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## Milking systems help improve throughput efficiency

## Milkline, Italy

Veneto is one of the most productive regions in Italy and the dairy sector plays an important role with a production value of milk that exceeds €415 million, equal to 8% of the entire regional agricultural sector (Istat, 2018). The region produces 10% of the national production of cow's milk, with 1.2 million tons produced in 2019 and ranks third in Italy after Lombardy (43%) and Emilia-Romagna (16%). These three regions, together with Piedmont, represent about 75% of Italian production (Agea, 2019). Moreover, Veneto has a very high production of one of the most famous cheeses in the world, the Grana Padano.

It is within this setting that Milkline NG Spa's project of a new milking parlour was born in 2021.

The aim of the farmer was to completely change the perspective of his business: a new milking parlour with a high degree of automation thanks to the introduction of animal monitoring and herd management software for real-time control of the milking process. A parallel 2x10 milking parlour with fast exit was the best choice to allow the milking of more than 200 cows.

The willingness of the farmer to maximise throughput during milking was crucial to implement a significant and consistent route change to optimise the management of the animals in the milking parlour. Thanks to the herd management software DataFlow II, it was possible to control in real-time the milking process and special reports dedicated to milking efficiency allowed Milkline to better understand the key points to work on to optimise the milking process.

The Bunch Milking Efficiency and the Milking Efficiency Preparation reports really helped Milkline to understand in detail how to optimise the operator work routine and how to improve the speediness of the milking process, understanding what routinely – and sometimes not so routinely – happened in the milking parlour.



Fig. 1. Milking preparation efficiency graph of the Herd Management Software DataFlow II. The milking preparation efficiency graph shows the average and current milk flow, the average milking time and milk yield for the cows in the herd.

To determine whether milking parlour routine is efficient, the Bunch Milking Efficiency report breaks that routine into measurable segments and the time intervals for the events in the routine are measured, for example the time interval between the opening of the parlour gate and when the first unit is attached to the udder, the time interval between first and last unit attachment, when all units are off, the time interval between the cows exiting the milking parlour, and the milking time of the bunch.

This time analysis is crucial to understand if the operator workflow is smooth and fast or whether there are some dead time intervals to work on. On the other hand, it can also help to improve the animal traffic in and out from the milking parlour that represents another important factor of the speediness of the milking process.

The Milking Preparation Efficiency allowed Milkline to understand how well the cows were prepared for milking and how to improve the milking routine, thanks to specific graphs that show the milk ejection curve per group of animals (as shown in Fig. 1) and data related to milk flow speediness and milking times.

Also in this case, the time and data analysis practically helped the company to find the best-balanced procedures to prepare the animals before milking. The introduction of a consistent milking routine and dynamic pulsation guaranteed optimal animal preparation and speed out of the milk during milking. Thanks to these crucial improvements the bimodalities decreased around 10% and a better teat health was reached.

This project for Milkline NG Spa represents not only a milking parlour installation, but a clear and practical demonstration that their milking systems allow customers to really improve their throughput efficiency.

#### milkline.com





# Sustainable animal health alongside cutting-edge technology

#### GEA Farm Technologies, Germany

"First and foremost, I am concerned about animal welfare and animal health," says Michael Krümberg, explaining his investment in the spacious barn for 340 dairy cows. To provide his herd with superior comfort right up to the milking parlour, the agricultural business graduate in Rheine, Westphalia, Germany, opted for the T8900, the most advanced rotary milking parlour from the GEA DairyRotor line.

"It thrills me how smoothly the cows enter and leave the carousel in just a few seconds," the farmer enthuses about the smooth flow of milking time. From the waiting area with automatic cow driver, the animals arrive at the milking places in a 90° set-up. For enhanced animal comfort, the cabinets at the 40 milking stalls are particularly low, round and ergonomically shaped. With no risk of bumping or injuring themselves, cows stand comfortably side-by-side in the spacious pens. "Notice how quiet it is during milking. The cows appreciate the headroom because they can comfortably ruminate and maintain contact with the herd."

Maximum comfort is guaranteed by the GEA DairyRotor T8900 just as much for the milking work of the staff. As soon as the cow has entered the milking stall, the pre-routine can begin thanks to a clear view of the animal and free access to the udder. To make things easier, the positioning arm moves the cluster into the working area. The milking control unit monitors the gentle, speedy milking process right through to quarter individual milking out.

When equipping his rotary milking parlour, Michael Krümberg relies on the advantages of automation provided by the pioneering ApolloMilkSystem. The innovative four-way milking cluster automatically dips the teats inside the liner after the milking process before the cluster is removed. The teat cups are then carefully rinsed and disinfected. "On the one hand, we increase the efficiency of the milking work, which can be done by one person alone. This is because the milker is only needed during the attachment process; removal and dipping happen automatically. On the other hand, the dipping process automatically protects udder health. By disinfecting the cluster in between, we effectively prevent the spread of germs from cow to cow and gain maximum safety in udder hygiene."

Cows which feel good perform better. Because of this, Michael has modernised his farm with a focus on animal welfare. He decided against





increasing the size of the herd, and instead of adding more buildings to the existing ones, he built a completely new barn with an integrated milking centre. Airy, spacious and flooded with light, the barn architecture impresses with wide aisles, plenty of freedom of movement and low-lying cubicles for the 340 dairy cows. In addition to a constant supply of fresh air via the open side areas, the brightness is surprising. Special lighting balances the lighting conditions during the day and at night.

For high working efficiency, the barn concept is designed around a centrally located axis with a feed table on both sides. This means Michael can see immediately if something is wrong and saves a lot of time thanks to short distances. He has also implemented the principle of short distances for the animals in the calving and straw areas. With professional care and attention, the so-called special-needs cows reach the milking parlour in just a few steps. This also protects the health of the animals and helps them to start the new lactation well after calving.

Michael makes a point of inspecting the animals twice a day. That is why he likes to milk conventionally. In personal observation and herd management, he is supported by intelligent GEA technology: conductivity analysis and milk quantity monitoring provide results during milking time. The CowScout monitoring system analyses the animals' rumination and movement behaviour in the barn. The current animal data provides an early warning of cows that are sick or in heat, for example, and thus provides the ideal basis for successful animal health and reproduction management.

When Michael switched from the double 8 GEA EuroClass 1200 herringbone milking parlour to the T8900 milking carousel, he relied on the long-standing cooperation with the local GEA dealer and, after running the parlour for a good year he was able to reduce milking time from 4.5-5.0 hours to 1.5-2.0 hours. Low cell counts of 140,000-170,000 reflect the animal health since commissioning. Thanks to the high level of comfort in the well-being barn and milking parlour, the herd yields around 11,000 litres per cow per year. However, the dairy producer sees another way to relieve the strain on his high-performance animals: "In the long run we are planning to switch from two to three milking times. This will noticeably reduce udder pressure, so we will protect the animals' health even more sustainably in the future."

gea.com



# 40-point rotary system brings whole farm benefits

#### DeLaval, UK

Hedydd Evans installed a 40-point DeLaval E100 rotary parlour in March 2021 to replace his 10/20 herringbone. A new building was constructed to house the parlour which milks 230 Friesian Holstein cows twice a day. "We looked at installing a 24/48 herringbone, but it would have needed a building twice the length and would not have been as time efficient. This new rotary has reduced milking time by two and half hours and our yield has increased by 500 litres per cow per year already," he says.

The previous herringbone parlour required significantly more labour time with each milking averaging over four hours. "We have been expanding the herd and the parlour was holding us back, so we sought advice from local dealer Lloyds Dairy Centre who suggested the rotary," he explains.

Lloyds technician Owen McConochie worked with DeLaval and Mr Evans to explore the farm's options. "Rotary parlours for smaller herd sizes are becoming more popular in Wales and we have installed quite a few in recent years. The new Evanza cluster design and the teat spray robot both contribute to saving time and have enabled Hedydd to focus on herd health and managing the farm," he says.

Cow comfort was a big consideration for Mr Evans, and he wanted to improve foot health by reducing standing time. The previous herringbone was very tight and with cows of varying stages of maturity and size there were instances where cows lacked the space to be milked efficiently. "The cows are quieter and more content in the rotary because each has her own space and the stalls are plenty big enough for even our largest milkers," he says.

Standing time has been significantly reduced which has contributed to improving foot health throughout the herd. The new FastLane entry has improved drafting the cows as does the low-profile bail in the parlour which makes exiting, through a three-way sorting gate, much quicker. "The cows approach the parlour and enter the stalls without any encouragement. The bail works really well and by opting for a three-way sorting gate we can easily pull-out cows that may need attention or group cows for vet visits," he says.



Milking time has also been improved by the cows dropping milk more quickly which Mr Evans attributes to the new cluster design. "The Evanza clusters are easier to attach and stimulate milk let down faster," he says. The cluster features new technology that increases flow and reduces the frequency cartridges need to be changed. "We only have to change the cartridge every 5,000 milkings, our old ones would only last half that time. It used to take us up to an hour to change the liners, now it only takes 20 minutes," says Hedydd.

The farm building, which housed the 10/20 herringbone, was too small to convert and the adjacent plot offered an opportunity to build a new parlour from scratch. With 230 cows, and the desire to possibly increase, Mr Evans was keen to look for a futureproof solution. "When we looked at the cost difference between a 24/48 herringbone and the E100 it was significant. However, we knew that in a few years we would have regretted not choosing the rotary," he explains.

Further consideration was given to the plot which did not suit a long narrow parlour design. The new building is compact and makes best use of the space, and we are especially pleased with the wide drafting area. "The rotary has a better cow flow than a herringbone and the cows are stood for a shorter time. The building also feels more spacious and the high roof gives the cows a feeling of space which has made them more settled at milking."

Speed in the parlour is also evident with the rotary which only requires one member of staff to milk the whole herd taking 90 minutes. "The teat spray robot is a big help. It is always there and is totally reliable. It is just one more thing that we do not have to worry about, and it really helps us focus on making the process as streamlined as possible," he says. DeLaval's cockpit system, with a large touch screen, and automatic cluster removers, all help to make the milking process as efficient as possible.

The investment has been significant, but he believes the farm is better placed to succeed in the coming years. "The rotary has given me the time to start looking at our whole farming system and now I can focus on incremental benefits to cow health and milk yield that will impact down the line. The help we have had from Owen and Lloyds has been amazing and without their vision I am not sure we would have come to this decision. Sometimes it pays to move away from the norm and invest in a more sustainable solution, and that is what I feel we have achieved here," he concludes.

delaval.com



# Best-in-class cow comfort in a parallel parlour

### BouMatic, United States of America

Brian Harbers is the owner of Harbers Farms located outside of Alberta, Canada. Harbers Farms was founded in 1972 and has been active for three generations. Both his daughter and son are involved in the dairy. Today, 125 cows are milked daily thanks to the BouMatic Xcalibur 90LX parallel parlour that was installed in June 2018. The farm has experienced great results switching over from their old double four Herringbone parlour to the Xcalibur 90LX.

"Everybody is happier to come into the barn and milk now because things go faster, easier and with less cow interruption. The flow seems to be good into the barn and we can even take on more cows now," Brian stated. "Overall herd health has improved. Cows do not stand as long to be milked in the holding area. They move quicker through the system and milk out better."

Brian was also proud to share that after milking in their new parallel parlour the farm won a high-quality milk award from their dairy association. "A lot of it was because of the equipment. It washes better, sanitises better and is easy to keep clean."

But the cow health improvements he considers their biggest win. Even their veterinarian has remarked to him about how much of an improvement he has seen over the whole barn. The herd health aspect and the labour improvements has him very pleased with his choice of parlour.

Installed on the Harbers Farm is a Double-12 Xcalibur 90LX parallel with SmartDairy automation and, SmartControlMeters with TouchPoint, SmartEIDidentification system, Flo-Star MAX claws, AirStar DSL vacuum





pump with variable speed drive, BouMatic Plate Cooler, Guardian Supreme washer, stainless steel jetters, and stainless-steel air cylinder detachers.

Parallel parlours are a favourite for dairymen intending to maximise cow flow. The cow platform is wider than a herringbone parlour to accommodate the length of the cow. The cow can also easily walk into their milking stall in a natural position. She does not need to lift her head to get into place and can freely move her head during milking. Each stall position is enhanced with wide shoulder bumpers for her well-being. Large breeds fit comfortably in the 28 inches (71cm) wide stall.

With cows standing on an elevated platform at a 90-degree angle facing away from the operator area, it is easy to keep an eye on udder health and access the udder for preparation procedures. The walking distance is shorter in a parallel parlour and the access to all equipment brings a high functionality to the space resulting in a high rate of operator comfort and safety. The Xcalibur 90LX is available with a range of high-performance automation and milk sensor capabilities to best suit different styles of herd management needs.

The Xcalibur 90LX promotes fast exiting with a lift exit system vs. a tilt exit system. A cow must walk only one cow length before lowering the exit system instead of one cow length plus the added distance of the tilt exit fronts. This means the parlour building can be up to six feet narrower than a tilt exit parlour and still allow the same amount of exiting space. It provides a smooth and safe exit creating a calm atmosphere in the milking parlour.

The Xcalibur 90LX is designed for quick installation by providing modularised components to the dairy site for fast, efficient assembly. It is based on a quality construction that is easy to install because it has a bolt together design that means a quick, uncomplicated installation. There is also no onsite welding of galvanised material eliminating the potential for corrosion. Directly mounted lift cylinders eliminate cables that wear out or bind over time. No Sequence Gate Posts facilitate easy loading for cows and unobstructed exiting from the stalls. The only posts in the ground are from the main support posts located every 4-6 cows.

BouMatic is dedicated to ensuring that dairy farm producers throughout the world can produce the highest quality milk most efficiently, profitably, and responsibly.

#### boumatic.com

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