



Milk Cows with Robots? You Gotta Be Kidding!

*It's true...
space-age machines
do the milking on this
family dairy farm.
Look, "Bessie"—no hands!*

By Kathy Kuhl

TIME WAS when you could tell a dairy farmer by shaking his hand. That hand was huge, muscular and callused from coaxing milk from the cows morning and night, year after year.



Donahue

But maybe not anymore—not if space-age technology like John and Joan Maxwell have in their milking parlor becomes commonplace.

The Maxwells operate Cinnamon Ridge Farms near Donahue in eastern Iowa. Since 2012, they've used mechanical robots called the Astronaut A4 to milk their high-producing herd of Jerseys. Yup—robots.

The robots work tirelessly, milking cows all hours of the day and night. One thing's for certain—you'll never catch these modern milkers sitting around taking a break on three-legged stools.

Designed by Lely Corporation, the robots have an exterior that looks like a bright red, oversized refrigerator, with milking attachments on the back and a notebook computer on the front that collects a barn-full of data.

Cows line up behind the robots and wait patiently to be milked—sometimes as often as five or six times a day—lured by a molasses treat they receive during milking.

"Robotic milking encourages a dairy cow to be milked more frequently each day, which isn't surprising since it's as natural to her as nursing her own calf," John explains.

More Than a Chore Hand

The Astronaut A4 is a fascinating and highly sophisticated piece of machinery, and comes at a cost of \$250,000 each.

A laser from the robot detects the cow's udder. The robot then washes the udder with a cleansing solution, before attaching its milking mechanism to begin milking.

The Astronaut A4 handles more than just milking chores, however. Each cow wears a special collar with a pod, from which the robot's computer collects 120 pieces of information from the cow every day.

"This information includes things like the cow's weight, how

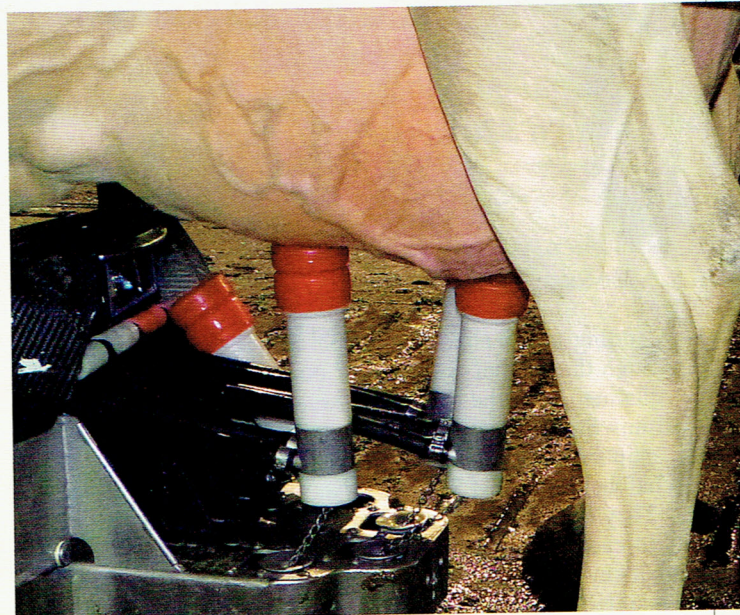
*"Robots work tirelessly, milking cows
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many times she's been milked that day and how much milk she produced from each milking," Joan says.

Information is also collected as to how many times a cow has ruminated and how many steps she's taken that day.

"A cow ruminates less and takes about three times more steps when she's in heat," Joan explains. "So when we get those kinds of indicators from the pod, we know the cow's likely ready to be artificially inseminated.

"With this detailed information, we have a very high success rate in getting the cows bred the first time we inseminate them."



UDDERLY FASCINATING. Once a laser from the robot locates the udder, the machine attaches itself to the cow and milking begins.

The robot also collects information on the composition of each cow's milk.

"If the milk is good, it goes into our 5,000-gallon bulk cooling tank," says Joan. "If it's determined that a cow has mastitis or any other illness, her milk gets discarded. If a cow is producing colostrum, it's saved and used to bottle-feed newborn calves."

The Maxwells can view all this information directly on their smartphones, or on a large-screen computer monitor in the office of the farm's dairy manager, Amy Maxwell. Amy is John's daughter.

"We are constantly analyzing data, such as whether a new feed we're using is worth its cost, or how many cows will give birth in a given month," Joan relates.

"We can look at data by the month, the quarter and for a full year. The decisions made in running our operation are based more on data now, where years ago it was done on gut feeling."

According to John, accurate information gleaned by the robots also means more time can be spent on preventive herd health management rather than doctoring a sick cow.

Dad Did Things Differently

John's family has been farming in Scott County since the Civil War era. His folks had a herd of 30 cows when he was young and milked them by hand.

Amy is now the family's sixth generation to farm, having returned to manage the dairy operation after earning degrees in ag business and economics from Iowa State University in 2011.

John trusted Amy's opinion to make the leap into robotic milking after she had seen the technology in operation on farms during college.

Amy says the robots have lived up to her expectations.

Side Note: One thing you can't recycle is wasted time.

“Robotic milking allows us to provide improved comfort and health for our herd, while improving the quality of milk and a cow’s performance at the same time,” she says.

The first two Astronaut A4s purchased by Cinnamon Ridge Farms were manufactured in the Netherlands, and were installed by November 2012 when the herd numbered 80 head.

The second pair, built in Pella, was added as the farm expanded the herd to its full capacity of 250 cows in late 2013.

Good Fit for the Family

You might think robotic milking would be technology best suited for large corporate farms. But John notes that robotics actually make more sense for midsize family operations.

“Robotic milkers max out their efficiency when herds reach around 500 cows,” says John. “Each robot can milk about 60 cows numerous times each day.

“The large dairies you find in California and Colorado—ones with 1,000 or more cows—don’t want to invest in \$250,000 robots to milk 60 cows a day, because it would take quite a few of them.”

John continues: “These super-dairies have already invested millions of dollars in traditional herringbone or rotary milking parlors, and it would cost a lot to build new facilities to make the robots operational. A smaller family operation like ours can more easily do a retrofit to existing facilities, or add on.”

Investment Pays Dividends

There’s other up-to-date technology in the new barn besides the robotic milkers. For instance, a feeding system runs the perimeter of the barn, pushing feed rations to the cows in their stalls. Robotic brushes also groom the cows as often as they want to use them.

John says with robots handling the milking chores, a smaller staff is needed to operate the farm. This makes it more likely that he and Joan can provide long-term security to dependable employees.

Of the farm’s 10 employees, four are family members, which John says heightens cooperation in making the operation successful.

“Family members are in farming for the long haul and are more likely to roll with the changes,” he adds.

Brother Ed Is Cheese Maker

John still operates the old home farm near Walcott with his brother Edwin, who also works at Cinnamon Ridge as its on-site cheese maker. All milk from the herd goes into making cheese.

“Jersey milk is high in butterfat and protein, making it ideal

for cheese,” John explains. “You need about 10 pounds of Holstein milk to make 1 pound of cheese, but with Jersey milk, you only need 6 to 7 pounds.”

Edwin turns Cinnamon Ridge milk into Gouda, Swiss and cheddar cheese, often mixed with tasty ingredients like chipotle, bacon and red wine.

The rest of the milk is sold wholesale to other cheese producers and to local outlets.

Fresh beef, pork, eggs, cheese and other homemade products, all produced at Cinnamon Ridge, are sold in a self-serve store on the farm called the Country Cupboard.

Customers shop at the store on the honor system—they select the products they want and drop their payment into a designated slot in the wall.

“We trust our customers...and it’s worked,” says John. “This honor system really intrigues visitors touring the farm—especially visitors from other countries.”

Takes Time for Tourists

The new barn was built with hosting tours in mind, since John’s been offering farm tours long before he built his unique robotic operation.

The barn has a walkway that runs down the center, with two robots operating on each side.

“The walkway is enclosed, which keeps the odor of the barn off our guests,” John chuckles. “They can watch the robots milking cows from behind one-way glass that keeps the cows from getting distracted.”

Thousands of folks stop by each year on tours hosted by ag

“A cow being milked each day by robots is as natural to her as nursing a calf...”

companies such as John Deere, Monsanto, Pioneer and Dow Chemical.

Foreign visitors are also interested in seeing how American farmers live, so in 2008 the Maxwells began opening their home to provide dining for groups that visit. They can serve up to 120 people, with seating that overlooks the farm.

Locally, groups from schools, churches and even nursing homes trek to the farm to check out the dairy operation. You can learn more about Cinnamon Ridge Farms and the tours they offer at their Web site, www.TourMyFarm.com.

Older retired farmers shake their heads watching the robotic milkers in action. They usually share stories of how milking was done in days gone by, often mentioning how they milked cows by hand as youngsters before going to school.

Jerseys Love the Attention

Not only are the robots interesting to watch, the purebred Jerseys are a big hit, too.

Comfortable on their beds of sand, and content being milked by the robots, the Jerseys are curious and gentle. They often approach visitors, sometimes giving them a friendly lick with their long, powerful tongues.

“Jerseys have very expressive eyes and faces,” notes Joan. “Our cows were already docile, but now that they’re being milked by the robots, they’re even more friendly.”

According to John, contented cows produce more and better quality milk.

“We’re striving to have the No. 1 producing Jersey herd in the nation,” John says. “Rankings are determined by production per cow, and right now Cinnamon Ridge is ranked around 20th.”

INNOVATIVE IOWANS. John and Joan Maxwell sell farm-fresh produce on the “honor system” in their shop at Cinnamon Ridge Farms.

