

How to grow from 50 to 500 cows in an automated milking system

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AT A GLANCE

Building in steps with a farmstead plan can allow a herd to grow in phases while also transitioning to robotic milking.

Dairy farms of different sizes all over the world are pondering if robotic milking should be their next step as they change or grow their dairy business. Reasons like lack of labor availability, creating more flexible working times and making dairying attractive to the next generation are driving farms toward robotic milking systems.

Robotic milking is a large capital investment. Many smaller farms may still be milking cows in tiestalls, so switching to robotic milking requires a new design for housing facilities. At the same time, robots are extremely suitable for smaller farms using mostly family members as labor. Stepping from a tiestall barn system to a completely new automated milking system (AMS) facility is a large capital investment that many farms cannot financially afford. The dream of a new robotic milking barn is on the horizon, but it is unreachable. But there might be a solution. Rather than building everything new, could capital investment costs be kept down by using some of the farm's existing buildings and infrastructure?

There may be another option

There may be an option to build the robotic milking system in steps. Using existing buildings and building in steps can allow the

project to be broken into smaller pieces that are more financially acceptable and lower the financial risk. Also, new barn designs can be built in phases. In order to move forward, a road map to the final destination is needed. It is very important to have a road map for the dairy farm first, and this is called a farmstead plan. Developing a farmstead plan requires the dairy farmer to list bottlenecks and goals in labor usage, cow comfort, business growth and next-generation transition. These questions should really be looked at from a jumbo-jet perspective, trying to imagine how the dairy industry will look in 15 to 20 years. Think big and focus on cow comfort, labor efficiency and dairy-farm sustainability.

When goals and bottlenecks are outlined, take a look at existing buildings. Which of them have a lifespan that can allow them to be used in a different way and be part of the future plan? It is important not to overvalue old buildings. They should be used as much as possible as they are, without large investments to change the structure or space they provide. Sometimes, the farmstead plan requires old buildings to be torn down. Don't be afraid of that. Use an expert to develop a farmstead plan to optimize your infrastructure but to also not sacrifice overall functionality.



By building a monoslope barn as part of the expansion phase, the second side can be added on at a later point in time.



The milk room from the previous barn can be utilized by making a protected tunnel for the milk pipe.

Phases of growth

Let's imagine an example. A farm milks 80 cows in a typical 50-year-old tiestall barn. The short-term goal is to decrease labor and improve cow comfort while increasing herd size to 120 cows. The farmer also wants to leave the option for the younger generation to step in and allow the herd to grow to 240 cows. The farm site may allow for an even bigger expansion. A farmstead plan is developed to allow the following steps or phases to occur.

Phase 1

Build a monoslope housing barn for 120 cows with an area reserved for robots, which will be used as a pack area first. The barn can improve cow comfort, feeding and manure handling. Research has shown labor can drop by 50% from doing that same work in a tiestall

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barn, plus it has the benefit of improved cow comfort. Depending on when the investment can be made in robots, a simple remodeling of the tiestall barn to a flat-barn milking system, or an economical parlor and holding area, allows milking to be done more efficiently.

Phase 2

Buy two robots and transition the old barn: Use the existing milk room and a long pipeline to pump milk from the new AMS to the existing milk tank. Depending on the site, milk can be pumped a long distance. This saves the cost of building new infrastructure.

Phase 3

Expand the 120-stall monoslope barn with its mirror image and a second monoslope roofline to make it wider, and use some pen space for dry cows or older heifers. Build a new space ready for cows, but reserve it for new animal groups as cow numbers grow.

Phase 4

Buy two more robots and build a new milk room and other utility spaces. Continue keeping transition cows in an old barn.

Phase 5

Build a transition barn with a fifth robot. Have a close-up area dimensioned for future expansion. This step can be expensive, but it has a huge impact on cow health, and it also supports production. A fifth robot milks approximately 50 fresh cows and gives them a good start before moving to the main AMS barn. At this point, the tiestall barn can be used for heifers.



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Phase 6

Expand the AMS barn with four more robots. (Another option is to split expansion into smaller pieces, so the first two robots are installed and the other side is used for big heifers.) Finally, you have achieved the final farmstead plan and the ultimate goal of milking 540 cows.

This may sound too easy as written here – in a real life, things are sometimes more complicated. While expanding the cow barn, additional housing will be needed to take care of developing heifer and calf facilities. Feed storage and manure storage must also be developed. In some cases, calves and heifers may be sourced to other farms so capital does not have to be spent for them until the dairy cows' space is developed.

Every farm has a unique starting point to develop a roadmap to the future. It is very important and helpful to use outside eyes and a team of trusted consultants to develop a farmstead plan. The critical thing is to start a plan that helps give you direction. Decisions made in the beginning have a huge impact on business profitability in coming years. The goal must also be not to compromise cow comfort and labor efficiency. ↪

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