

Modernization and Technology

Situation Overview:

- A. *Detail the farm's reasoning behind the decision to pursue a modernization plan.*
1. Our tie stall barn needed updated and was causing cow comfort issues.
 2. A 10 year rental lease was about to expire, with an option to purchase the farm. We could house animals, but then how do we milk them? There was a robot versus parlor discussion. We wanted the daily schedule freedom that robots offered. There is less labor with robots, as compared to a parlor system.
- B. *List the key variables that impacted the decision to move ahead with the plan.* We compared the financial feasibility of robots versus parlor milking systems. We liked that robots also allowed a flexible schedule for our family that includes four young children. It's a family farm, with family members managing the day-to-day work; neighbors help in a pinch.
- C. *The following modernization areas apply to our farm and describe the incorporation of technology.*
- Young stock facilities – Remodeling old tie stall for young stock.
 - Milking cow facilities – Two robotic milking units.
 - Manure management and storage – No additional storage. Tank holds 4 – 5 months.
 - Manure handling – Chain link, not cable, scraper systems with tube gutter keeps alleys drier, pump through transfer line.
 - Feed Storage – In March 2013, we started pasteurizing waste milk for our calves. Low quality milk is separated and collected by the robot to be pasteurized.
 - Ventilation – Built a three row barn. Natural prevailing winds for cross ventilation. AutoVent system controls curtains and fans and has a detector that reads wind and indoor/outdoor temperatures. Humidity and precipitation sensors change curtains based on weather conditions; curtains are opened and closed more often with sensors, as compared to manual operation.

Challenges and Opportunities:

- D. *What were the different options the Transformation Team considered as they worked together to pursue this plan? Please describe.* The Transformation Team helped us consider one robot, versus two, and also keeping the same herd size, versus doubling our herd size. Ultimately, we decided on two robots, doubling the herd size. This decision also changed our cropping and manure handling systems. Our break-even price dropped by \$1.

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E. *Did any barriers, or bottlenecks, occur during the project, and if yes, how did the team overcome those issues?* Yes. Tropical Storm Lee was the biggest construction obstacle. For project financing, all three loans were contingent on the other. We needed one lender to go first.

Actions:

F. *How did the work done on a business plan or feasibility study impact the farm's final decisions?* Once we gathered our estimates and our financial numbers matched, we moved forward with our plan.

G. *How long did the project take, start to finish?* Two years.

Timeline:

- Late winter/early spring 2010: Rental agreement for the farm was coming to a close
- July 2010: First meeting of the Transformation Team
- January 2011: Financed with the bank
- April 2011: Bank approved
- August 2011: Construction began
- December 14, 2011: Cows moved into the new barn

Results:

H. *How did the modernization and new technology change the business as it relates to profitability?* We would not have purchased the farm and remained in dairy without the modernization plan.

I. *Can the farm quantify labor savings, energy savings or environmental impact?* Our herd is a little more than double the original size, and we can finish our chores in equal or less time without additional hired labor. Chores no longer revolve around the strict 2x per day milking schedule.

J. *Did the modernization and new technology change management practices on the farm?* Herd management relies more on data collected from the robot and observation, instead of all hands on / clinical observations. Rations for the dairy cows have been fine tuned to help cow flow to the robot, and achieve optimal production. We now see more standing heats in the herd and have an activity monitor in the identification collars that alert us to possible heats.

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K. *Have you learned anything that has influenced future decision making about technology or given you new enthusiasm for some aspect of modernization?* The completed project continues to be a work in progress for us. There were computer glitches in the beginning, but we didn't begin this project expecting everything to be perfect. We had great support to help fix those glitches.

Other than the routine/schedule maintenance to rebuild, calibrate, etc., we haven't had a service person on the farm for more than six months.

Reproductive performance was fantastic from January through March, after the initial move to the facilities. Breeding on standing heat and conception rate was excellent and new for us having moved from a confined housing, stall barn environment.

L. *Has the farm shared the new facilities or technology (milking facilities, manure management, etc.) with others in the community? If yes, what was the response from the community?* Many farmers have stopped to see the new facilities and robots in action. Curious neighbors that visit are amazed by the robots! Non-agriculture visitors often ask us when we start milking. Our answer – “we milk 24/7!”

In August of 2012, we hosted state and federal inspectors from the Northeast, who were convening in Pennsylvania to discuss milking equipment with a focus on robotics. It was an enlightening experience for us and some of the inspectors/regulators who had not previously seen a robot in action.

A group of European educators also came to the barn through Penn State Cooperative Extension. Due to our proximity to a local equipment dealer, farmers often stop in who are “driving by” and want to look at the facility. Other Lely dealers have brought tours of prospective buyers from Virginia, New York, Michigan, Indiana, Ohio, etc.

