

How do special need cows and an automatic milking system fit together?

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Since the year 2000 the number of dairy farms using an Automatic Milking System (AMS) is significantly increasing year by year. During the last three years a real boom has been observed in most European markets. Today, more than 10,000 dairy farms all over Europe are already using a milking robot.

The key reasons for dairy farms using an AMS are:

- To get more flexible work time, meaning dairy farmers do not have to spend fixed hours on milking their cows.
- To save overall labour time.
- To become more independent.
- To have the freedom to spend more time doing other things.

However, not every dairy farm reaches the target of being more flexible and having more free time. Nevertheless, it needs to be noted that most dairy farms are working very successfully with their milking robot.

But, what is the difference between farms being successful and those getting frustrated because they do not get the desired results?

When you are thinking about investing in an AMS it is most important to precisely analyse the entire process of your milk production and think through your requirements before making the step from conventional to automatic milking.

Automatic milking system.



Using a milking robot versus a conventional parlour system is not simply a change of milking equipment, it is a complete different way of milk production especially with regard to herd management.

Using a conventional milking system the milking capacity is mainly influenced by the number of milk stalls. Time is ranked second. With a milking robot the number of milk stalls is very limited, time is very critical and needs to be as close as possible to a 24/7 operation.

Consequently, everything which will disturb the standard milking routine will decrease the capacity of a robot system.

This also includes the management of the so called 'special need cows' as this group of cows will not disappear by using a robot milking system. First of all, they are time consumers! For multiple reasons there is no

fixed definition of a 'special need cow'. The definition depends on the focus of the herd's manager and it will, therefore, vary from dairy farm to dairy farm.

However, for most dairy farms special need cows can be categorised as follows:

- Cows with foot problems.
- Cows with metabolic problems.
- Cows having fertility problems.
- Fresh milking cows and heifers.
- Treatment cows.
- Injured cows.
- Mastitis cows.

The work load for this group of milking cows should never be

underestimated. It almost follows the Pareto principle as the last 20% of the herd are responsible for about 80% of your work load.

For this reason quite a few dairy farms already practice so called 'management by exception' where the management is clearly focused on the special need cows in order to keep these cows under control.

If there is an AMS in use an additional category of cows needs to be taken care of:

- Weak cows.

This group contains heifers or low ranked cows which may be stressed by others. You will find those cows in every herd but where in a conventional dairy farm it is mostly a question of how to ensure the feed intake it becomes more challenging by working with an AMS as those animals may avoid visiting the robot at the desired frequency.

Overall, the share of special need cows in an average herd is between 8-15%.

Therefore, it is most important to clearly organise the management of those particular cows when using a milking robot.

As there are various reasons for special need cows they will affect the work with a robot in different ways.

The following questions need to be answered:

- What needs to be done to get all cows milked at the desired frequency?
- How can I observe and monitor cows when I do not see them twice or three times a day during a milking session?

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- How can I treat particular cows without fetching every single one out of the herd?
- How can I temporarily milk cows manually?
- What needs to be done to fit those topics into an automated milking process?

The key to these questions can be an elaborate barn concept, such as a milk centre with a calving area, special need area and a treatment/observation area around a robot to keep the walking distances, especially for special need cows, as short as possible.

This allows most of these cows to be available in one spot which simplifies the management and work with this particular group of cows. A holding pen with a pre- and/or

post selection in front of the robot may be very useful for the daily work as it simplifies the work flow with the special need group.

Cows with foot problems

There is no difference between a conventional parlour and an automatic milking system in regard to reduced milk production for lame cows. For this reason good foot health is always a precondition for successful milk production. However, a dairy farm using a robot system is even more sensitive to cows with foot problems.

Only cows with good foot health will frequently visit the robot on their own. That

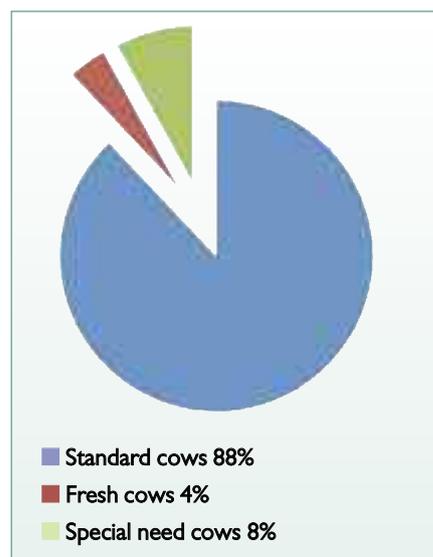


Fig. 1. The typical herd structure.

means that foot problems will directly increase the number of 'overdue' cows which need to be pushed to the robot.

Beside this, cows which have pain walking may block the system when standing in or before the robot and will reduce the capacity of the system.

In addition, lame cows often start kicking the moment a milking unit is about to be attached so the robot may need several attempts to attach the teat cups, which may also lead to a reduced capacity of the machine. Last but not least, the risk of a soiled or a damaged robot by a kicking cow increases.

Therefore, a clean and dry walking area for the cows and a good foot care programme is indispensable when using an automatic milking system. Such a programme needs strict organisation as you cannot have the milking process interrupted for a complete day because of hoof trimming.

Cows with fertility problems

One of the most challenging tasks in milk production is a sophisticated and efficient heat observation because of the lack of time available for the herd manager. In conventional milking systems a significant part of the heat observation is being covered during the milking time.

In a robot system it is essential to reserve time for heat detection at least twice a day when you are present in the barn.

Automated heat detection such as activity sensors are useful tools to support the herd manager in finding cows in heat.

Fresh milking cows

This is a very sensitive group of animals which need special care. To optimise the work flow with this group of animals they should be located as close as possible to the robot.

A holding pen in front of the robot will allow these animals to be kept in a group, which will increase work efficiency.

After calving the ligaments of the cows are still loose and there is a high risk of injury which may cause a total loss if cows are directly released into the standard herd after calving.

For those cows it is suggested that an operator is present to 'manually' observe the first milkings to check udder health, prevent milk fever problems and, if necessary, support the robot by manual attachment of the teat cups.

On average the share of heifers in a standard herd is approximately 30%, which also need to be trained for automatic milking. When milked the first time an operator should be present.

Treatment cows

One of the questions is where to treat cows when using a robot. As the dairy farm manager has only limited control of when a cow will visit the robot, simple routine work, such as drying off cows, needs to be planned. If the robot allows easy access to the udder the application of the injector can be done directly after milking.

To organise such treatments a post selection may be of advantage which will help to separate the cows into a special area at any time of the day. Next time the operator is present at the robot he can let them in the robot and directly start working on those cows.

Mastitis cows

Mastitis treatments are usually very time consuming. In addition, there is a significant infection risk depending on the type of the mastitis pathogens.

Therefore, it may be helpful to keep mastitis cows separated from the rest of the herd in a separation area close to the robot. This will allow better monitoring and easier treatment of affected cows and, furthermore, will reduce the infection risk of other cows.

Milk from treated cows needs to be dumped. As in any other dairy farm, after curing the mastitis it is the safest method to proof a milk sample for residuals before releasing the milk to the standard milk line.

Weak cows

Every herd includes weak cows. In a robotic milking system there is some risk that those cows are blocked from visiting the robot by stronger and more dominant cows.

As a result they will appear on the overdue list. This number of overdue cows will accrue the closer the robot works at the capacity limit.

It is daily routine for every dairy farmer to

push the cows from the overdue list at least once a day in front of the robot. To minimise the work load, cleaning the bedding may be combined with pushing these cows. However, stress by overstaffing the freestalls should be avoided.

Summary

A dairy cow herd does not only include 'standard' cows. The question of how to take care of the special need cows has a significant influence on the successful operation of an automated milking system and it needs to be carefully addressed.

Independently from a robot being inte-

grated in an existing barn or being installed in a complete new building the barn layout is the key for the success of the operation.

Enough space as close as possible to the AMS is important for the integration of special need cows into the daily working routine. The calving area, special need area and treatment area should be part of the milk centre concept. The milking centre needs to assure that these cows have direct and easy access to the robot in order to have a successful operation that includes all dairy cows.

In other words, it is not enough to simply replace a parlour by a robot. It is producing milk with a completely new concept that affects all parts of the dairy farm. ■