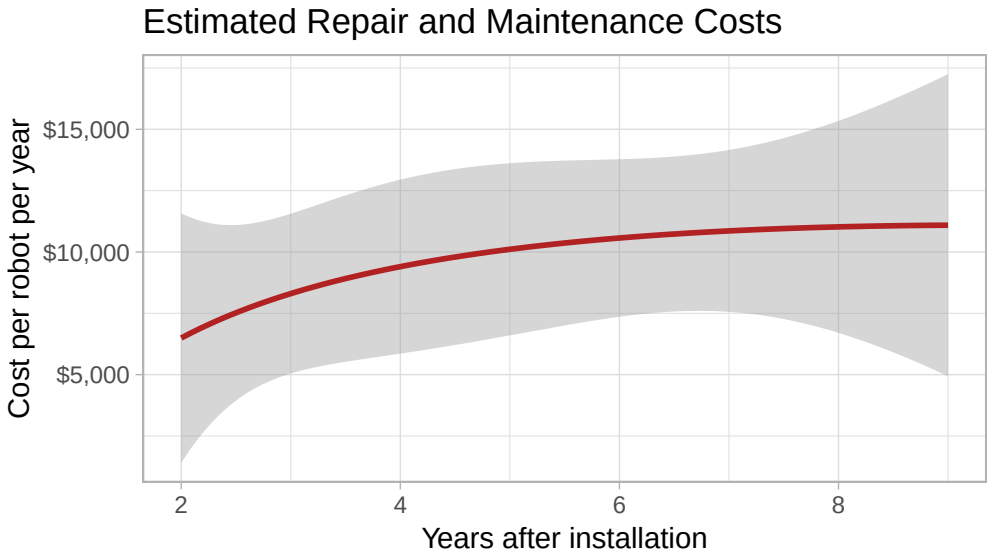
Repair and Maintenance Costs of AMS Units

When considering major changes in production technology such as the adoption of automated milking systems (AMS), identifying and quantifying the main costs and benefits is a crucial part of the planning process. Robotic milking implies large capital investment which bring ownership costs including depreciation, interest, and repairs. The lifespan of AMS units and the repairs are often subject to discussion. To help shed light on those aspect of the AMS adoption decisions, this fact sheet analyses answers of 50 dairy producers from the US about AMS lifespan, maintenance and repair costs, as well as customer service.

Our sample included producers that adopted AMS as a far back as 2008 and as recently as 2018. We asked each of them to report the average maintenance and repair costs over the last three years. We also asked them about the expected lifespan of their AMS units and some details about recent major repairs.

The average expected lifespan of AMS was just above 15 years[1]. That number didn't change between those with retrofitted and new housing. Neither did it change much between those that recently installed AMS and those that have been operating AMS for more than 5 years. Overall, about a quarter of the respondent expected a total lifespan of 13 years or less, while another quarter of the respondents expected a total lifespan of 18 years or more.

Discussions of equipment lifespan more often than not turn into questions about repair[2] and maintenance cost[3]. The figure below shows the estimated total repair and maintenance cost based on the reported costs from our respondents.



[1]The expected lifespan was calculated based on actual age of AMS unit and the reported number of years each producer expects to be able to use the AMS unit before having to change it.
[2]Cost including, for example, cost of replacing lasers, compressors, arm components, . . . etc.
[3]Cost of replacing tubes, valves, liners, filters, brushes,. . . etc.

In the early years, repairs and maintenance total around $5,000 per robot per year on average. Those average cost increase above $10,0000 as the AMS unit gets older. This is mainly due to higher repair costs, since maintenance costs remained somewhat constant over the AMS lifespan. Table 1 provides a short list of most frequent AMS repairs and the average cost and downtime associated with them.

Table 1: Major repairs

Parts	Average cost	Average downtime (hrs)
Air Compressor	10200	4.4
Laser (teat detection equipment)	3369	3.0
Other	3320	4.4

It must be kept in mind that repair and maintenance cost estimates varied considerably. Among our respondent that had installed AMS units 5 years ago or more, 25% reported maintenance and repair costs above $15,000 per robot per year. That includes a few producers that reported cost above $25,000 per robot per year. In their comments, those respondents made it clear that adaptation to AMS didn't go well for them and that they were transitioning back to more conventional milking systems.

A key element believed to help minimize the risk of failed AMS adoption is the availability and quality of customer service from AMS dealers. The survey shows that a majority of producers are satisfied with the customer service they received. Maybe more importantly, 45% have indicated improvements while 19% indicated deterioration of service since they adopted AMS technology.

The Survey

The survey was jointly conducted by the Dairy Extensions of Wisconsin, Minnesota, and Pennsylvania. We thank those who provided their inputs to our survey, and we continue to invite others who are also operating automatic milking systems (AMS). The online survey is available at z.umn.edu/DairyRobotSurvey.

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