

# Time for Technology

## Robotic Milking.....and Rotaries

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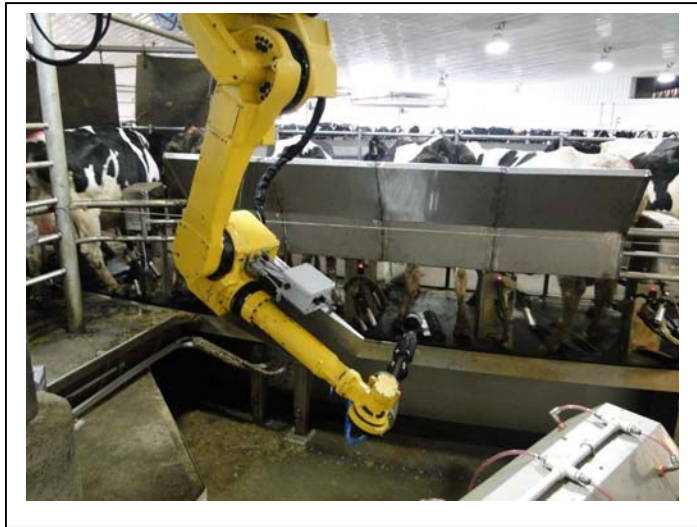


Robotic Milking on commercial dairies in Canada is ten years old this year. The first dairyman to install robots milks with a parlor today, and the second is out of business. Number three and four became chicken farmers and number 5 has developed into a very satisfied customer who has grown from 1 robot in 1999 to three today. Despite some growing pains, the majority of buyers, especially in the last 4 or 5 years, have been happy with their decision. If you saw the side by side demonstration of Lely and DeLaval robotic milking systems at Canada's Outdoor Farm Show this fall, I expect you will agree that both of these systems are here to stay. Robotic milking using single box technology is now a well established and viable option for milking cows on modern Ontario dairies. Having watched developments in this field from the beginning, I am amazed at how much results with these systems have improved, due in part to improvements in the technology itself but even more due to a better understanding of the management required to make them succeed. As might be expected the early adopters, took a substantial risk. Those who had the misfortune to choose the wrong technology or to apply inappropriate management, experienced loads of stress as well as financial losses, while those who chose well have done well. We owe a vote of thanks to these early adopters for learning the lessons that make it so much easier for everyone else today.

In the next year we will also see some new entries into the North American market. The Insentec Galaxy was not milking cows at the farm show, but it was there and will be marketed in SouthWestern Ontario by AGCO. The same system is sold in Europe under three different brand names including BouMatic. That company had their version on display at World Dairy Expo in Madison, with as yet unspecified marketing plans. This system has been in use on farms in Europe, especially in Holland and Denmark for about 8 years. It uses a fairly standard industrial robot arm to service either one milking stall or two back to back mirrored stalls. With barn plans that are specifically laid out for this, growing from 60 cows and one stall to 100 to 110 with two requires a little less investment than with single box systems. Having two stalls back to back does limit the options for separation and milking special groups, but it offers some interesting possibilities, especially for larger herds milking larger groups with multiple robots. Westfalia unveiled a new multibox system at the EuroTier Show in Germany last year and there

are rumours it may be offered in Canada as well. Previous attempts to operate more than two milking stalls with one robot have been disastrous, but no one really has the experience to judge if this was because of poor technology, or because the concept is wrong.

Last but by no means least, there is one other commercial development that has just stepped onto the stage of practical application. A company called Green Source Automation has taken the first step toward what so many North American producers have been waiting for. They are applying robotics to the rotary parlor with their RotaryMATE EXPD, a commercial robot with a camera system that locates legs and teats, mounted on an arm that negotiates a path between the legs to position a teat spray applicator that accurately applies teat dip. The prototype was installed on the Charles Ahlem Ranch in Tullock California nearly 2 years ago. This farm is one of the



Hillmar dairies milking 4000 Jerseys. Pagel's Ponderosa Dairy in Kewaunee Wisconsin has installed two arms for both pre and post dipping. According to owner John Pagel, with these tedious tasks taken care of by robots, three milkers are running his 72 stall rotary at a throughput of 525 cows per hour or 175 cows per man. This size of rotary would normally require four or five milkers with a throughput of 100 to 120 cows per man. Production in this herd is at 41 Kg with an SCC below 150,000. If you want to see it working, check it out at [www.youtube.com/watch?v=Q\\_Nm9-5B9JA](http://www.youtube.com/watch?v=Q_Nm9-5B9JA).

While this first rotary robot is a noteworthy development we need to clearly understand that this kind of technology and its benefits are in no way similar to voluntary robotic milking. Even if complete automation is eventually realised, herd workers still have to move cows to the parlor, and cows still have to deal with long walks, crowded holding areas, and incorporating the trip in their daily time budget. We need a name for this, perhaps "Robot Assisted Rotary Milking" because it would be completely inappropriate to lump it in with the technologies discussed above. Because it can deal with many more cows, this kind of robot has a much better payback in labour saving, and in terms of return on investment, on a large dairy, where the parlor idle time is low, that labour saving will pay for the equipment in 3 or 4 years time. There is little doubt in my mind that this robot will find a home on many large dairies in the next few years. Since this arm performs the same task as the man it replaces, the management issues associated with its introduction should also be minimal. Conversely what we know as

robotic milking results in a completely different lifestyle for the farmer as well as for the cow, but because the number of cows milked is very small, it requires a much greater relative capital investment and has a much greater impact on herd management.

Watching this machine dip teats also provides a good illustration of how challenging the task of fully automating a rotary will be. At 525 cows per hour, Pagel is turning the 72 stall platform



every 8.2 minutes. That means a new cow enters every 6.85 seconds, and it also means a robot applying any work function to every cow has only that much time to work with. This system has proven that teat spraying in that time is possible, and they are working on another arm that sanitizes and preps the udder. Rosendale Dairy, which we visited with Progressive Dairy Operators last June, installed a post dip system on their 80 stall rotary in October. A

second 80 stall rotary turning the opposite way is part of the nearly completed phase two of what will be a 7000 cow dairy housed in two 16 row wide body cross tunnel ventilated barns. Once they are market ready, Rosendale plans to include prep robots and dip robots on both parlors and envision milking 1200 cows per hour with 5 people, or 240 cows per man.

The final challenge, attaching the milker claw in 6 seconds or less will be quite a challenge. Numerous companies already hold a variety of patents on systems to do this, but clearly none are market ready today. If you wonder whether it will ever happen, remember that traditional milking takes up nearly 40% of the time of the workers on a dairy farm...and time is money.....so more than likely..... it's only a matter of time!