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# A barn built for the cows

It takes careful planning to design a labor efficient and animal friendly robot barn.

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**T**HE main reason dairy producers switch to automatic milking systems (AMS) is a need to reduce labor. To achieve this, the goal for the design phase must be to create efficient working routines that enable smooth workflow.

It's a well-known fact that healthy cows are easier to manage, and that's why we should do all we can to design facilities that foster good health and welfare for cows. Otherwise, it is very difficult to achieve high milk yield and efficient labor usage.

## Made for the cows

Consumers and the dairy community alike are asking for higher standards for animal welfare. This trend is not going away, and it will determine the way of future milk production. The whole concept of AMS or robotic barns has very good potential to be "cow friendly."

In a well-functioning robotic barn, we give a cow the resources it needs: feed, a comfortable lying place, good quality air, fresh water, a cow brush, and social interaction in a herd. The cow can use those resources as it pleases.

Cows can move around the barn at their own rhythm, and timid cows can find a quiet moment to go to the feedbunk or to be milked and avoid contact with cows higher in rank. That potentially reduces the social stress cows experience in a conventional barn environment.

Cows also like routines, and they want activities to repeat as they always have. In a well-functioning robot barn, there is minimal human interaction with cows, and that makes the system as standardized as a barn can be.

Milking itself with an AMS is also consistent, and cows that visit to be milked are rewarded with pellets. In practice, we have heard many stories from farmers about cows being restless or even difficult to milk with conventional methods, but those same cows

did extremely well in a robot.

Cows also go to the robot individually, so there are no potentially stressful holding areas where cows get pushed tightly together before milking. Such areas can also create heat stress in the summertime. Crowding can be mostly avoided in a robot barn.

Since cows move to their own rhythm and are not guided by people, active cows are a key element of success with an AMS. To achieve three milkings per day and 90 pounds of milk per cow per day in a robotic barn, we must keep cows' feet in excellent condition and support their metabolic health in every possible way.

Housing a fresh cow or heifer in the same pen with late lactation animals is a risk factor for diseases such as ketosis. That's why providing a specific fresh cow pen with a smaller group size, comfortable lying space, 30 inches of bunk space, and an easy, short walk to the robot with 24 hours a day access to the robot is beneficial for metabolic health and milk production. A small fresh cow group is also easier to manage in order to find and treat all health issues promptly.

## They need four good feet

Lameness can be a serious problem for AMS herds. Every case of lameness cuts down production and is a welfare issue for the cow. Basic principles of maintaining good hoof health are the same in every barn regardless of the milking system: clean, solid, non-slip flooring; comfortable stalls; functional footbath; and hoof trimming facilities. Those features important in preventing lameness are often decided when a barn is still on the drawing table.

To run an AMS facility, people working there must be trained to find early signs of lameness. Routing to the handling chute must be easy so that all the acute cases get treated immediately. In an AMS barn, a lame cow doesn't come up to the robot on its own, and therefore lameness also adds to labor needs.

**IN A PROPERLY DESIGNED ROBOT BARN**, the need for interaction with the cows should be minimal.

Many AMS farms fail to arrange a routine footbath for all the cows in the barn. Having a functional footbath as a part of cow traffic around the robot should be a high priority in the design phase. Fresh cows and cows not in the main lactation group must be able to use footbath with minimal labor as well.

## Go with the flow

AMS cows are handled more as individuals or in small groups of two to three animals. In our experience, cows seem to be calmer in robot barns, and handling one animal inside a big group is not difficult.

To make handling really easy for people and stress free for the cow, routing in and out from all the pens in the barn, to milking, and to the handling chute must be well planned. The right kind of gates in the right places help to guide a cow to where it is needed, so gate design is an important part of the planning. Gates are the key factor for efficient working. When moving animals is easy, the people managing the cows stay calm, too.

When planning a new robot facility or changing an existing barn into robotic milking, all the management and every day working routines need to be addressed. Investing time and capital in the prevention of health issues is imperative. People working in robot barns should trust the cows to "do their job" and disturb them as little as possible outside the routine tasks.

Minimal labor usage and absence of people in the barn can be a challenge at times. One example is monitoring calvings. These possible risks can be taken into consideration and avoided when all the main practices are thoroughly planned in the barn design phase.

Robotic milking is still developing, and we learn more about it every day. Today's technology and future possibilities with all kinds of sensors will help improve animal welfare even further. This thinking leads us to ask: Are robots and automation better for cows than human interaction?

When an AMS barn is working well and the herd is healthy, a lactating cow only needs human interaction for inseminations, herd checks, and hoof trimming. One farmer with three AMS put it all together well: "Our barn functionality is so good that we can just let everything flow in its natural way." 🐄

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