



The Vector automatic feeding system uses lasers to determine how much food it should drop off for the cows.

## Robots help keep family dairy together

Something strange is happening inside the new Good-View dairy barn. Cows lounge lazily on waterbeds and receive footbaths. Their meals are delivered by a self-propelled robot. And, when they feel like it, each member of the herd meanders over to milk itself with help from a laser-guided robotic arm.

These cows are living the good life. But it may be lifelong dairy farmers Linda

and Mike Hanson who are the happiest residents on the farm near Goodridge, Minn. The high-tech barn has automated many of the processes that kept the family on a rigid, demanding schedule all too common in the world of dairy.

“Our alarm clock still goes off at the same time, but now we just take an extra minute in the morning to drink our coffee,” Linda said with a smile. “The system just takes a lot of the time pressure off. So if we don’t get over to the barn right away, we know the cows are still getting milked and fed.”

Prior to opening the robotic barn in September 2016, the family operated a 50-head operation from their farmstead. The new 116-foot-long by 276-foot-wide facility is located about 3 miles from home and has space for 120 milking cows and 40 dry cows.

With a passion for raising Ayrshire dairy cattle that spans four generations, the family knew they had to make a bold investment if they were going to survive in a business that has mostly vanished from the area. In 1994, there were 21 neighboring dairy farms in the Goodridge area. Now, the Hansons are the last dairy family in all of Pennington County.

With the robotic system, the fourth

generation – sons David, 25; Matthew, 23; and Steven, 20 – are starting to take on a larger role in the farm. Their commitment pushed the project forward.

“If the boys weren’t interested in the dairy, we probably wouldn’t have built this facility,” Linda said.

It would be difficult to find a better team. All three sons have college degrees focused on dairy management.

Matthew, who lives nearby, completes most of the daily tasks with the help of his parents, who also farm 3,000 acres of cropland. David lives in Nicollet, Minn., with his wife, Ashley, who graduated from the University of Minnesota’s Veterinary School and works for a company that provides embryo transfer services for dairy and beef cattle farmers.

Despite the distance, the entire family is active in the operation. They are also involved in numerous county, state and national dairy boards and judging panels.

For Matthew, it wasn’t until going away to college that he realized he wanted to follow in the family footsteps.

“I just enjoy being around the cows,” he said. “And when we started talking about this facility, I became even more interested. It still amazes me some days with how far we’ve come.”



Mike, Linda, Matthew and Steven Hanson stand in their new barn located near Goodridge, Minn.

## Futuristic farm

It is eerily quiet inside the barn. No mooing, snorting, stomping or scraping. Instead, you hear the subdued munch of animals feeding and the soft hum of the large, red robots.

The calm environment has helped produce healthy, happy cows. Since moving into the facility, the average cow's milk production has increased from 55 pounds per day to 70 pounds. With a little work, the family thinks they can get to 80 pounds per day.

"A happy, well-cared-for cow is going to produce more," Linda said. "It's in our best interest to keep them comfortable."

Each cow has a computer transponder on its neck that communicates with the robots and forwards information to the family's computer and smartphones. Upon entering one of the two robotic milking systems, the transponder is scanned and a food pellet is dispensed. While the cow eats, a mechanized arm swings underneath the udder to brush it clean and stimulate milk flow. Three-dimensional laser scanners find the teats and attach four cups for milking.

About 10 minutes later, the milking is complete and the computer opens the gate to usher the cow back into the barn. A new cow enters (2201004.03 Daniel Trontvet) and the process is repeated.

While milking robots are now becoming commonplace across the nation's dairies, the Hanson farm is one of the first in the nation to install a Vector automatic feeding system. The barn includes an area referred to as "the kitchen" where a large claw runs on tracks across the ceiling, scooping food and placing it inside a funnel-shaped robot. Using sensor technology, the robot precisely mixes hay, corn silage and water.

The robot leaves its electric charging station every 45 minutes and travels down the rows of cows to dispense the appropriate amount of food. The process reduces waste, improves efficiency and enhances the overall quality of the feed.

If there's a system malfunction, the family receives an alert by phone and computer. They can monitor the entire system day and night, including each cow's production, activity levels and other health-based statistics.



In an area of the barn known as the kitchen, a robotic claw and mixer work together to prepare feed for the 160-cow herd. (Bottom right) The new barn was completed in September 2016.



## Built for the future

Even though many processes are now automated, don't think the Hansons are taking a hands off approach. Each cow isn't a number, but part of the family. They greet Brenda, Bianca, Carmelo and the other cows (4318002.09 Gerald H. Zblewski) as they pass through the barn each day.

The Hansons credit their local cooperatives for helping make the project possible. The farm is a Red Lake Electric Cooperative member and a Garden Val-

ley Telephone Company member, which provides essential internet service. The milk is marketed through Land'O'Lakes, another Minnesota cooperative.

With a system that never quits, the farm depends on reliable power from Red Lake Electric.

"What's the greatest invention in agriculture? It's got to be electricity, I think," Mike said. "Look at everything it does. You could not run the feeding system, the robot system or any of this stuff without it."



Mike Hanson reviews information on his automatic milking system. (Inset) The system collects the milk and pumps it to a 3,000-gallon bulk storage tank.

