The realities of robotic milking technology today

Francisco Rodriguez for Progressive Dairyman

I was born and raised on a dairy farm in Colombia where, from an early age, I was embracing the lifestyle of and nurturing a passion for milking cows. My family and I organized our lives and schedules around the needs of the herd. The challenge of finding the right competencies on our dairy inspired me to attend veterinary school. After graduating, I interned at one of the largest Western U.S. dairies where I learned the business of managing thousands of cows and its exponential impact on labor needs.

Today, as a dairy management adviser working with a variety of herds around the world, the human element remains a critical factor. Without a motivated, competent and committed workforce, it’s impossible to build a successful dairy business in today’s volatile market environment. At the same time, dairy families, owners and employees – especially new generations – are actively more social and mobile, seeking a new kind of flexibility in their work, a profitable business and a better quality of life.

Automatic milking systems appeared to be an opportunity for sustaining Europe’s dairy industry more than 20 years ago. The growth of the systems has been tremendous, with approximately 10,000 farms across the globe milking more than 1.2 million cows unmanned. Northern Europe, Holland, Germany and France have been leading this paradigm shift in milking. Ninety percent of new equipment installations in Sweden and Finland, and 50 percent in Germany, include robotic milkers – showing that these systems have become a reliable technology for small and medium farms.

A growing lack of high-quality, affordable labor, in combination with the demand for higher efficiency, lower costs and flexible lifestyles, has created a new category for robotic milking and other automated systems on dairies. Large dairies in the U.S., Germany and Russia are adopting automatic milking system technology for herd sizes ranging from 600 to 2,400 cows. Grassland countries like New Zealand and Australia are developing new cow traffic and management strategies together with these systems while still making profits in highly competitive export markets.

Developing countries like Mexico and Brazil are running their first installations and others like South Korea are moving to this solution.

In North America, automated milking began making its appearance in the mid-1990s. Today, more than 18 states, most Canadian provinces and Mexico have robots in operation. There are more than 600 farms robotically milking close to 75,000 cows in North America and the number of on-farm robots ranges from one to 20 units with an average of 2.5 per farm.

Automatic milking systems will continue to shape the future of North American dairy farming but, even as a viable solution today, more and more producers want to know what it can – and can’t – do before making the investment. This article aims to introduce the different types of systems available and the realities of operating each system.

There are three types of commercially available automatic milking systems worldwide:
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a cow or a device has a problem, or if the manager forgot to perform a planned action, the system will immediately call or text the producer informing him or her of the current issue.

Herd management

- **Correlation of milk weights** – This information is processed by the herd management software after every milking, giving the manager accurate data and the possibility to work smarter and faster.

- **Monitoring of udder health** – Conductivity, blood, milking interval, somatic cell count and expected yields – combined with logarithms – help herd managers find cows with mastitis or at risk of infection earlier – also at individual quarter levels.

- **Customized feeding regimes** – Robots can be used as a tool to customize rations at group and cow levels based on milk production, days in milk and stage of lactation depending on feeding strategies and cow traffic scenarios.

- **Traceability** – This reliable data can be stored on thousands of cows over many years. The milk from treated cows is automatically diverted.

- **Remote access** – This feature gives the manager the flexibility to manage operations, or even operate a robot, remotely – wherever connected to the Internet.

- **Management optimization** – With data integration, producers can focus their efforts and resources on priority cows managing by exception.

- **Automatic pre-selection** – The system can customize the milking frequency of select cows based on milking interval and expected yield, thus potentially increasing total system capacity.

- **Automatic post-selection (sorting)** – The system can identify and prioritize special-needs cows using sort gates serving to improve labor efficiency, cow welfare and performance.

**What automatic milking systems can’t realistically offer**

- **Automatic repair** – A robot can perform diagnostics and self-calibration checks but often can’t fix itself. Scheduled maintenance should always be completed.

- **Manage the herd** – Robots can’t solve bedding, nutrition or other management issues. Basic principles and best practices should be applied to ensure the system performs as expected.

The future of automated milking will certainly include more integrated technologies, which will give producers the tools to diagnose reproductive performance, udder health and metabolic disorders all in real-time.

As a reliable, proven solution for the dairy industry, robotic milking will continue to advance helping producers work smarter and more efficiently with added flexibility in their work and personal life.

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