

# LELY ASTRONAUT

Robotic milking system



Create the future for your dairy farm



[www.lely.com](http://www.lely.com)

*innovators in agriculture*



# We are committed to helping you create the future for your dairy farm

Since the founding of Lely, innovation has always been our passion. Innovation in providing the best products and the best service, all aimed at improving the life of today's modern dairy farmers.

Every day we are busy improving our products so that tomorrow, too, we can live up to your expectations. Today, the Lely Astronaut A3 robotic milking system is a legend in its own right. At Lely we never rest on our laurels and therefore we have carefully shaped the newest model in our line of milking robots: the Lely Astronaut A3 Next. You may rest assured that we mean business with our objective of remaining market leader and are working very hard every day to ensure we can provide even better products and services in the future.

We are the true originators of robotic milking and since 1992 the Astronaut robotic milking system has provided substantial financial and lifestyle benefits for dairy farmers. We offer you the lowest cost of ownership on an annual base and provide the most reliable robotic milking system available today, backed up by a comprehensive network of the most experienced service experts. We are continuously seeking new opportunities through automation, using the most advanced techniques to further optimize your daily working conditions.

I would like to express my sincere gratitude to the dairy farmers who continue to put in their feedback, outstanding expertise and commitment that sustain our unremitting efforts to advance the superb technology that benefits us all today.

Yours sincerely,



Alexander van der Lely  
CEO Lely Group





## Why opt for robotic milking?

Do you realize that by 2009 no fewer than 1.2 million milkings are done daily by Lely Astronaut robotic milking systems? The Astronaut robotic milking system is taking dairy operations worldwide to new heights of consistency, economy and efficiency. Field-proven worldwide with more than 7,000 units installed (and still counting!). Lely technology is designed for long-term toughness, year-round reliability and solid return-on-investment.



## Flexibility to manage your dairy

You can organize your working day the way you like it; you no longer have to stick to fixed milking times. The saved time can now be used to monitor your herd and to optimize all the essential factors that go into making your farm more profitable.

## Freedom to enjoy your social life

If the core activity on your dairy farm – milking – is taken care of by a Lely Astronaut robot, you have the time to enjoy a fulfilled life.

## Most efficient use of your labour

With the Lely Astronaut, it's as though you have hired the most consistent, reliable employee imaginable – and he's ready to work 24/7 for years to come! Even at the biggest farm, labour productivity can increase to 1.2 m kg of milk per year per employee (fte). Even with the biggest parlour you could not reach such an outstanding labour productivity.

## Freedom for cows

Two decades of robotic milking have made it clear to our customers that by allowing the cow to make her own decisions, both comfort and productivity are optimized. The cows make their own choice for either resting or being milked or fed, ensuring maximum performance for all cows.

## Increased production

Cow production increases of more than 10% are common after the installation of a Lely Astronaut robotic milking system. Especially heifers benefit from more milkings per day. The simple reason is: the cow visits the robot of her own free will, as often as she likes.

## A solid investment

While taking in consideration the investment in a Lely Astronaut robotic milking system, please realize that the Astronaut robot – due to its plug-and-play concept – can easily be integrated into many farm set-ups. If you consider building a new barn, please also look at the potential lower construction costs due to fewer m<sup>2</sup> required.



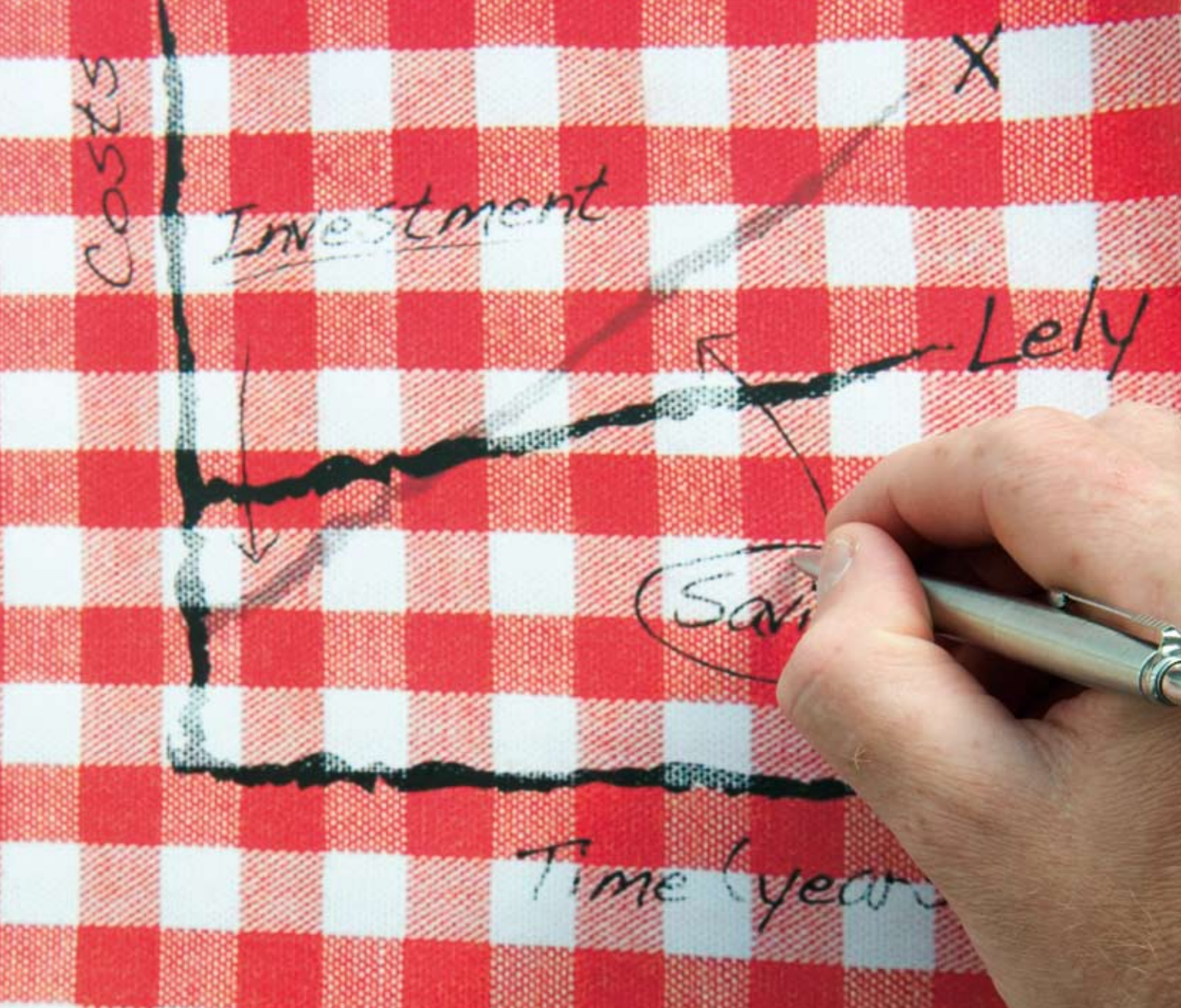
Freedom for you.



Freedom for your cows.



Increased production.



## “We offer you the lowest cost of ownership”

We are aware of the fact that a Lely Astronaut milking robot initially is quite an investment; however, please do not just look at the investment. It is not just the initial investment that counts, but all costs in the years to come!

Thanks to our focus – throughout product development – on reliability, durability and cost-positive use of water and energy, we offer you a robot with the highest trade-in value, ensuring the lowest energy and water consumption, as well as limited service requirements.

## Proven durability

On the basis of the effective depreciation based on the first ten years of using Lely Astronaut robots in the field, it can be concluded that in financial terms the robots should be depreciated over a 15 year period. The use of first-class materials as well as only a limited number of moving parts, guarantees a long lifetime and a significant trade-in value.

## Designed to be reliable

Obviously, Lely technology is designed for year-round reliability. In addition only first-class materials are used. An extended five years' warranty period can be agreed for a number of essential components of the milking robot such as the vacuum pump, laser, load cells and brush motor.

## Keep down your service costs

The improved modular design of the Lely Astronaut A3 Next milking robot ensures an easier way of servicing. In addition, the Astronaut A3 Next only requires a maximum of four maintenance calls per year. Unique in the dairy sector: service contracts come based per milking and you also have the option to take a fully fledged service contract, really all-included!

## No waste of water

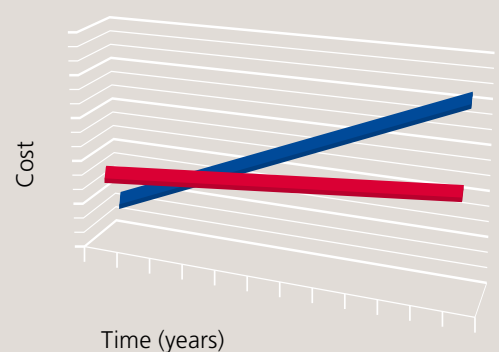
Lely Astronaut robot uses less water than other competitive brands. This is due to the most efficient way of internal cleaning, no need for floor cleaning as milk cups cannot drop on the floor while in addition udders are brushed instead of using less effective means, e.g. water.

## Efficient energy consumption

Lely uses one pneumatic system for all movements of one or more robots as well as directly related equipment in the barn, such as selection gates. In addition, the Astronaut robot has significantly less movements for connection and removal than any other brand.



Admittedly, a Lely Astronaut milking robot is quite an investment initially, but at Lely we continually strive to offer you the smartest robotic milking system with the lowest costs on an annual basis.





## Free cow traffic – it is their choice

Admittedly, when we started robotic milking 2 decades ago, we also thought that efficient milk production could only be achieved by continuously forcing cows. However, in practice after a couple of years, it was clear that dairy farmers who let their cows totally free achieve the best results. Just like human beings, cows do not like to be pushed around.



## The big five

Animal welfare is key to our product development. We respect the five animal freedoms:

1. Freedom from thirst, hunger and malnutrition – by ensuring ready access to fresh water and a diet to maintain full health and vigour.
2. Freedom from discomfort – by providing a suitable environment including shelter and a comfortable resting area.
3. Freedom from pain, injury and disease – by prevention or rapid diagnosis and treatment.
4. Freedom to express normal behaviour – by providing sufficient space, proper facilities and company of the animals' own kind.
5. Freedom from fear and distress – by ensuring conditions that avoid mental suffering.

(source: Dr. John Webster: Professor of Animal Husbandry, University of Bristol)

## Freedom gives the best return

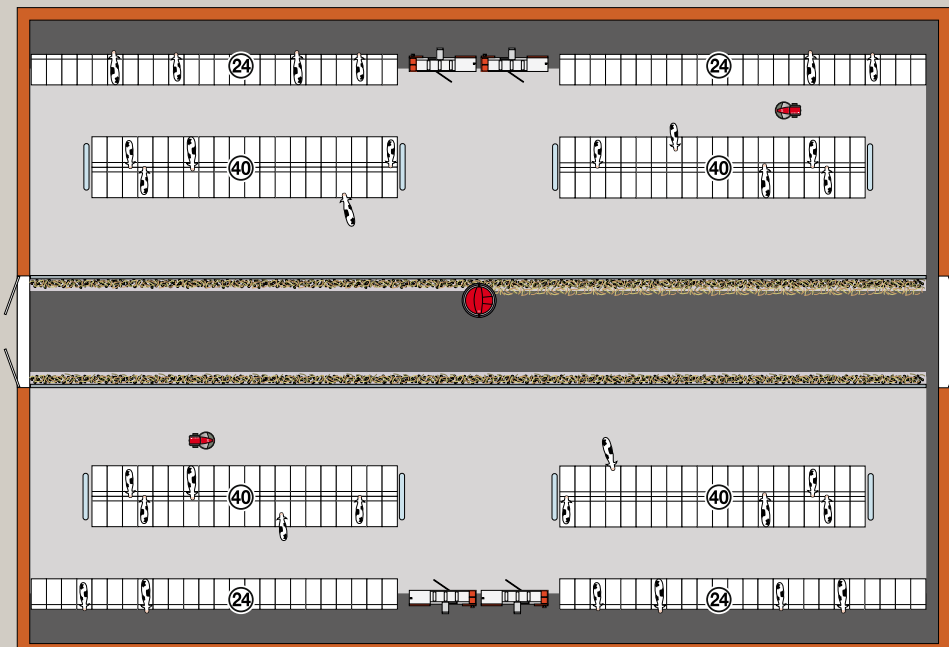
Due to Lely's free cow traffic, your cows can eat, drink, rest and be milked whenever they want. Since all cows choose the most suitable times themselves, the hierarchy within the herd is hardly affected, ensuring minimum stress. Your cows feel happier, they produce more milk and good health is maintained. Within a guided cow traffic system, the cows are denied one of their basic needs (lying down

or eating) and they have to follow a compulsory route to the robot. Remember, a cow is definitely not a robotic system and forcing the animals means putting them in a position that readily causes stress.

## Free cow traffic for successful robotic milking

Due to free cow traffic, the cows can follow their own biorhythm. This is essential for healthy lactation, in particular for cows at the start of lactation and for heifers. They will feel less threatened than in a system in which they may have to wait for hours in a holding pen without being able to lie down. This waiting time has a negative effect on animals' wellbeing and thus on their health and milk production.

With years of experience, our experts can say this is the only system to deliver the best results. Free cow traffic is a very simple system that requires attention only twice a day at the most, at times that are convenient to the farmer. And thus, being the front runners in robotic milking, we are staunch advocates of free cow traffic as the basis for a successful implementation of any automated milking system. Our consultants are always happy to advise you about the implementation of free cow traffic, both in new and existing barns.



***SMARTER,  
FASTER,  
STRONGER!***



We proudly present...  
Lely Astronaut A3 Next

Three powerful statements saying exactly why Lely machines stand out from their competitors. Innovative thinking by our engineers often results in surprisingly effective solutions for making our products even more efficient. Durability and ease of operation are always keys to these efforts. Therefore, we at Lely quite rightly say: "We are the innovators in agriculture". Our unremitting efforts are aimed at improving the farmers' social and financial wellbeing.



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## Smarter!

### 1 Milk quality control (MQC)

Lely was the very first to introduce a system to detect – and separate – colostrums, milk containing blood as well as substandard milk. This advanced system checks milk colour, conductivity and flow to ensure maximum control of milk quality. Through the optional Lely MQC-C system Lely can even check somatic cell counts at quarter level on-line. Read more on page 24.

### 2 Cow box

In line with Lely's belief that animals perform best when they are not restricted in any way, this spacious box with a soft rubber floor ensures optimal cow comfort without using any force. The position of the cow is measured by means of sensors that are fitted in the weighing floor. In addition the boxes can be placed to ensure an optimum cow flow. More detailed information about the cow box is provided on page 16.

### 3 Pre-treatment and cleaning

Research has proven that the special brushes – together with the precise arm movements – guarantee up to 40% more effective cleaning and stimulation as compared to conventional situations. Go to page 18 to learn all about Lely's patented pre-treatment and cleaning.

## Faster!

### 4 The Lely 4Effect Pulsator

is the first revolutionary breakthrough in milking technique over the past 30 years, because adjustments can be regulated at quarter level. This ensures a truly individual treatment of the cow and, hence, "tailor-made milking". Please refer to page 22.

### 5 The Lely Astronaut arm

is a well proven concept; the arm remains underneath the cow and controls the entire milking process. This means that there are fewer arm movements so that the experience is quieter for the cow, while the fastest possible cup attachment is ensured.

### 6 TDS

The teat detection sensor (TDS) features a three-layer scanning technology for the quickest connection. You will find more information on page 20.

## Stronger!

### 7 The Lely Astronaut arm

The robustness and pneumatic steering of the arm ensures that even if the cow should stand on it, this does not do any damage. You will find more information on this unique concept on page 14.

### 8 Fewest movements

The construction of the Lely Astronaut is very elementary. The amount of moving parts is limited and the necessary movements are very tiny, reducing wear and tear of the robot.

### 9 Durable construction

Lely only uses first class materials. Consequence; a long product lifetime combined with a high trade-in value. Key parts of the milking robot come with a 5 year warranty!

### 10 Advanced Touch Screen X-link

Immediate access to all data including your own preferred settings.

### 11 Milk jar

Outstandingly accurate, featuring revolutionary weighing technology.

### 12 Lely T4C Management System

The user-friendly 'management by exception' philosophy.

### 13 Weighing Floor

Featuring a unique sensor system to locate the cow's udder.

### 14 Durable stainless steel feeding bin

### 15 The Professional Dairy Look

Cutting edge technology and improved protection of milk tubes.



## The Lely Astronaut arm – muscles and brains!

Since 1992 Lely has proven its concept of the robust robot arm; the arm remains underneath the cow and controls the entire milking process. The robustness of the arm ensures that even if the cow should stand on it, this does not cause any damage. In the incident that teat cups are kicked off, they will be reconnected in a matter of seconds without any contamination.

## Challenged by cows

Due its rugged construction, combined with the gentle pneumatic characteristics of the system, the invulnerable robot arm can withstand all forces that a cow might exert on it. Inside the arm, the teat cups are tilted away, so the cow simply cannot kick those cups that are not in action at that particular moment.

## Great adaptation capacity

The arm has an unrivalled reach; swift teat cup attachment is ensured for high and low udders, but also for udders with teats that are spaced far apart. We ensure the fastest possible teat attachment as well as full control of the whole milking process, with all functional components situated as closely as possible to the teat cups.

## Most intelligent movements

The strong arm stays underneath the cow throughout the entire milking process. In this way, fewer arm movements are required for connecting, so that the experience is quieter for the cow.

## All inclusive

Cows benefit from Lely's advanced milking configuration; the key milking technique components such as the Lely 4Effect and Lely MQC are safely positioned in the arm, as closely as possible to the udder. In addition, the milk lines are safely protected in the arm so that they cannot be damaged by cows.

Challenged by cows.



Most intelligent movements.



All inclusive.





## The cow box – one size fits all

The spacious cow box with a soft rubber floor ensures optimal cow comfort. In the box the cows are totally free to move and no force whatsoever is used, which is a basic condition for a successful free cow traffic concept. Total freedom for cows of any size has proven beyond doubt that animals are willing to visit the Lely Astronaut A3 robot regularly.





Rubber is safe.

Weighing floor.

## Knowing without touching

During the milking process, cows never stand still. The position of the cow is measured by a weighing floor with four load-cells. By determining its central weighing point, the arm is able to precisely follow the animal's position and udders placement. In this way, the arm can fully control the total process and ensure an optimum milking process.

## Total freedom

The Lely Astronaut cow box offers every cow total freedom. Since the arm can be positioned through the information provided by the weighing floor, the cow can stand inside the box in any preferred position. Freedom for the cow increases animal wellbeing, stimulates free cow traffic and minimizes the dairy farmer's work load.

## Weighing is knowing

The weighing floor also weighs a cow each time she visits the robot. This gives you the added benefit of an easy tool for monitoring the cow's health and the possibility to react instantly to changing animal conditions.

## Rubber is safe

The soft rubber floor ensures that the animals have a good grip, which increases animal stability. The use of soft rubber improves the cows' hoof health and stimulates cow traffic throughout the barn and thus the use of the Lely Astronaut robotic milking system.

## Independent and fully equipped

The plug-and-play concept of Lely's robot allows flexible placement and quick installation of the robot. In addition, each cow box is fully equipped and ensures 100% attention to the cow; the arm remains under the cow and controls the entire milk process.



### Feed bin

The spacious new stainless steel feed bin is easy to clean and prevents contamination.



### One box system

Although the herd can be divided over more than one robot, each robot functions on a stand-alone basis. In case of maintenance or breakdown of one robot, the other one continues its operation!



## The Lely brushes – designed for more than cleaning

To ensure optimal pre-treatment, udder and teat brushing are of great importance. In addition the milk let-down needs to be optimized. Together with the precise arm movements, the brush system guarantees optimal cleaning and stimulation. The pre-treatment udder brush has proven to be the most successful system in terms of animal welfare, hygiene, milk quality and optimal stimulation characteristics.

## Brushes versus water

Undoubtedly, brushes are the ideal tools for cleaning. A mechanical brush system always cleans better than only using water; just think of a toothbrush or car wash brushes. Water will only rinse superficially, whereas brushes will actually remove the dirt, even if it sticks.

## More than cleaning

Brush cleaning allows outstandingly quick and the most effective tactile stimulation, which is important for oxytocin release. Because of the optimal stimulation, the connection of the teat cups to the full firm teats is more reliable, resulting in better milking, lower cell count and less mastitis. According to Swiss research\*, the cows are more relaxed and they kick 42% less in the Lely Astronaut milking robot than in other systems.

## Cleaning without limitation

Brush cleaning can be used with different kinds of bedding material. Even chopped straw does not cause any blockages or other problems. The brushes are very reliable and durable; the key components of the system come with a 5 year warranty.

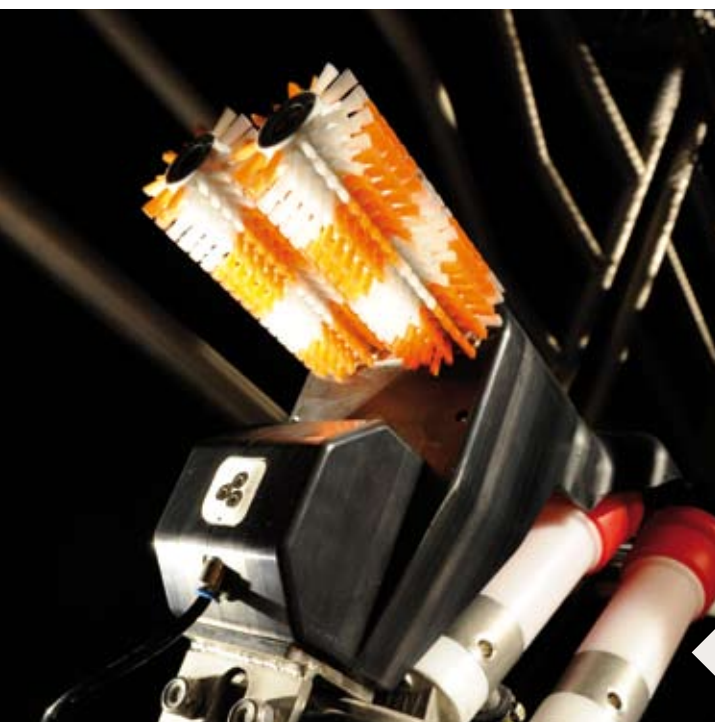
## Unrivalled hygiene standard

Lely's mechanical brush system is the only one that cleans the area around the teats where teat cups can touch, as well as the bottom of the udder close to the teat. Brush cleaning scores even much better than manual cleaning. The brush cleaning system is the only system that is disinfected with a chlorine-free detergent in between cleaning cows, preventing cross contamination. Consequently, the best milk quality figures are realized, not only for the bacteria count but also on the level of butyric acid.

## Brushes pay off

Better udder cleaning will help you to get a premium milk price, because better stimulation will improve connection times, milk speed and therefore robot output.

\* reference: Gygax, L. et al., Restlessness behaviour, heart rate and heart-rate variability of dairy cows milked in two types of automatic milking systems and auto-tandem milking parlours, *Appl. Anim. Behav. Sci.* (2007), doi:10.1016/j.applanim.2007.03.010



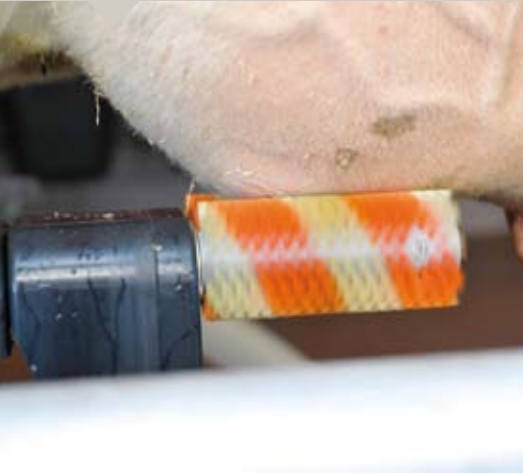
The Lely brush features different red / white hair types in a spiral shape to ensure optimal stimulation and cleaning.



## Lely's TDS – fast detection means quick connection

Finding teats without the human eye requires special techniques with highly durable equipment. Our teat detection system ensures quick and accurate teat detection without any moving parts in the system. The teat detection sensor (TDS) features a three-layer scanning technology for the quickest connection and fewest arm movements.

Step 1.



Step 2.



Step 3.



### Step 1 – pre-treatment and brush cleaning

Pre-treatment starts right after the cow's entry. No scanning is needed since the robot knows the cow's coordinates. This ensures the quickest and most effective pre-treatment and milking process.

### Step 2 – detection

After the brush cleaning and pre-treatment, the teat detection system (TDS) starts scanning the full udder bottom to detect the position of each individual teat.

### Step 3 – attachment

A full scan is carried out and the back teat cup will be put in place, ready for attachment. Here another precise 3 beam laser scan will be carried out on the individual teat to precisely determine the teat's location, after which the teat cup is attached.

### Step 4 – connection

After the first teat cup has been attached, the following teat cups are attached – fast and individually – in the same order.

### Step 5 – milking

Milking starts as soon as a teat cup is attached. Through the most advanced milking technology available in the market place today. Optimal milking is executed on quarter level base. As soon as one quarter is finished, the teat cup will be taken off very gently.

### Step 6 – spraying

After milking, every quarter is sprayed. This completes the whole milking process and ensures optimal udder health.

Step 4.



Step 5.



Step 6.

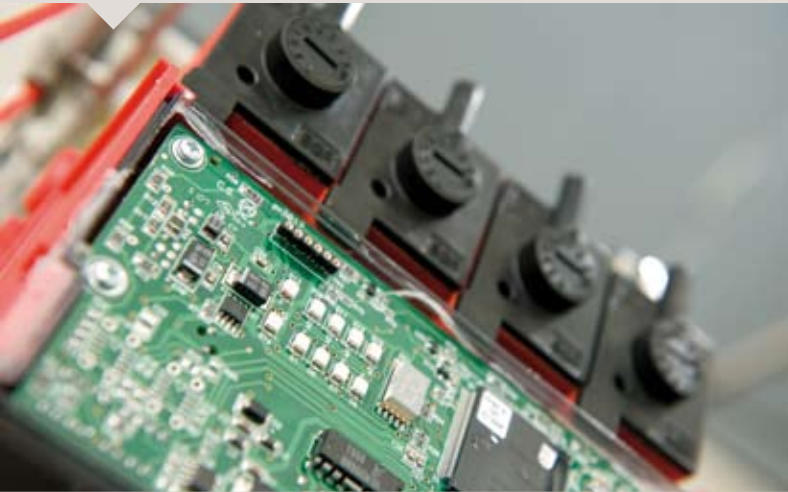




## The Lely 4Effect – tailor-made per quarter

It is perfectly clear that cows differ from one another. Each cow prefers different settings to ensure optimal milking. The Lely 4Effect pulsator is the first revolutionary breakthrough in milking technology over the past 30 years, because vacuum and pulsation settings can be adjusted at quarter level. This ensures a truly individual treatment of the cow and, hence, “tailor-made milking”. This effect is optimized by the position of the pulsation system, which is safely hidden in the arm and positioned as closely as possible to the udder.

Four individual pulsators; to ensure an optimal vacuum and pulsation profile, they are mounted inside the arm, as closely as possible to the teat cups.



Milking times are minimized, resulting in improved udder health and less stress on the entire udder.



Pulsation is adjusted in relation to quarter-based milk speed, which is communicated through the milk quality control system (MQC). In this way the milk speed per quarter is optimized, which results in shorter milk times and an increase of robot capacity by 7%.

Individual teat cup removal results in lower dead milking times per teat.

Settings for 4Effect are automatically adjusted during milking of the herd. Individual adjustments can be made by the farmer.





## Lely MQC and Lely MQC-C – milk as a flow of information

Animal wellbeing and an excellent milk quality are keys to successful robotic milking. The more information we can retrieve from changes in the milk quality, the easier it is for dairy farmers to identify cows with potential problems. That's why Lely started working on measuring milk quality right from the start and the company has maintained its position as a leading manufacturer, making this cutting edge technology available to farmers worldwide.



## Milk quality counts

The milk quality control centre is located in the arm, closely to the udder. As such, it is in the optimal position to ensure the ideal moment for detachment of the teat cups as well as optimal functionality of the Lely 4Effect pulsation system. In addition, each milking, milk is sampled per each cow's quarter which provides vital information about milk quality and udder health. In case substandard or undesirable milk is detected, it will be automatically separated.

## Lely MQC measures essential parameters such as:

- Milk colour.
- Conductivity.
- Milk time.
- Dead milking times.
- Milk volume (yield) and milk speed per quarter.

## Colour is more than just red

Unique in today's dairy market is that Lely MQC measures the whole visible colour spectrum, which indicates much more than just blood. Colostrums and substandard or undesirable milk are easily identified and separated. For the farmer it also allows earlier detection of, for example, mastitis. The colour measuring system observes the quality of the milk better than the human eye, with a higher accuracy and reliability.

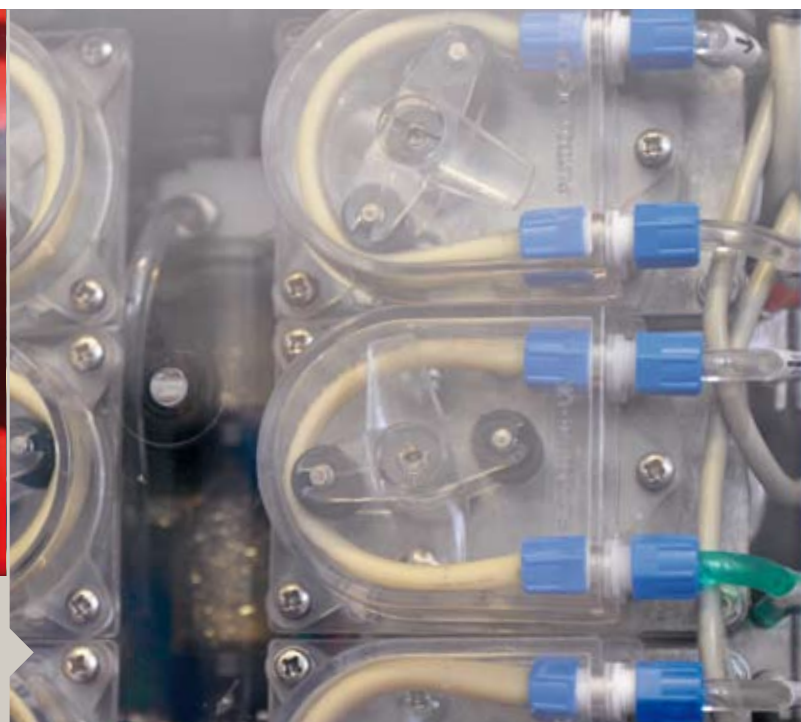
## Classified milk only

Lely MQC-C is the first available on-line method to determine the somatic cell count per quarter. This option allows you to determine yourself at what time and for which cow cell count measurement is required and as such is a unique tool for optimal cow (udder) health. A warning in the Lely T4C management system signals the likelihood of treating a cow at an early stage. For more information about this optional high-quality device, please refer to page 31.

MQC and MQC-C are clear examples of the importance of accurate information adding value; early diagnosis and treatment contribute toward the quick recovery of the animals and a bare minimum of production loss.



Lely MQC-C.





## Lely T4C – time for your cows

This management program is an indispensable tool to manage your herd. Time for Cows (Lely T4C) facilitates effective management by exception. In conventional milking situations, you see every cow walking by at milking time. The Lely Astronaut's comprehensive and detailed information is saved by the management programme T4C.

## Management by exception

Nowadays, obtaining information is not the most important thing; what matters is that this information is presented to you in the shape of hard and fast management information. The Lely T4C management programme collects all data for you and ensures optimum herd management for you as a dairy farmer. Smart dashboard Key Performance Indicators allow you to overview the status of all data at a glance so that you can see right away which cows need your special attention.

## Optimum milk yield

DLM is a programme that calculates the optimal net result between cost and profit, based on the fact that

each additional kilogram of concentrate should result in additional milk yield but not at any cost. Besides this optimum, the programme determines the exact milking times with a view to maximized robot output. First field tests have shown an increase in profitability of € 30,- per day per robot.

## Mobile Management

We provide the possibility to access Lely T4C through a PDA module. With your PDA you can connect to the T4C server which gives you immediate access to all your management information. It makes it possible to input data into T4C at any place and any time, in or outside the barn.

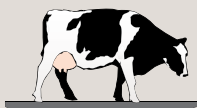


Total herd control, including well-organized display screens and extensive graphic options. Simple and informative; an ideal overview of the Lely Astronaut benefits.

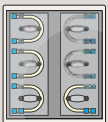
If you like, you can compare your results with colleagues from all over the world; a unique global community!



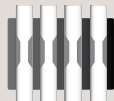
QWES-HR



GRAVITOR



MQC-C



MQC



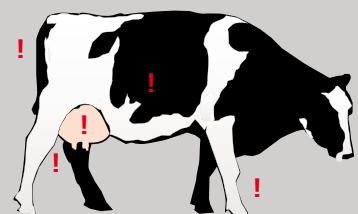
MILK JAR



FEED BIN



T4C MANAGEMENT SYSTEM



ASTRONAUT



COSMIX



GRAZEWAY

Lely T4C uses the built-in sensors in the robot, the Lely MQC Milk Quality Control, the Lely Gravitor weighing unit, and data generated by the robot – e.g. cow behaviour and concentrates – to provide a general overview and quick analysis of the herd data.



## 24/7 service – you can rely on us

If you opt for a 24/7 milking robot you will enjoy the peace of mind that comes with our 24/7 support system. Lely Center personnel will get to know you and your concerns – providing valuable assistance, local knowledge, quick response in case of interruptions and extensive expertise on all Lely dairy products.

## Pay-per-milking concept

With a view to full transparency, Lely offers you two kinds of service contract. Following our comprehensive experience in automatic milking we can offer you a basic contract or a fully-fledged service contract (including wearing-, spare parts and labour) based on the number of milkings. The structure of this service contract is unique in the dairy market. The Lely Astronaut A3 Next only requires a maximum of four maintenance calls per year.

## Dedicated and educated

All across our Lely Center facilities we continuously strive to optimize our performance. Should you experience any technical hitch, Lely guarantees certified service engineers are always available. They are available 24 hours a day / 7 days a week and they are trained by our own experts. In case of a problem, quite often it can be resolved immediately through connecting to your system via the internet, doing away with the need for a service call.



We ensure that all our service engineers remain up-to-date on the newest techniques. Therefore, they have to pass an examination every year to keep their certification.

# Accessories for the Lely Astronaut A3 Next

The Lely Astronaut robotic milking system is designed with dedicated focus on optimum wellbeing for you and your animals. With a view to optimizing the situation of both the dairy farmer and his cows, we have complemented our milking robot with a range of exceptionally useful accessories.



## Lely Pura Steam cleaning system

The Lely Pura steam cleaning system kills 99% of all bacteria in the teat cups without the use of detergents, thus offering maximum security in respect of udder health, food safety and environment. The 1% bacteria that are left, does not represent pathogenic bacteria. After each milking, the steam cleaning system directly cleans the teat cups with heated steam, followed by a short rinse with plain water.

## Lely Titania liquid feed dispenser

The Lely Titania liquid feed dispenser doses various fluids on top of the concentrates in the feeding trough of the robot. Basically, this metering unit has been developed to avoid the problem of ketosis by adding propylene glycol to the concentrates. The dosing system is managed by the Lely T4C management system as an additional feed type.



## Lely M4Use milk separation unit

The Lely Astronaut milking robot provides several ways to separate milk. Fixed periods for milk separation can be set by means of the management programme. Milk that does not meet the quality settings can be either dumped or collected in M4Use. Also, dairy farmers can separate milk on an individual basis. The unit is mounted separately from the milking robot, at any location you prefer.



## Lely Shuttle sampling device

The Lely Shuttle milk sampling unit is officially ICAR-approved for milk recording. The Shuttle automatically takes a sample of each milking during the period of milk recording. The filled sample bottles are offered to the milk recording organization, together with a file from the management system comprising cow numbers, milk yields and milking times.

**Lely MQC-C milk quality control system**

To determine the somatic cell count per quarter during each milking, samples from each individual quarter are analyzed. At the end of each milking, the information is directly available in your management system. Thanks to the modular construction any technical interruption can be solved easily by simply replacing the relevant module.



**Thermostatic mixing valve**

This system can be used when there is an alternative source of hot water available. An example: using the pre-heated water from the cooling system of the milk tank.



**Compact cooler**

Lely provides a high-grade tubular pre-cooler. The inside of the tank contains a twisted tube, made out of one piece eliminating any welded connections. The milk is cooled during transport. Due to the special construction, there is no risk of contamination of the milk with cooling water.

**Milk buffer tank**

With this fully automated system, milking can continue during cleaning of the main tank, optimizing the robot's capacity.



**Twin filter-flexible filter change**

The twin filter automatically switches from one filter to the other after each main cleaning. More robots can be managed through one filter, saving you extra filters. The time between changing filters is flexible, you can change the used filter any time you want.



**Cow identification system**

Lely supplies a range of ISO and Infrared-identification tags, for identification and cow activity measurement. Unique in the dairy market is Lely Qwes-HR which is also measuring ruminating activity, providing farmers a wealth of additional information on cow health.

# Lely Consumables

Lely Consumables completes the range of supplies to Lely's customers with a high-quality product range. Lely has deliberately chosen chloride-free detergents to comply with the consumer demand to use environmentally safe products in the primary production process. The quality of wearing parts complies with the highest standards of material used in the food chain. Liners and flexible parts are mainly made of silicone. Lely Consumables offers a comprehensive range of excellent products. All products are manufactured in keeping with the highest standards and they comply with regulations for food safety and environment.

## **Astri-Din**

This liquid sprayable udder care and hygiene product is based on Lactic acid. Lactic acid has proven to be a highly effective component overcoming cross contaminations. Astri-Din, excellent protection of the teat channel, is designed for spray applications and gives a unique complete cover of the teats after application.

## **Astri-UC**

Astri-UC is a spray-on cosmetic emulsion used for post-milking routines. It is a high-grade PVP-iodine product with a proven performance. Astri-UC provides ultimate post-milking protection, promoting new skin growth and replenishing damaged tissue to ensure a superb condition of the teats at all times.







#### Astri-L brush cleaner

The Astri-L brush cleaner is a liquid and complete cleaning agent, which has been developed specifically for the udder cleaning brushes of the Lely Astronaut milking robot; it ensures optimum cleaning of these brushes. This cleaning agent reduces the bacterial count considerably and – unlike many chlorine-containing products – it does not cause irritation of the skin.

#### Astri-Lin

Astri-Lin detergent, tailored for the Lely Astronaut robot cleaning system, is a liquid alkaline detergent with special complex builders, which can fight each level of water hardness. Mineral compounds are dissolved in the cleaning water preventing the occurrence of calcium sediments. This detergent is biologically degradable and has no negative effects on the rubber of the teat cups; neither does it cause skin irritation.



#### Astri-foamer

The foamer system is very efficient and reaches those areas in the milking parlor that are inaccessible to other systems. This dramatically reduces the risk of cross contamination and increases overall hygiene standards.



#### Astri-B

Astri-B is an alkaline cleaner that has been specially formulated to break down dirt and contamination on the Astronaut milking robot and the surrounding area. When using Astri-B, low pressure cleaning is sufficient. Astri-B enables the dairy farmer to clean his robotic milking system quickly and without risk to the environment.

#### Astri-Cid

The Astri-Cid cleaning agent is used during main cleaning to de-scale the installation and it ensures that mineral compounds such as calcium and milk particles are quickly removed. The Astri-Cid cleaning agent also contains special elements that allow fats and proteins to be removed efficiently in an acidic environment. Astri-Cid cleaner is 100% chlorine-free and bio-degradable.



#### Astri TDS

Astri TDS has been designed for daily cleaning of the lens of the detection system. It leaves a non-scratching film to protect the lens and prevents dirt from sticking to its surface.



## Marsh Insurances

All dairy farmers are exposed to the risk of damage and loss resulting from technical failures or external factors. Small causes may have considerable consequences, such as expensive repairs. A standard insurance does not cover all costs you could incur. For this purpose, a tailor-made insurance especially for the users of the Lely Astronaut milking robot is developed. This all-risk insurance includes a number of combined insurances covering most frequent risks. This insurance will complement the service contracts of Lely and can only be taken out in combination with such a contract.

## Lely Finance – for flexible financing

Lely Finance enables you to acquire the Lely Astronaut robot without a substantial down-payment. You pay for its use from your operating budget and not from capital reserves. In addition, at the end of the finance term, you can make a choice: buy the equipment for a fraction of the original investment, upgrade to newer technology, extend the finance term or return the equipment to Lely.

Lely Finance is the result of an integrated partnership with De Lage Landen, a 100% subsidiary of the Rabobank Group and a major international player in the field of high-grade capital financing products. Our knowledgeable industry specialists are ready to provide you with the products and services you need to meet your business goals and keep you competitive.

### Financial Lease

If you want to own your milking robot, but are looking for a way to spread the investment over multiple payments over a longer period of time, you can opt for our Hire Purchase or Financial Lease product. At the end of the contract, you will have full ownership of dairy equipment. The total VAT is included in your first payment. With the Hire Purchase or Financial Lease programme, the equipment will appear on the balance sheet of your business.

### Operational Lease

If you are looking for significant cash flow savings without ownership of your dairy equipment, and if you want to make use of the latest technology in dairy equipment, you can opt for our Operational Lease product. The VAT will be spread over all payments, which are substantially less than traditional finance options. When the rental contract comes to an end, you can make a choice: renew the contract and upgrade to the latest model available, extend the existing contract or buy the dairy equipment you have had been operating. Under the Operational Lease option, the dairy equipment does not appear on the balance sheet of your business.



# Lely Ambassadors Club



To exchange experience between users of Lely Astronaut milking robots, we have founded the Lely Ambassadors Club.

## Knowledge and experience

Only owners of a Lely Astronaut can become a member of this professional and highly sociable club. The Lely Ambassador Club features exclusive trips focused on general dairy management improvements to ensure optimum benefits of your decision to go for robotic milking. Furthermore, we offer you an exceptionally interesting and informative free

magazine plus the opportunity to partake of a dedicated discussion platform on the internet with exclusive accessibility for Lely Ambassadors Club members. It enables you to compare notes and share both your expertise and challenges with other dairy farmers who also own an Astronaut milking robot. Being a member of the Lely Ambassador Club is interesting as well as FUN!

# Taurus Guarantee Programme



The cost-price of a machine depends upon its buying price, trade-in value and maintenance costs. So says your bookkeeper. Now that is 100% true, but then again you know the differences that may occur in practice. After all, you may be amazed by the high trade-in value of your used machine. Due to extensive testing and the use of high-grade materials in the Lely Astronaut robotic milking systems, we at Lely ensure low maintenance costs as well as a high trade-in value.

While you are now considering the purchase of the newest technology in milking robots currently available, the Lely Astronaut A3 Next, you probably also appreciate the fact that we also have developed a tailor-made program for second-hand robots; the Taurus Guarantee Programme. This programme ensures maximum reliability for those customers who opt for a used, but excellent Astronaut milking robot. We offer different upgrading levels,

expressed in a star qualification system from one to three stars. In that way, you know the exact specifications of your Astronaut robot as well as the warranty period associated with it. According to the star level, a warranty period of 3, 6 or 12 months is applicable. The Taurus Guarantee Programme can be applied to any type of Astronaut, irrespective of the age of the robot and it offers the best conceivable package of guarantees.

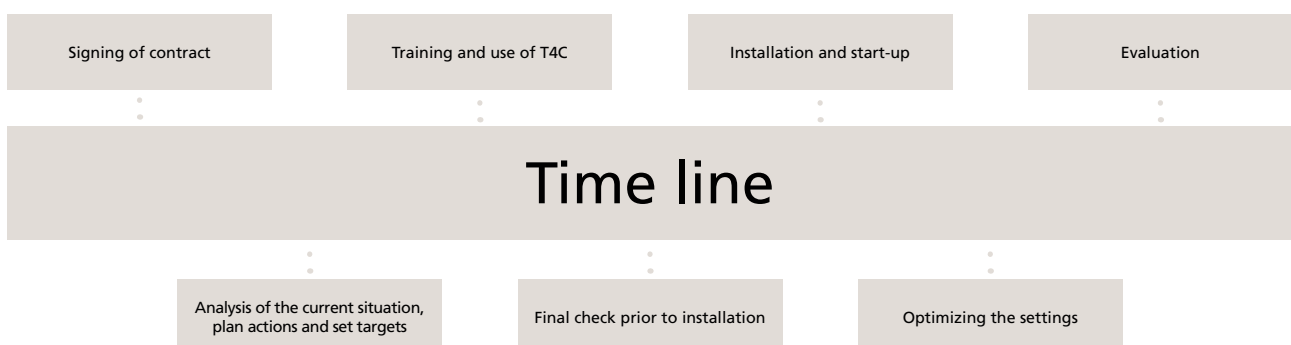


## Plug-and-play – milking from the first day

Installing a Lely Astronaut robotic milking system is simple and easy. Since the Astronaut is a complete system, only the milk line and water and energy connections need to be installed before the robot can start. If you decide to move the robot, this can also be easily achieved.

Our expert consultants prepare you and your herd for free cow traffic and organize the placement of the Lely Astronaut, even before the robotic milking system itself has arrived at your premises. They will thoroughly train both you and your herd to ensure an optimum start-up.

Our passion for innovation does not stop at the technical features of the robot, but continues far beyond that point to cover all practical aspects.



# 60 years of unstoppable agricultural progress

At the beginning of the last century Cornelis and Arij van der Lely, when children, were busy with a Meccano box shaping their ideas to ease heavy physical labour in the agricultural industry. In 1948, with the invention of the finger-wheel hay rake, Lely was put on the map as an agricultural business. Subsequently, developments followed one after another in rapid succession. Around 1958 Lely started developing and producing a unique fertiliser spreader; in 1965 Lely introduced the Lely Lotus hook tine with its unique shape. However, Lely's real breakthrough was marked by the development of the Lelyterra power harrow in 1968. This development also signified the internationalisation of the company. In 1983 the mower system received a huge improvement through the introduction of the modular cutter bar. Undoubtedly, the milking robot – introduced in 1992 – is the most important invention for dairy farmers in the twentieth century.

It is also under the inspirational leadership of the second Van der Lely generation that the company is permanently seeking methods that improve the lives of dairy farmers, both financially and socially. In addition to the introduction of rakes and tedders with the largest working width, the development of increasing numbers of automated equipment for barns fits in with this pursuit. And... our 60 years' jubilee promises many good things for the years to come!

 *Lely 60 years of innovations*  
**GO FOR THE FUTURE**



Lely really cares for the environment.

Lely, Astronaut, Atlantis, Hibiscus, Lotus, Splendimo, Astri, Astrodata, Calm, Commodus, Compedes, Cosmix, Discovery, E-link, Fertliner, Gravitor, Grazeway, Hubble, Juno, Lely Center, Lelywash, Luna, Nautilus, Orbiter, Shuttle, T4C, Viseo and Voyager are registered trademarks of the Lely Group. The right of exclusive use belongs to the companies of the Lely Group. All rights reserved. The information given in this publication is provided for information purposes only and does not constitute an offer for sale. Certain products may not be available in individual countries and products supplied may differ from those illustrated. No part of this publication may be copied or published by means of printing, photocopying, microfilm or any other process whatsoever without prior permission in writing by Lely Holding S.à r.l. Although the contents of this publication have been compiled with the greatest possible care, Lely cannot accept liability for any damage that might arise from errors or omissions in this publication.

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