

Dairies

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a treat. Farmers are able to put multiple kinds of feed in the Lely Astronaut robotic milking machine. Wuebker and Schwieterman feed their cows sweet pellets. Schwieterman jokingly refers to the pellets as “Snickers.” Made of corn and molasses, they are perfect for cows to snack on and replenish their energy.

The cow, anticipating a treat, walks freely into an enclosure from one end and starts munching. That’s when the robotics come in.

Central to the robotic milkers are the “smart” collars the cows wear around their necks. Similar to Fitbit watches, the collars have a sensor which tracks how much rest the cow has had, how much food she’s eaten and how much she’s moved throughout the day.

Wuebker said the sensors also track optimal intervals for insemination, how often the cow has tried to be milked in a day, how much milk she’s produced and the quality of the milk and much more. Based on the sensor’s data, the farmers said they can more easily determine if a cow is sick or has an injury.

Once she enters the enclosure, the sensor is scanned and data is sent to the robot’s management system. Milking is based on the cow’s historical data, meaning the robot knows the exact position of her teats and how much pellets she should be fed, Wuebker said.

The cow’s teats are cleaned and sanitized by brushes, which prevents cross-contamination. The brushes also stimulate the teats, prompting the cow to prepare for milking. Once finished, the brushes are cleaned and sanitized again, Wuebker said.

The teat cups are attached one at a time with the guidance of a laser, which tracks and remembers the location of each cow’s teats, Wuebker continued. A camera located above the milking station tracks her movement, so if the cow shifts her weight or moves around the milking machine’s arm will follow.

The machine pre-milks the cow, which is another step to prevent cross-contamination, and filters out the lower-quality pre-milk, according to Lely’s website. Then, the real milking begins. Lely North America provides and supports robotic milking technology in the U.S. and Canada.

Milking occurs through two different vacuum circuits, according to Lely’s website. The movement of milk from the teat cup happens through a pulsation vacuum. Then, a milk vacuum transports the milk to a holding tank. The machine comes with a vacuum buffer to ensure that the pulsation

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— Brian Wuebker, dairy farmer

vacuum doesn’t interfere with the milk vacuum, and the pulsations are altered based on the milk flow, according to the website.

During milking, a computer monitors the milk, continuously safeguarding its quality. Once the milk flow drops below a certain threshold, the teat cup is removed by turning off the vacuum, Wuebker said.

After removing the teat cups, the teats are sprayed with an udder care solution. Because the udder changes shape after milking is done, the machine scans the udder again before applying the udder care solution.

Once milking is complete the feed box swivels away, allowing the cow to walk out. Finally, the teat cups are sanitized and prepped for the next milking. The entire process takes 10 minutes or less to complete, start to finish. The robot also takes a 15-minute break twice a day to sanitize and clean itself, Wuebker said.

Schwieterman and Wuebker invested in other robots, as well. Both have automatic feed pushers, which moves feed closer to the stalls so the cows always have fresh feed. The mid-sized robots make the rounds 20 times a day, or once every hour, except for two, two-hour blocks to recharge.

The two farmers also added a robotic arm with a brush, which the cows love. The robotic brushes both massage the bovines and keep them clean. The cows love the massage function, Schwieterman and Wuebker said.

Wuebker also introduced an automatic manure scraper which removes manure from the floor between eight to 10 times a day. He said farmers traditionally have to go into the barns twice a day with a skid



Dan Melograna photos/The Daily Standard

Every cow wears a collar containing a sensor that tracks its eating, milking and movement.

loader to scrape manure, which excites the cows.

The robots aren’t without cost. Wuebker said his two robots cost about \$250,000 combined. And the new barn — including the two robotic milkers, robotic feed pusher, robotic brush and automatic manure scraper — cost about \$1 million in total. Schwieterman said his robotic milkers cost about \$150,000 per unit.

However, the robots have been a smart investment. Milk production is up for Schwieterman’s cows. They used to produce about 78 pounds of milk daily, and now they average about 91 pounds per day. Wuebker said production is also up on his farm.

Yet beyond pure profit is an intangible benefit of automation: improved quality of life for both the farmers and their cows.

The farmers said they can have a social life now. They can go to weddings, dinner with friends and their kid’s sporting events because the robots have taken over part of the labor they used to do. Schwieterman and Wuebker also said it’s helped ease some of the stress involved with the job.

Schwieterman said his parents often couldn’t come to the football games he played in or other school events while he was growing up — one of the inevitable concessions dairy farmers



Calves come to the feeding bin at Brian Wuebker’s farm near St. Henry.

have to make due to the demand of the job.

Although he understands why his parents couldn’t attend his events often, Schwieterman says adding automation to his operation has allowed him to be there for his

kids in a way his parents couldn’t for him.

“The lifestyle change is huge,” he said.

For Wuebker, the investment in automation has meant more than increased profits. Automating his opera-

tion means he can spend more time with his wife and four children.

“We can get a return on investment in seven years,” Wuebker said.

“But the family time and cow’s happiness doesn’t have value.”

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