



# Minnesota Dairy Health Conference

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## **Update on Robotic Milking Systems**

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AMS (Automated Milking Systems) or robotic milking systems have rapidly hit the market and certainly aroused the interest of dairy producers in the past 3 – 5 years. Though they seem to be a “new” innovation, European nations have been using some form of this technology for over 15 years. Currently, there are 3 primary dairy equipment companies actively participating in the US dairy industry – Lely, DeLaval and GEA Technologies.

Why Robotic Technology? Producers suggest the following: less hired labor, improved cow comfort, less stress on cows, healthier cows, uniformity of milking, a more flexible schedule, and improved quality of life for producers. While these may all be true with a well managed herd, one must pose the questions: 1) Why are these true? 2) Are these traits adequate to financially cash flow this technology? The real answers may come in realizing the difference between mechanization and automation. (1) AMS is not only a “machine” to mechanically milk the cows. It is providing an automated means to collect and interpret data to make management decisions in a timely manner to improve individual cow’s production, health, and reproduction. Data collected, by most AMS systems at each milking, includes body weight, body temperature, milk yield, fat and protein content, conductivity, milk speed, feed, intake and rumination with one company. The automation interprets large volumes of data, on an individual cow basis and creates multiple reports (including a cow health report), allowing producers to quickly view data in a chart or graphic form.

My experience suggests that a typical SE Minnesota dairy will have 47 – 50 cows per FTE laborer and approximately 1.0 – 1.2 million pounds per FTE. Robotic systems are moving over 100 cows per FTE and 1.8 – 2.4 million pounds per FTE, in the same well managed operations. In my presentation and discussion, we will view how reducing labor cost will offset a sizable share of the AMS cost and how the automation benefits may provide improving profitability to the dairy operation. Other benchmarks I believe are measurable to robotic success include, a minimum of 4700 pounds of milk per robot per day and a dairy debt level of less than \$32/cwt of milk (\$20 in a conventional dairy). We will review other financial and production factors in the presentation.

Common factors of Successful AMS Systems usually include; positive barn layout design, quality feed and ration formulation, professional guidance during the transition period, use of Precision Dairy Management tools(2) and the proper preparation of the management team. This preparation generally includes a network of robotic producers, experienced AMS nutritionist, and open communication with the AMS dealer and their management support staff.

Research on 104 AMS farms in the US conducted by Lely, indicates the following: Average days to first breeding (-4 days), days to conception (-6 days), calving interval (-7 days), and milk yield (+6.3%).(2)

Improving efficiency factors, cow health, and productivity allow the AMS systems to be competitive in the dairy industry for any size of operation.

References:

- (1) Cees Jan Hollander, Jan Dirk van Mourik, , S.a.r.l Maassluis, N.V. Maassluis, Aart van 't Land, Ben Smink, Transition from Mechanization to Automation.
- (2) Peter Kool, Rik van der Tol, N.V. Maassluis, Ben Smink, Success Factors for Transitioning to Automated Milking in North America, Lely USA