

VMS Spectra

The future of dairy farming

Making feed go further

Technology has come a long way in recent years. When robotic milking was first introduced onto the market it revolutionised dairy farming. Suddenly, farmers could spend more time on value adding activities, such as effective farm management, and leave cows to milk themselves. Today, using robots is a well-established way to milk. DeLaval improves its milking robots year on year, with both inbuilt features and optional add-ons that make an enormous difference on any dairy farm, and this year is no different.

The latest optional add-on for DeLaval's Voluntary Milking System VMS really makes it stand out from the crowd: the limited edition VMS Spectra comes with an automatic Body Condition Scoring (BCS) system. This unique feature scans cows' bodies on a daily basis and plots their current score as they pass through the lactation cycle.

"We've found that automatic body condition scoring is extremely helpful for farmers," says DeLaval VMS Business Development Manager, Johan Ter Weele. "Despite the importance of regularly scoring cows, it's become one of those jobs that gets done when there's time over in the day – and how often does that happen on a farm? With VMS Spectra, we're providing farmers with daily accurate body condition scores, which they can view and utilise directly from the farm computer."

Cows' body condition scores are usually only taken a few times during the entire lactation cycle to check a cow's condition – and this is done manually, by feeling and looking at them. The solution from DeLaval takes a 3D image of a cow every time she passes through the robot milker and logs the data on the farm computer in DeLaval DelPro Farm Manager. With accurate daily information, the body condition scores can be used to much greater effect.

Auke Veldman is typical of VMS farmers that have started using DeLaval automatic body condition

scoring. "We could see that the scores of our cows were decreasing a lot in the first 60 or 70 days," he says. "So we worked on improving that. We wouldn't have known this without daily scores. The feature is proving great for monitoring transition cows and keeping them in good shape. With the help of this tool the farm can easily keep up its yearly milk production of 10,000kg milk per cow and year."

Although the potential benefits of automatic body condition scores are the same on every farm, different VMS farms may choose to utilise the data differently. For example, on Lövänget farm in central Sweden, Michael Arvidsson has been using daily scores to improve feeding at individual cow level. According to Arvidsson, "I can quickly see if a cow is outside her optimal condition and change her feeding – something that I haven't managed to do as effectively in the past. This means I can make sure the feed my cows eat turns into milk and not body fat. I have healthier cows that contribute to farm profitability."

On yet another Swedish farm, farmer Jörgen Johansson is saving time as well as feed costs. "In my situation, I have a lot of cows and I don't see them all on a daily basis, but with the computer's help I can. I know everything I need to know about every cow without actually trying to find her in the herd. It's a huge time-saver. I'm also seeing savings in feed, as I'm reducing it much earlier based on the scores. It's resulting in better milk production and is better for my wallet."

"No matter what benefit or benefits a farmer takes advantage of, it is clear that VMS Spectra offers something for every dairy farmer, and proves that yet again, when it comes to robot milkers, the VMS is giving farmers more than standard robot milking stations," says DeLaval VMS Business Development Manager, Johan Ter Weele. ■

Milking robots

The future of dairy farming

DeLaval VMS: consistently outperforming other robots

In most milking systems pulsation is set according to the milking hardware; in a DeLaval VMS pulsation is set according to each cow's optimal milking performance at her current stage of lactation.

Tailoring milking for each cow

"Cows don't milk uniformly, so it is natural that different pulsation ratios will be better suited to different cows," says DeLaval VMS Business Development Manager, Johan ter Weele.

"That's why we have developed Smart Pulsation, a dynamic, cow-specific pulsation system for VMS. We want the cow to dictate the pulsation ratio, not the robot."

Fast, efficient and healthy milking

"DeLaval trials¹ showed roughly 80% of a herd achieve optimal milk flow at a higher pulsation ratio, to the ratio typically used by milking robots in the industry today.

So if you don't milk with a VMS robot, then most probably 80% of your cows are not being milked at the optimal ratio. Or put another way, your cows are being milked too slowly by your robot, and you are missing out on potential milking capacity," says ter Weele.

DeLaval VMS has four standard pulsation ratios. The VMS automatically analyses a cow's milking behaviour through lactation and adapts the pulsation ratio to ensure the optimal flow rates.

The optimal pulsation ratios for your herd

Smart pulsation can make a big difference on a farm. As the majority of cows are milked faster, thanks to a faster pulsation ratio, there is excess capacity that can be exploited.

In the series of DeLaval pulsation

trials, milk flow was shown to increase by between 5 and 9%. This adds up to a lot of extra milking capacity over a year.

The Swedish University of Agricultural Sciences held trials with different breeds at different stages of lactation to see the effect various pulsation ratios have on teat health.

The research showed no significant effects on teat ends or somatic cell counts regardless of which pulsation ratio was used².

Faster milking equals greater capacity

Dutch farmer, Jan van de Linde, is typical of the farmers that took part in the smart pulsation trials; he witnessed considerable increases in milk yield.

Commenting on the smart pulsation, van de Linde says "I was averaging under two tons per VMS per day until I started varying the pulsation ratios. Now I constantly hit over two tons per VMS. I've even reached 2200kg."

Smart pulsation is available as standard on all VMS robots today. It is also available as an upgrade on older VMS robots for farmers that want to increase the capacity of their milking systems.

It is the high-value standard features, such as smart pulsation, that make DeLaval VMS robots such a popular choice among dairy farmers. And why does DeLaval include them?

Well, for the world's leading manufacturer of milking equipment, producing extra value seems to be standard procedure.



¹ DeLaval International – verification trial I, 2011-2013.

² Swedish University of Agricultural Sciences: Effects of Pulsation Ratio on Teat and Udder Health in Dairy Cows, 2013.

Optifeeder

The future of dairy farming

Concentrate on feeding – the DeLaval way

Back in 1976, when DeLaval launched the first automatic feed dispensing system for cows, the Alfa Laval Saturn (DeLaval traded under its parent company name back then), few could have envisaged how important automation would become to the dairy farming industry.

Today, some 40 years later, DeLaval offer dairy farmers a complete robot barn, where virtually every element – from feeding, milking and cooling, to cow traffic, ventilation and effluent handling – all work seamlessly, automatically, and in sync.

Feed concentrate: at the heart of the most productive dairy farms

“Feeding is the single most expensive milk production cost,” according to DeLaval’s Maxime de Traversay. “And bearing in mind that the way you choose to feed cows with concentrates will affect herd yield, milk quality, overall costs and income, it’s important to get feeding right. In fact, when DeLaval Optifeeder is used together with an effective feed concentrate programme, milk production cost savings of up to 15% can be achieved.”

Tailored feeding

To get such savings, farmers should employ the mixed ration feeding method. Bulk base rations are delivered to the herd along the feed table, while concentrates are dispensed to each cow from feed stations. By providing cows with tailored rations, the most productive cows can, for example, be given the high nutrition diets they require.

Individual concentrate rations are dispensed throughout the day in small portions to cows from the feed stations. However, a cow cannot go directly from one station to another for concentrate; she will be refused more feed until she is due another ration. With

regular small portions, cows cannot sort through the ration and eat what they prefer; they eat the lot.

“Providing regular portions to cows is standard practice for automatic feeders,” continues Traversay. “But where DeLaval Optifeeder is unique, is the way in which it enables farmers to use current or historical individual cow data.

“Activity, milk quality and yield, health status, the stage in the lactation cycle, etc., can all be smartly utilised to distribute automatically daily concentrate rations. This minimises competition between cows and results in a calm and productive barn environment.”

Three levels of automation

DeLaval Optifeeder can be used on any farm. Farmers can choose the level of automation that suits them best. In the DeLaval feeding processor FP204X standalone system, farmers simply enter the amount of feed per cow directly into the control unit. One step up from this is DelPro Feeding. Farmers can register the history of the herd, including data such as the health book, reproduction and follow-up. This information is used to plan and set feeding concentrate routines.

Finally, there is the state-of-the-art DeLaval DelPro Farm Manager system. With its rich database of farming operations – including milking, activity, breeding and health status – feeding is automatically controlled and altered on a regular basis by the system itself. However, it can also be controlled manually.

“40 years of feeding experience and over 30,000 satisfied customers around the world has taught us a great deal over the years. Perhaps most importantly, how to help farmers make big savings with the right equipment and the ideal feeding routines,” Traversay concludes.

DelPro Farm Manager

The future of dairy farming

Body Condition Scoring

It is widely accepted in the dairy community that Body Condition Scoring (BCS) is a useful management tool. Most vets and nutritionists will tell about the importance of scoring cows on a regular basis and the value it can bring to a dairy farm. There is also a lot of research to back this up. For instance, a 2016 University of Illinois paper on BCS states "Management of body fat content is critical to achieving the sometimes antagonistic goals of good fertility, high milk production, and health." However, measuring cow body condition scores has never been an exact science. That is until DeLaval launched the VMS Spectra, the latest edition of the company's robot milking solution, which accurately measures each cow's BCS after every milking.

According to VMS Business Development Manager, Johan ter Weele "We wanted to help farmers get real benefits from body condition scoring. We didn't just want to provide a list of scores, but rather create an entire BCS management system that combines data and presents herd levels and each cow in her lactation cycle." A DeLaval BCS camera located on the VMS automatically sends a cow's scores to DeLaval DelPro Farm Manager, and plots it against the lactation cycle in an easy to read graphical format. Farmers can see which, if any, cows are above or below the curve on their farm computer. Besides this they can also track individual BCS scores.

A key benefit of having this information is the ability to improve feed efficiency. Reducing rations and concentrate of over-conditioned cows and increasing them for under-conditioned cows means each member of the herd can be given the right feed content at the right stage of lactation. This saves you money if you have a lot of over-conditioned cows, and will certainly ensure a better return on feed cost per fat/protein corrected litre of milk. Another benefit is it can help improve the fertility

process. Cows that have a healthy BCS throughout the lactation cycle can have less days between calving periods. Also, they usually require fewer inseminations to become pregnant. BCS and feed management starts to become more important as calves age. Healthier calves can begin birthing at a slightly younger age (up to two months) compared to the average cow, meaning a faster return on herd investment. If your cows remain within the BCS curve you don't need to take any action. Cows that are below the curve are at a higher risk of poor fertility and low milk yields. Those that are above the curve are at a higher risk of ketosis and other side effect problems."

A good body condition score throughout the entire lactation is a sign of good health. The initial downward trajectory of the curve occurs in the first 100 days or so, when around half the total milk yield of the lactation cycle is harvested, this is also the time the cow is becoming ready for insemination. Cows that remain within the BCS lactation curve boundaries will achieve the best milk yield and insemination results over their lifetime. Good BCS can also help limit health issues such as lameness. Research carried out in the UK and Malaysia suggested 'loss of BCS and increase of BCS could influence the risk of becoming lame and the chance of recovery from lameness. Regular monitoring and maintenance of BCS on farms could be a key tool for reducing lameness'.

"Dairy farming is a complicated business. You invest two years in a young cow's life, feeding, housing, managing, inseminating and in some cases nursing her, before you know what her initial return on investment will be. Then, it takes almost two lactations before she pays for herself. BCS management is one effective way of helping cows to produce at lower cost, which is why we have integrated it into the VMS Spectra. We want to help farmers succeed," concludes ter Weele.

DeLaval Clover liner

The future of dairy farming

The ultimate milking liner

Now that the DeLaval Voluntary Milking System VMS is available with the DeLaval Clover liner, we take a look at the experiences of DeLaval farmers to see what can be expected when a fine-tuned robotic milking system, such as the VMS, is combined with the revolutionary high performance DeLaval Clover liner.

Superior milking performance

"One thing VMS farmers notice with Clover liners is an increase in milking capacity," says DeLaval Product Manager, Marika Cederholm. "Torp farm in Sweden, which has four robots, was one of the first farms to switch to Clover for VMS. And they achieved a capacity increase of 20 cows a day, due to the fast milk out of the liner." Many of the benefits on offer from the DeLaval Clover liner are due to the unique barrel design that is clover like in shape, hence the name. When combined with the liner's thin concave side walls and smooth rounded corners, it provides gentle grip and teat treatment. This delivers fast and comfortable milking.

Increased milk yield

According to Cederholm, "Many farmers that have switched to Clover also report an increase in milk yield per cow. On Muir farm in Scotland, they have witnessed a total herd milk yield increase of 20%, within the space of six months."

Unlike most other liners, the DeLaval Clover liner is always in complete contact with a cow's teat. With no air escaping from the liner, optimal vacuum levels – higher at the teat end and lower at the mouthpiece – are always maintained. The result is less slippage, less teat infection and improved milk flows.

Improved teat health

"Many farmers that have switched to Clover liners also report improved herd health," continues Cederholm. "Somatic cell counts are down, as are the number of mastitis cases. At Lower Barker farm in England, for instance, they

have gone from an average of two to three mastitis incidents a week to around three weeks without a single incident. This obviously offers huge savings on vet bills."

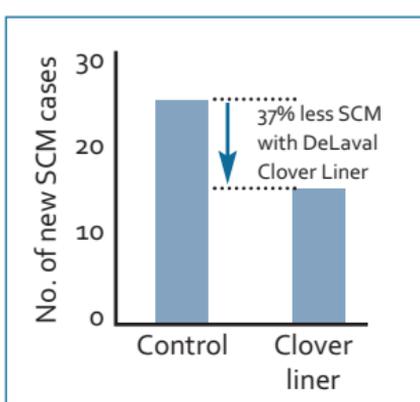
The ultimate liner

"Thanks to these three key benefits – superior milking performance, increased milk yield and improved teat health – virtually all farmers that have tested Clover liners, have continued to use them to milk their herd," says Cederholm. "This has even surpassed our expectations. It's one thing conducting tests and research that show how good a product is, but when farmers from around the world, with very different farming routines and conditions, share the same great results, then you know that you've done a good job."

The research Cederholm is talking about includes the independent trial* that clearly show that DeLaval Clover liners improve teat end roughness and can substantially reduce the risk of clinical mastitis (see figure below).

"It's early days for the Clover liner for VMS, but we expect take up to be fairly rapid. After all, in today's tough financial climate there are few low investment alterations on a farm that can have such a big impact. On the very first VMS farm to use Clover liners, milking capacity was increased by 720 litres a day. Just think what it could do for all the other VMS farms," concludes Cederholm.

*Source: Dr Haeussermann A., "Liner type and impact on teat health", NMC Ghent, Belgium, 2014.



DeLaval VMS

The future of dairy farming

Three levels of mastitis detection and health protection

Mastitis is a part of dairy farming life and unfortunately a costly one. Detecting mastitis at an early stage and treating cows is vital for a business.

In fact, according to the 2015 paper "The cost of clinical mastitis in the first 30 days of lactation: An economic modelling tool" the overall cost per case of clinical mastitis in the first 30 DIM is estimated to be USD444 (EUR 400). The costs incurred vary from extra farm labour and vet expenses to lost milk and culling costs.

"At DeLaval, we do what we can to help dairy farmers minimise the number of mastitis cases on their farms," says Johan ter Weele, VMS Business Development Manager.

"That's why we offer VMS farmers three levels of detection and health protection, depending on which VMS robot they choose from our range."

The 'standard' DeLaval VMS robot comes with built-in detection in the form of the DeLaval Mastitis Detection Index MDi™. This simple yet effective analysis tool combines several measured values to determine if cows are in danger of infection.

"MDi is unique to DeLaval VMS robots. It informs a farmer if a cow should be monitored further for signs of mastitis, such as udder swelling, redness or hardness, or a rise in body temperature."

Next model in the VMS range is the VMS Supra, which has more advanced detection tools. It comes with an automatic somatic cell counter that can instantly determine if a cow or an individual quarter has a high cell count and is therefore infected with mastitis.

"The DeLaval Online Cell Counter provides an exact cell count of each cow by measuring the somatic cells in milk samples from that milking. Each udder is sampled individually, and if a score of around 200,000 or more is registered, the cow should be separated for treatment. Any milk that has a high cell count can be diverted from the cooling tank." The most advanced robot in the VMS range is the VMS Supra Plus. This comes with DeLaval Herd Navigator, the most advanced health and breeding system available for dairy cows.

"VMS Supra Plus is ideal for farmers who want to remain one step ahead of their herds. Rather than alerting farmers to a cow that has a mastitis infection, DeLaval Herd Navigator warns them if a cow is likely to contract mastitis so that preventive measures can be taken. It also warns a farmer if a cow is susceptible to ketosis."

DeLaval Herd Navigator also offers farmers another equally important and unique feature: it detects if a cow is entering heat or silent heat with almost 100% certainty. This greatly improves breeding success rates.

"It's up to all dairy equipment providers to do what they can to help farmers avoid mastitis cases, especially when you know that each case can cost a farmer hundreds of dollars or Euros. At DeLaval it's not just our VMS robots that help farmers fight mastitis, we also have an entire cow comfort programme that helps safeguard cow health and welfare," concludes ter Weele.

Source:
E. Rollin, K.C. Dhuyvetter and
M.W. Overton www.sciencedirect.com