Farms had an energy audit performed through NYSERDA that recommended lighting and water treatment system upgrades, which Maple Lawn Farms installed. At the time of the energy audit, John and his family were working toward installing the robotic milking system. After the milking system installation, concerns arose regarding the efficiency and longevity of the air compressor system. The air dryer was burning out every 18 months at a cost of $4,000 each. In addition, the farm was incurring greatly increased peak-demand utility charges due to simultaneously operating the air compressor and water heater for the milking robots' sanitizing cycle.

John's father, who has a degree in agricultural engineering, discussed the issues with other farmers who had milking robots. He and John developed a plan to revamp their farm's system to be more efficient and less prone to failure, and to reduce peak-demand charges. When John learned about NYSERDA through a farm bureau announcement, he asked for assistance in carrying out their plan.

NYSERDA's implementation contractor guided John through the technical review process and helped determine the appropriate energy efficiency measures for his farm. After a technical review, a plan was proposed. The new setup would save an estimated 28,000 kilowatt-hours annually including 7.5 kilowatts during peak demand. In 2011, John was approved for assistance to upgrade their compressed air system. The new system has the appropriate capacity, including two 1,000-gallon air storage tanks, a more efficient air dryer, and a room environment controller. Its efficient design reduces the overall number of run hours on the compressor and allows the compressor to run at 100% capacity, filling two air storage tanks. Therefore, the compressors can be programmed to be off while the hot water is being heated for the milking system's sanitizing cycle, avoiding high utility charges. In addition, the room environment controller allows the air dryer to operate more efficiently and eliminates the numerous dryer replacements.

Results

Although John is saving energy and money on his energy bills, the majority of cost savings are realized in reduced maintenance costs. As a result of these efficiency measures, John plans to expand the herd and increase milk production.

Get started

Visit **nyserda.ny.gov/agriculture** or call **1-866-NYSERDA** to learn how you can reduce your energy consumption and costs.

"NYSERDA's program helped save us a lot of money and energy. The whole setup is more energy efficient now, and the air compressor needs only routine maintenance. I have recommended NYSERDA to my neighbors."

— John Wolf
Maple Lawn Farms, Inc.

NYSERDA offers assistance to identify energy efficiency measures for eligible farms and on-farm producers, including but not limited to: dairies, orchards, greenhouses, vegetables, vineyards, grain dryers, and poultry/egg farms.

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