

Robotic Milking

For UK dairy farmers considering a move from a parlour to robots, one of the first decisions is whether to run a free access or guided system but what are the pros and cons of each? Wendy Short finds out more.

Free access versus guided in robotic milking system

About 80% of UK robotic systems are designed for free access, says independent adviser Gareth Jones, of Robotic Milking Systems.

He explains that free access systems allow cows to move freely between feed, cubicles and robots, with concentrates used to attract visits.

In contrast, a guided system controls cow movement through the building using one-way selection gates.

Cows move from the cubicles towards the feed fence, but to get there they must pass through a pre-selection gate and, if due, the robot. If the software determines they are not ready to be milked, they are diverted straight to the feed fence.

Choice

Mr Jones says: "Decisions between the two options are partly influenced by manufacturer choice. Not all suppliers offer guided systems and free access is easier to retrofit into existing cubicle housing.

"Retrofitting a guided system requires additional space and may mean further layout changes."

For producers who are weighing up the two options, herd size is often the starting point.

"On smaller units with up to about 120 cows in milk, free access is widely seen as the simpler and more practical option," says Mr Jones.



"A typical set-up would normally involve running the cows in one group, where cow flow can be managed effectively without the need for additional infrastructure. If herd size increases beyond this level, guided systems may be worth considering, although they are not automatically the right choice.

"The outcome is usually based on labour availability, feeding strategy and building layout.

"As cow movement is controlled, there is little or no need to fetch cows for milking.

"In larger herds, this can represent a meaningful labour saving, particularly where staffing is already stretched."

With feeding strategy, guided systems offer the chance to reduce concentrate levels fed through the robot, or potentially remove them altogether.

Instead of using concentrates

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GARETH JONES

as the visit incentive, the motivation is access to the feed fence.

This has led to the development of 'no feed' systems, sometimes adopted in the US and Canada, where cows receive no concentrates in the robot at all.

Instead, all their nutritional needs are delivered via the total mixed ration.

Mr Jones says: "These systems work well in North America largely because producers can grow large quantities of maize silage and lucerne on-farm.

Yields

"This high-energy, highly digestible diet means cows can maintain excellent yields without the requirement for additional robot concentrates, thereby reducing purchased feed inputs."

But replicating this approach in the UK is more difficult, says Mr Jones.

"Many units are heavily reliant on grass silage, particularly in the west of the country, where consistency and energy levels can vary more widely.

"Weather conditions can affect options and not all units have the land base or soil type to grow high proportions of maize or other high energy forages.

"However, that does not mean the principle cannot be applied.

"In eastern UK regions, or on units with a strong arable base, there may be an opportunity to move towards lower concentrate use in the robots.

"This could apply on farms growing a significant maize acreage, or with access to a consistent by-product supply.

Reduce

"Even where a full 'no feed' system is not achievable, guided set-ups can still allow farmers to reduce concentrate input to relatively low levels, improving feed efficiency and reducing exposure to volatile feed costs."

Another claimed advantage of guided systems is improved robot efficiency, based on the idea that only cows ready to be milked are allowed into the robot.

Mr Jones says: "In theory, this should increase milk output per robot per day.

"However, I have found no clear evidence that guided systems consistently produce more milk per robot than well-managed free access set-ups. As a result, milk output alone may not be

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a reliable reason for choosing guided over free access.”

Cost differences between the two systems are relatively small in percentage terms.

A guided system might add about 5% to the cost of a typical installation for a 240-cow herd with four robots.

The additional expense comes mainly from selection gates and the infrastructure required to create a one-way cow flow.

Where costs can increase more significantly is in building design.

Easier

Mr Jones says: “Free access systems are generally easier to retrofit into existing sheds.

“In many cases, it is simply a matter of creating space for the robots, either by removing cubicles or extending the building.

“Guided systems are more complex to retrofit because they require a defined cow flow through the building.

“This means additional space is

needed not only in front of the robots, but also for pre-selection gates and controlled passageways. As a rule of thumb, about five metres of space is required in front of the robot in any system, with guided setups needing at least an additional two metres to accommodate selection gates.”

For farmers considering converting an existing free access system to guided, this structural requirement is often the main limiting factor.

It is not simply a case of adding gates; the system needs to be integrated into the building layout to function properly, particularly in fully housed systems where cow movement must remain smooth and unrestricted.

In terms of management, Mr Jones says both systems rely heavily on data from the robot and there is little difference in workload associated with interpreting this information.

Every cow is identified at each visit, and milking frequency is

controlled by software in both systems. The main difference with guided systems is that selection decisions are made before the cow reaches the robot, rather than at the point of entry.

For a farmer currently running free access robots and considering a switch to guided, the key question is what problem they are trying to solve, says Mr Jones.

He says: “If the main issue is labour, particularly time spent fetching cows, guided systems can offer a clear benefit.

Home-grown

“If feed costs are high and there is scope to improve forage quality and increase reliance on home-grown feed, guided may also be worth exploring.

“However, if the expectation is to significantly increase milk output per robot, the evidence for this is less convincing. In well-managed free access systems, fetching rates can be kept low, typically about 5% of cows,

provided the balance between feed fence ration and robot concentrate is correct.

“Overloading robots with too many cows is more likely to increase fetching than the type of system itself.”

Ultimately, the choice between free access and guided comes down to farm-specific priorities.

Free access offers simplicity and flexibility, particularly in retrofit situations and smaller herds. Guided systems offer tighter control over cow flow, with potential benefits in labour and feed efficiency, but require more careful design and planning.

He recommends taking farm-specific advice before making an investment.

“For farmers moving from a parlour to robots, it is better to take independent advice and consider long-term feeding strategy, forage potential and labour availability, rather than focusing solely on perceived production gains,” says Mr Jones.