

The five rules for
profitable milking

06

Whether you are milking conventionally or automatically, there are five rules you must keep in mind when it comes to profitable milking.

Structured routines
for better farming

08

With automatic milking you will have more time to look after the needs of your cows.

Build your own
Lely Astronaut

22

Imagine how your farm would operate at its best. What's important to you and your farm?

Lely Astronaut



*The new milestone
in milking.*

www.lely.com



*"This is an investment. This is future labor,
happiness and health."
- Tina Hinchley, Hinchley Farms
Cambridge, Wisconsin*

Tina
Hinchley Farms
Cambridge, Wisconsin

"As we started looking at robots, we wanted to see what company had been in the robotic milking industry the longest, who had the most experience. It was Lely that really stuck out to me. I was impressed by how it was designed by farmers."

Make the difference

Imagine having more time to focus on the areas where you see the greatest opportunities for your operation. Whether you're interested in grassland management or the breeding side of herd management, robotic milking gives you the tools to do your job well and with improved efficiency.

Some producers like nothing more than adjusting cow rations and optimizing their herd's feed conversion efficiency. Or will your family appreciate more attention? Having the flexibility to target labor—be it yours or that of farm staff—where it will be put to best use and add the most value is key!

Imagine a way of farming that you will be proud of.



Designed to suit the needs of cows and farmers

The new milestone in cow comfort

It's proven that cows thrive and perform really well in our free-cow traffic system. Thanks to the I-flow concept and the spacious cow box, cows feel comfortable. We improved cow comfort with the hybrid arm. It's quieter, faster and more decisive. This increases visiting behavior and robot performance, effectively increasing the production capacity of the robot.

- **Attractive for cows:** I-flow with spacious cow box
- **Cow comfort:** decisive, precise and quiet arm movements
- **Udder health:** tailored milking at quarter level

The new milestone in ease of use

The redesigned, intuitive user interface makes automatic milking easy to understand for everybody. Relevant information is displayed in a compact overview that offers fast access to important features. Milking a cow for the first time has never been easier. When designing the A5, our engineers were constantly aware that the system's usability, accessibility and serviceability had to be of the highest level.

- **Easy to operate:** easy-to-learn, intuitive user interface
- **Easy to maintain:** excellent accessibility of all maintenance areas
- **Easy to do:** first milking of fresh cows

The new milestone in return on investment

To realize a significantly lower cost per kilogram of milk produced, Lely engineers redesigned our complete system. Thanks to a new hybrid arm that is the most energy efficient on the market, the arm delivers a limited number of fast and decisive movements. We invested in serviceability and high-quality components.

- **Reduced energy consumption:** significantly less power consumption with the hybrid arm
- **Reduced service costs:** designed for quick and easy maintenance using high-quality parts
- **Increased performance:** faster, with a more secure attachment and a larger reach

The new milestone in reliability

The more you can rely on the Astronaut, the better you can make use of the saved hours and flexibility. To be outstanding in terms of reliability and uptime, we eliminated components and extended the lifetime of others. The worldwide test program was the most intensive ever for automated milking, designed to ensure flawless operation under any circumstance. This Astronaut A5 is built for peace of mind.

- **Highest reliability:** built to last, thoroughly tested
- **Maximum uptime:** flawless operation, reduced service time
- **Proven performance:** a "thought-through" system backed by experts

The new milestone in milking

The Lely Astronaut A5 is the new milestone in milking. It's an evolution that incorporates everything we have learned during the past 25 years since we invented automatic milking. We looked at cows, and we listened to our customers. We stuck to proven practices, but we also completely redesigned every bit of the system. The combination of the proven automatic milking principles and our focus on reliability, as well as ease of use and cost efficiency, has resulted in the most cow- and farmer-friendly milking system.

The five rules for profitable milking

Automated milking puts producers in control of the cost of milking. It's a fixed cost—variables such as labor are not a factor. It's predictable, and this is key to controlling costs and enabling good financial planning.

1 Offer cows freedom and choice

Provide the cows with a stress-free environment, with peace and quiet, that allows them to express their natural behavior.



- Free-cow traffic allows the cow to follow her own rhythm
- More natural behavior makes it easier to detect cow signals
- I-flow and the spacious cow box make milking attractive

2 Treat cows consistently

Cows are averse to change. Routine and predictability are key to consistent milking.



- Allow each cow to develop a consistent routine and rhythm
- Offer consistent treatment at each milking
- Cows benefit from lactation-based milking intervals

3 Approach cows individually

Every cow and every one of her teats is unique and, therefore, needs to be treated individually.



- Safeguard udder health with tailored milking of each quarter
- Advanced sensor technology enables quarter-based pulsation
- Automatically adapts milking and feeding to the cow's individual needs

4 Optimize cow health

Cow performance is optimized when health requirements are met.



- Hygienic milking due to brush cleaning and Pura steam cleaning
- Real-time health reports show only cows that require attention
- Earlier treatments due to smart combination of milk and cow data

5 Handle milk with care

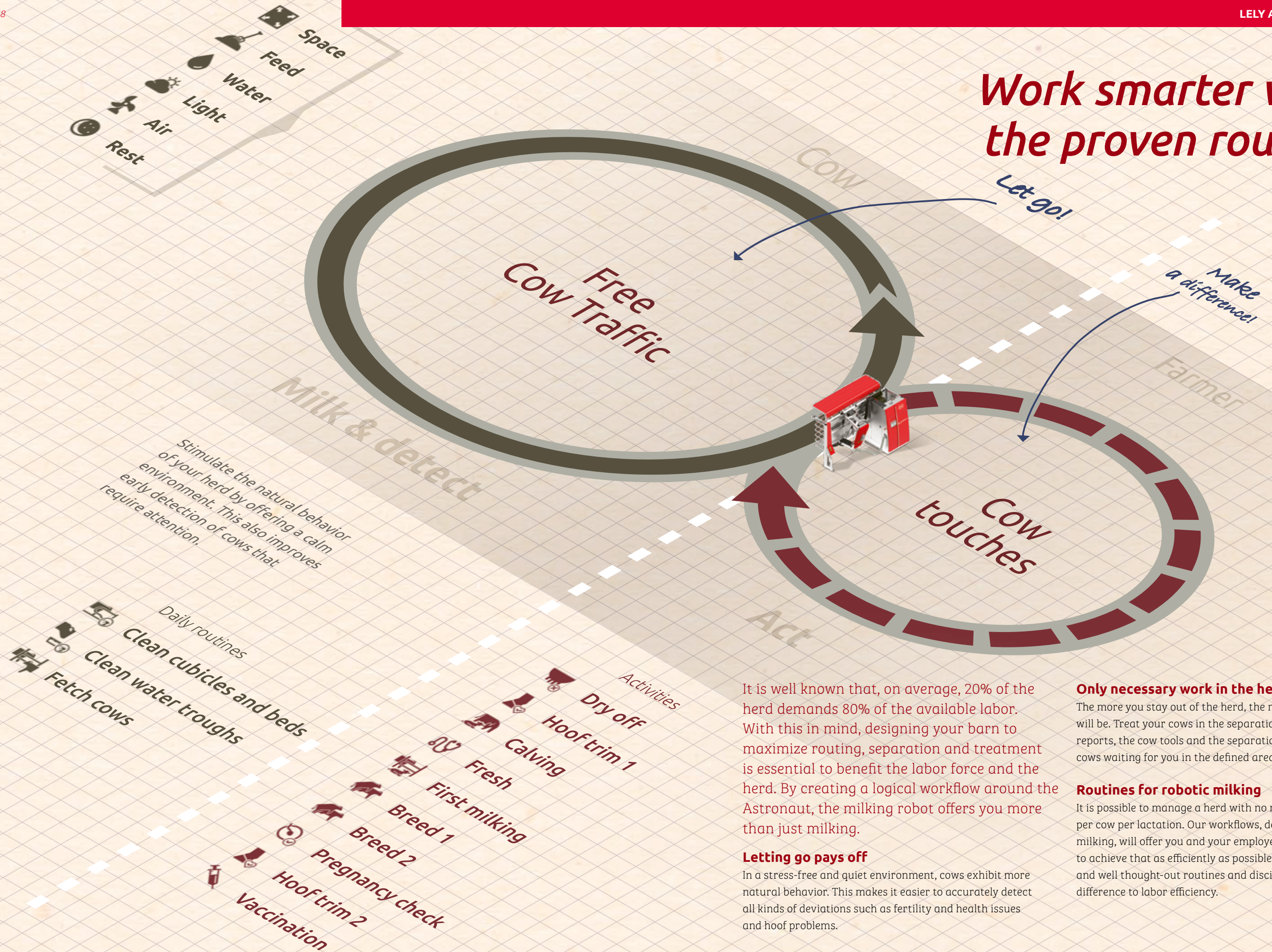
Milk is a valuable but perishable commodity and needs to be handled with care to maintain its quality.



- Avoid milk losses while milking
- Advanced MQC and MQC-C milk quality control systems
- Safeguard milk quality through careful milk treatment

Why Astronaut users excel

Work smarter with the proven routine



It is well known that, on average, 20% of the herd demands 80% of the available labor. With this in mind, designing your barn to maximize routing, separation and treatment is essential to benefit the labor force and the herd. By creating a logical workflow around the Astronaut, the milking robot offers you more than just milking.

Letting go pays off

In a stress-free and quiet environment, cows exhibit more natural behavior. This makes it easier to accurately detect all kinds of deviations such as fertility and health issues and hoof problems.

Only necessary work in the herd

The more you stay out of the herd, the more relaxed your herd will be. Treat your cows in the separation areas. Use the health reports, the cow tools and the separation gates to have the cows waiting for you in the defined areas.

Routines for robotic milking

It is possible to manage a herd with no more than nine touches per cow per lactation. Our workflows, developed for robotic milking, will offer you and your employees the necessary tools to achieve that as efficiently as possible. A good barn layout and well thought-out routines and disciplines can make a big difference to labor efficiency.

Built around the cow

We have refrained from just automating the actions of milking itself, and instead we have built a concept around the cow to make sure that cows like to be milked within a low-threshold system. Our truly unique robot arm concept, as well as the I-flow concept for easy entrance and exit from the box, are some clear examples of this strategy.

Cow-friendly design

The Lely Astronaut's I-flow system offers a natural way of milking, with a cow-friendly design. Cows can enter the Astronaut easily, simply by walking straight ahead. The system optimizes comfort. Nothing "squeezes" or constricts the cow and nothing pushes her. The cow stands comfortably and naturally. The cow is treated and handled as she would prefer to be treated.

Close to the herd

The open design of the cow box means that the cow stays close to the rest of the herd. This improves the milking process and, due to a faster walk-through rate, it increases the capacity of the robot. It also means that she may visit the robot more frequently enabling—being milked more than twice a day. This offers udder and cow health benefits, as well as increased milk yield.

Fits all teats

The wide reach of the arm ensures smooth connection for almost all cow breeds or cows with awkwardly positioned teats. The system very easily calibrates the arm's position for each cow at her first milking. The changing shape of the udder during lactation of the cow is no problem for the robot.



+4%
Capacity
with I-flow

Free-Cow Traffic

With Free-Cow Traffic, the cow decides when she eats, drinks, lies down and is milked. This improves her well-being. By taking care of our cows and putting extra effort into cow comfort, we are able to extend lifetime milk production. Sufficient space in the barn will also give the cow the opportunity to display her natural behavior and improve her overall well-being.

Milking cows—originally based on the suction mechanism of a calf—is a balanced process that takes a large number of individual characteristics of the cow into account. The milking robot has become the perfect tool to milk a cow according to her specific—individual—needs. Based on more than 25 years of experience and data from many millions of cows, the Lely Astronaut has evolved to become the most consistent and tailored way of milking.



The art of milking

Milking according to stage of lactation

Different lactations and lactation stages require a different approach. That's why every milking is based on the historical data of each cow, stored in the Horizon management system. In this way, the system automatically determines the milking interval and calculates the ration to be fed.

Udder and teat position

To increase the performance of the robot, the udder and teat position is stored after each milking. Together with the 3D camera for accurate cow positioning, the brushes can easily find the teats without the need for scanning the udder. When cows are milked for the first time, the robot arm must be positioned. This is easier than ever before, thanks to Easy First Milking.

Optimal hygiene

For optimal hygiene and stimulation, brushes clean the teats and the underside of the udder. The tactile cleaning of the teats with brushes offers the best stimulation for the milk-let-down response. After each milking, the brushes are disinfected.

Consistent attaching

Fast, consistent and accurate connection is more relaxing for the cow. That's why a robot is more suitable for milking than a human. A three-layer laser system delivers the most accurate teat-position information, independent from light or background. The slowest quarter to milk out is connected first.

Minimizing milk losses

In each teat there is a small amount of low-quality milk which is removed during pre-milking. The speed at which the cow releases this milk differs, even at quarter level, so the Astronaut always separates just 9ml of pre-milk per quarter. This prevents the waste of good, salable milk.

Healthy milking

To increase udder health, it is important to keep the vacuum level at the teat end as stable as possible. The Astronaut is, therefore, equipped with two separate vacuum circuits and a vacuum buffer in the arm. This ensures a constant vacuum at the teat end.

Measuring close to the udder

The milk is checked by the in-line MQC system for flow, color, temperature, lactose level, fat/protein ratio and conductivity. Measuring as close to the udder as possible is key to collecting accurate data.

Monitoring per quarter

To adjust the milking process, ensure quality milk and detect deviations, milk is continuously monitored per quarter. The pulsation, for example, is adjusted for each quarter based on the milk flow. When the milk flow of a quarter drops below a certain level, the teat cup will be removed.

Safe and efficient

If a troubled cow kicks off a teat cup, the milk line is closed immediately and the cup will be retracted. The teat cup will never hit the floor. The kicked-off cup will be reconnected while the remaining quarters continue to be milked.

Udder care

After cup removal, the teats are sprayed with a care product. During pumping, the milk is sampled for somatic cell count by the optional MQC-C. Before the next cow is milked, the teat cups are thoroughly cleaned with water. The optional Pura steam cleaning system kills bacteria in the teat cup.



**Shortest
in milk
time!**

The hybrid arm Exactly where it needs to be!

Milk is the most important source of data for tailor-made milking and to provide you with information regarding milk quality, cow health and udder health. To yield valuable and accurate data, the in-line sensors are as close to the udder as possible. A top priority of the milking process is to safeguard capacity and hygiene in all circumstances.

That's why the arm is always close to the udder during the entire milking process.



Large arm reach – fits all cows

The design and shape of the hybrid arm enables the Astronaut to milk all kind of teats on all kind of udders on all different sizes of cows. The redesigned arm and pivot points ensures an optimal upright position of the teat cups for a large area. This is key to fast and accurate attachment.



The perfect balance saves energy

The hybrid technology of the arm saves a lot of energy. Because the weight of the arm is transferred to a large pneumatic cylinder, the electrical drivers require very little power to move the arm. A thought-through system ensures this easy movement for all arm positions.



Safety first

Nervous cows have a very powerful kick. The Astronaut's arm is able to handle this. The energy of a kick is absorbed by a hinging system in the arm, which has two gas springs. This system gives way for the arm to move, saving the cow and sparing all electrical components. The arm will always return to the milking position by itself.

Cow-friendly

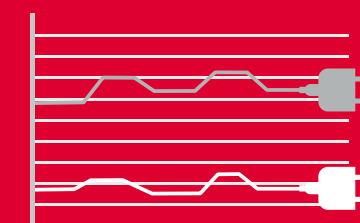
The hybrid arm of the Astronaut A5 creates a silent, relaxed environment for cows to be milked. Its quiet operation, decisive movements and swift attachment give little reason for cows to be nervous. The arm's large reach makes it easy to milk different-sized cows with plenty of room around them.

Energy-friendly

The Astronaut's arm principle is based on very few movements. After one swing under the cow, there's very little movement again until the arm swings out after milking. With the new hybrid arm, these movements are electrically driven, without the use of air, which results in a huge gain in energy efficiency.

Swift and reliable

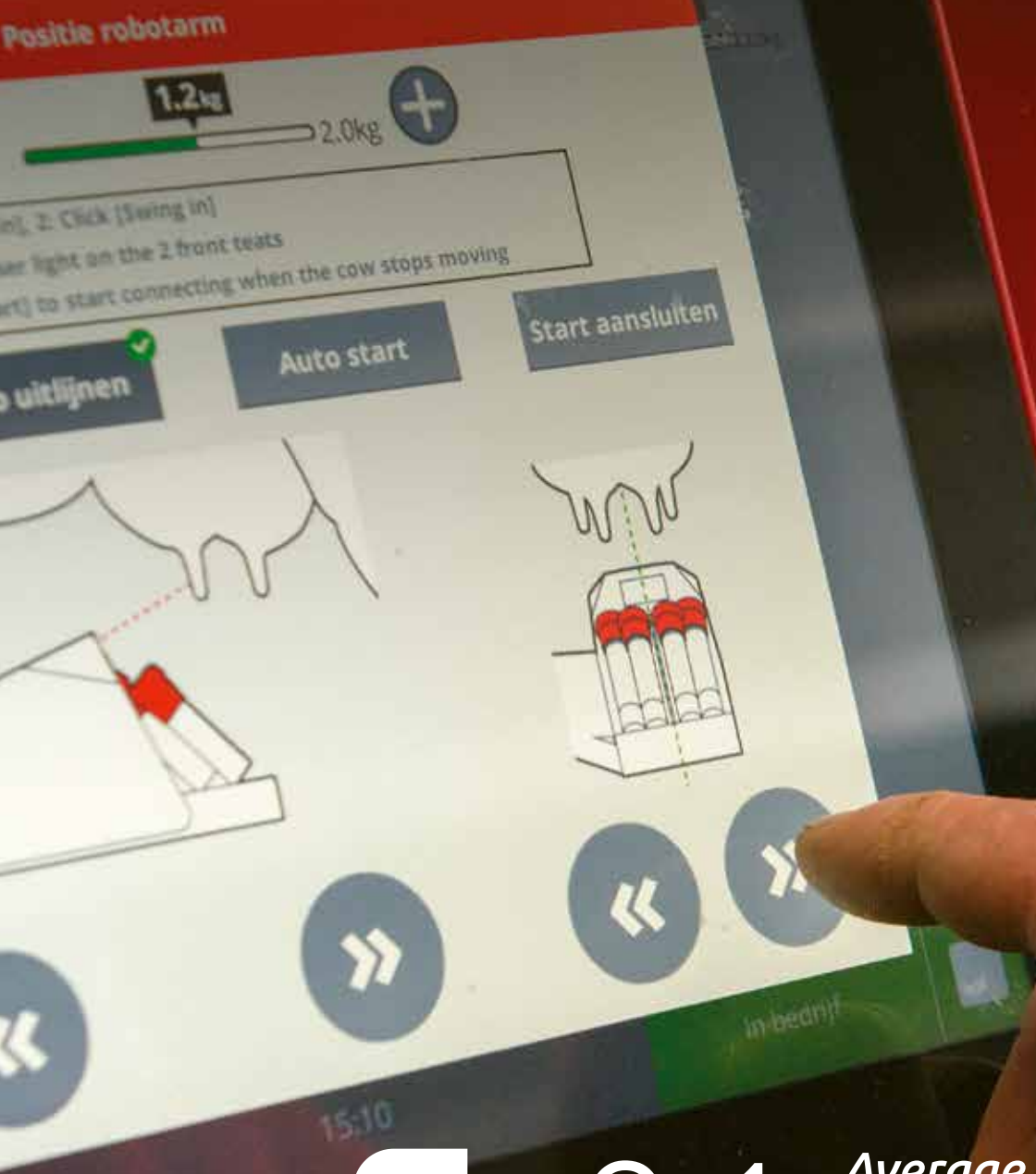
The arm is the most important part of the robot. It is involved in almost every step of the milking process. It has to do its job swiftly and accurately without disturbing the cow and must be 100% reliable. The arm of the A5 meets the highest requirements in terms of reliability.



**Lower
energy
usage**

Easy to use

Job satisfaction is heightened by providing easy ways to control the milking robot, even with minimal experience. The system's potential is unlocked through an intuitive user interface that makes it simple to navigate functions, settings, information and reports. Carefully listening to users' experiences have led to a successfully designed control panel and the Horizon management system.



9.1

Average user-
friendliness
score

A quick glimpse while milking

It only takes a quick glimpse to see which cow is being milked and what her status is. You can see how all quarters are performing and where, for example, the cow and the milk are going after milking. It only takes one touch to control functions, such as routing or changing milk destination.



Easy First Milking

Milking a fresh cow has never been so easy. With all functions in one display, it comes down to positioning the arm close to the udder. When it sees the front teats, just push the connect button. Use the feed button for extra concentrates to make her feel at ease, when necessary.



Convenient functions

Servicing your system is one of your daily tasks. With the easy-to-use service screen you have all the necessary functions available. Just push one button to put the arm into the service position and push another button when you are finished and ready to start milking again.



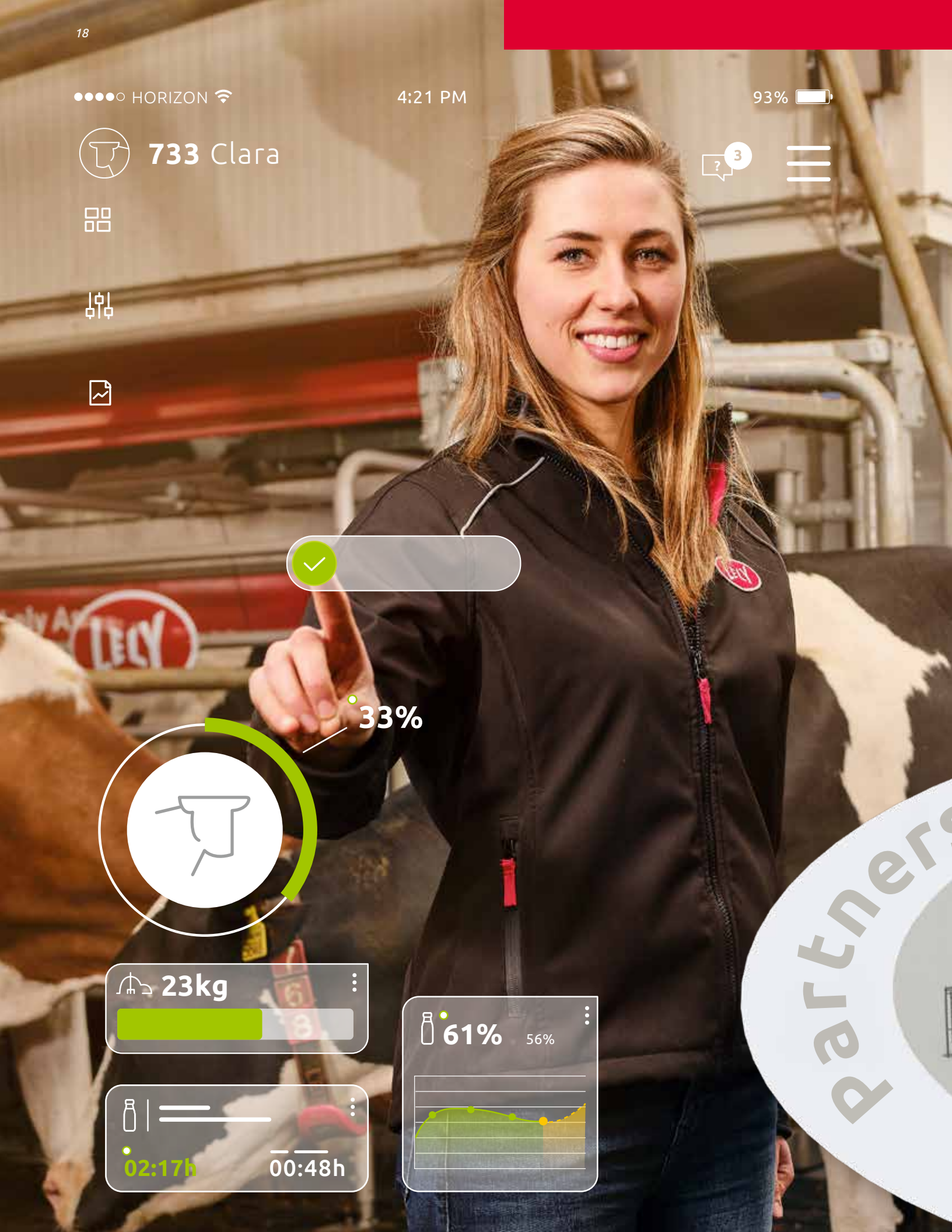
Easily accessible

The Astronaut A5 is designed to offer easy access to all parts. This reduces the time spent on maintenance and increases uptime.



The new user-friendly design of the central unit offers more space, reduces service time and makes it easier to position containers.





Digital dairy farming

The world seems to be changing faster and faster. It is the same in dairy farming. Two keywords are "data" and "digitalization". These offer both challenges and opportunities.

Imagine how much data a modern dairy farm generates. The Lely Astronaut milking robot, with all its sensors, generates a tremendous amount of data about milk quality, cow health, rumination, feed efficiency and much more. All at herd, individual cow and even milk-quarter level.

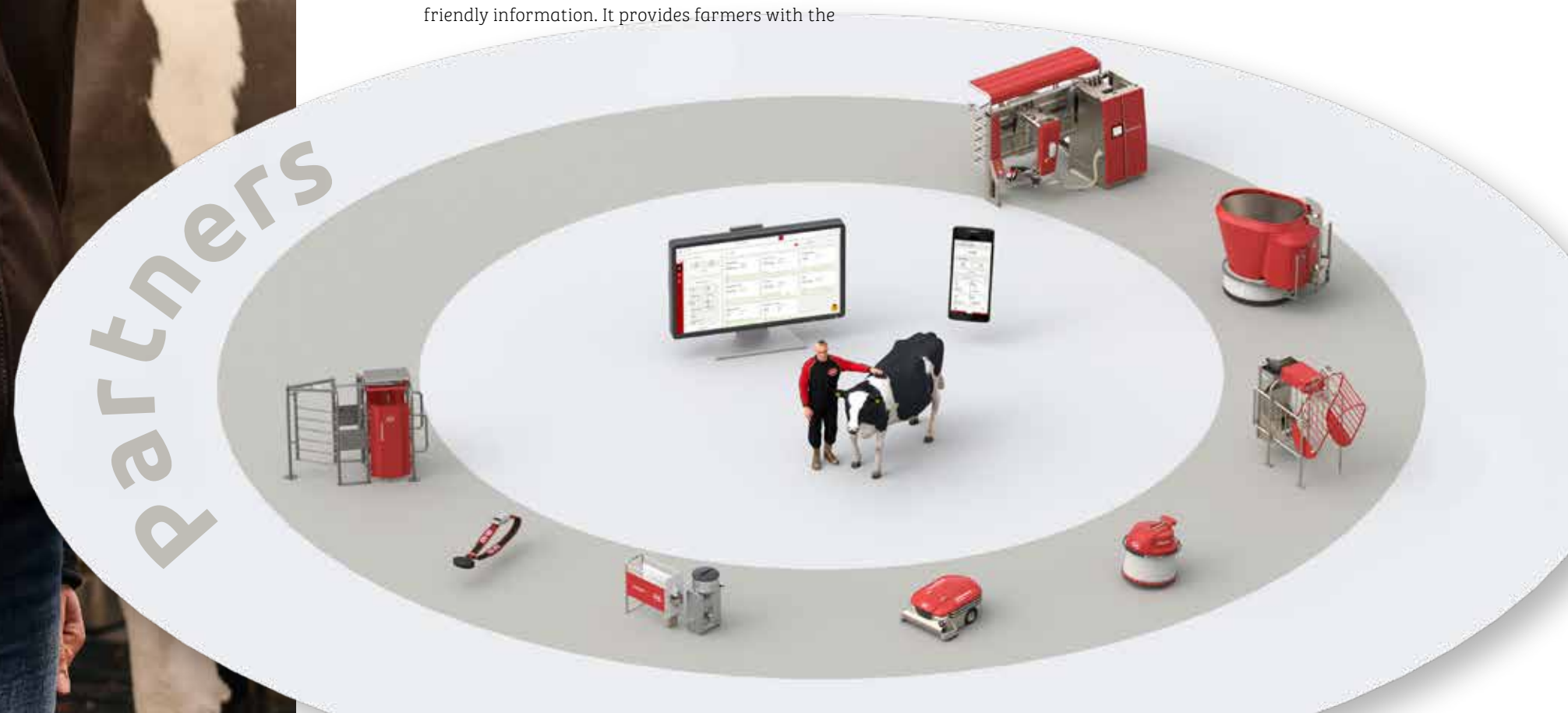
But that is not all. Other equipment, such as automatic feeding systems—for example our Lely Vector—delivers data as well. And what about other suppliers, such as feed advisors, semen suppliers and veterinarians? They also have data about your farm and herd. This is all extremely relevant. But how can we make it useful?

Lely Horizon does all that. It analyzes all available relevant data in an intelligent way. Using connectivity and smart algorithms it processes data into user-friendly information. It provides farmers with the

tools to work more efficiently and offers them more control in order to achieve their goals.

Lely Horizon elevates your data to forecast performances and offers you clear choices to optimize your farm. Daily and scheduled routines based on cow touches will be planned as logical and more efficient workflows. It offers you insights at the right time and in the right place.

Combining individual cow data from separate sources makes information more valuable. Horizon is built to support data connections with software of approved third-party data partners. Lely Horizon shows all information on all your devices in the same familiar flow.



Want to know more about the Lely Horizon packages?



Lely Horizon

Future farming at your finger tips

Our new farm management application sets new standards. Lely Horizon is the next step toward a bright future in dairy automation.

The highlights explained.



Easy to use

Lely Horizon sets the future standard in user-friendliness. An intuitive user interface gives you fast access to all the information you need. Easy to learn, great to use.

Top features

- **One user interface for office and mobile**
Similar customized dashboards and advice available when and where you want it.
- **A flying start via onboarding process**
Get up to speed in Horizon by going through the onboarding. Directly make the program fit your routines and learn the basics so you can get off to a flying start.



Decision support

Lely Horizon works as your second brain by using smart algorithms based on the experiences of thousands of dairy farmers. The program elevates your data to forecast performances and offers you clear choices for farming optimization. It gives you control over your herd as never before.

Top features

- **Ketosis indication and treatment advice**
Clearly indicates ketosis-suspected cows.
- **Keep open advice**
Fact-based decision support on whether to inseminate or not.

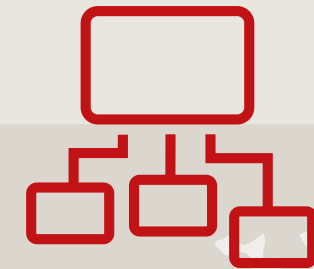


Optimized farm flow

Makes your day more efficient by relieving you of routine decision making. Optimizes the data to be shown and customizes the program to fit your own work routines.

Top features

- **Personalization**
Personalize your dashboard with widgets customizable KPIs. Customize your cow card and reports in such way that you show the data that is valuable to you. You are in charge of what you want to see and how you want to see it.
- **Task-based working**
Create shifts and tasks in order to make Horizon fit your specific farm routines. Enjoy the benefits of having insight on the actions you need to take when you need them.



Connecting and combining

Combines and analyzes individual cow data from your Lely equipment, as well as third-party information and presents this to you as useful information.

Top features

- **One central point for farm management**
No need to switch between screens and applications from different suppliers.
- **Combined data offers high-level insights**
Gives insights by analyzing combined individual cow data from various internal and external sources.



The Lely Center

Your partner for today and tomorrow

The Lely Center in your area is your local partner in dairy and feeding automation. Over many years, Lely has built a comprehensive network of specialists who combine their experience in dairy automation with local knowledge. Their main goal is to help you receive all the benefits that your Lely equipment has to offer.

Tailored service and support

We offer total solutions that consist of more than just innovative machines. It also includes technical service support, Farm Management advice and an extensive range of consumables and original wear parts to maximize the potential of your Lely products.

Together we keep the cows and the machines in shape, while working on a tank full of quality milk. All offered in tailored service products to meet each farmer's individual business goals. For our customers this means having peace of mind because continuity is ensured. They can enjoy optimized equipment performance and their costs are transparent.

Beyond the lifetime of equipment

Lely total solutions concept goes beyond the lifetime of the equipment. We aim to be your strategic business partner for now and in the future. We provide premium service products that contribute to maximizing uptime and management by exception. Next to that, as farming innovators we are continuously searching for ways to improve. Therefore our robot equipment can be upgraded along the way, ensuring you to benefit from the latest developments.

Technical Service Support 24/7—support for the greatest peace of mind

Through their specialized training and experience in the field, Lely's certified technicians speak the sector's language. All technicians work in their own region and have a good understanding of the farm history, details of the farm and the equipment in use. That enables them to make the right decisions and resolve any possible issues quickly.

Farm Management Support—to optimize your farm, at your choice

Farm Management Support has a key objective: optimize your farm, at your choice. You receive guidance prior, during and after the installation of your new equipment. Once up and running, we support you to optimize the management of your farm. We do this by offering a range of service products. From reactive online to proactive and intensive on-farm coaching, we help you to keep day-to-day business going, and we become your strategic business partner in achieving your long-term goals.

Lely Consumables for daily needs that support a smooth and profitable operation

Lely offers a wide range of first-class consumable products and wear parts, specifically designed for the Lely Astronaut. In combination with our technical service and farm management support, they will ensure a smooth and profitable operation on the farm by increasing animal welfare, milk quality and improving the lifetime of your Lely equipment.



Lely startup support

The right steps at the right time

Based on 25 years of field experience, Farm Management Support has developed guidelines and protocols to create a steady but solid learning curve with the right information at the right time. By doing so, all relevant topics are discussed and training is offered at your convenience, resulting in a low stress and smooth transition into automatic milking.

Your Farm Management Advisor will, together with you, follow the predefined steps and actions before, during and after the actual start-up over a period of six months. During this period, six contact moments are defined to discuss a variety of topics from daily routines, the Lely Horizon management program, InHerd, preparing cows for the Free Cow Traffic principle and feeding. After each contact moment, a digital report with the discussed topics, explanations and actions is shared. This enables you to go through the action points and knowledge at your own pace.

Management

We start with the introduction of Farm Management Support. What can we expect from each other in the coming six months? We talk about your personal and farm targets. We cover topics including cow health, feeding and daily routines on your farm and introduce you to topics such as Free Cow Traffic, PMR feeding, and the daily routines in combination with automatic milking.

Lely Horizon and start-up preparations

We show how to prepare your cows, including attaching collars and shaving udders and tails. We introduce the structure of the Lely Horizon management program. For example, how to enter data including responder numbers, treatment plans, and cows to calve. We also go through the start-up day and discuss what needs to be prepared, in chronological order.

Final check

The start-up day and time are set. We check, together, if all preparations have been done and any further questions can be asked and answered. We are ready for the start-up day.

The start-up day

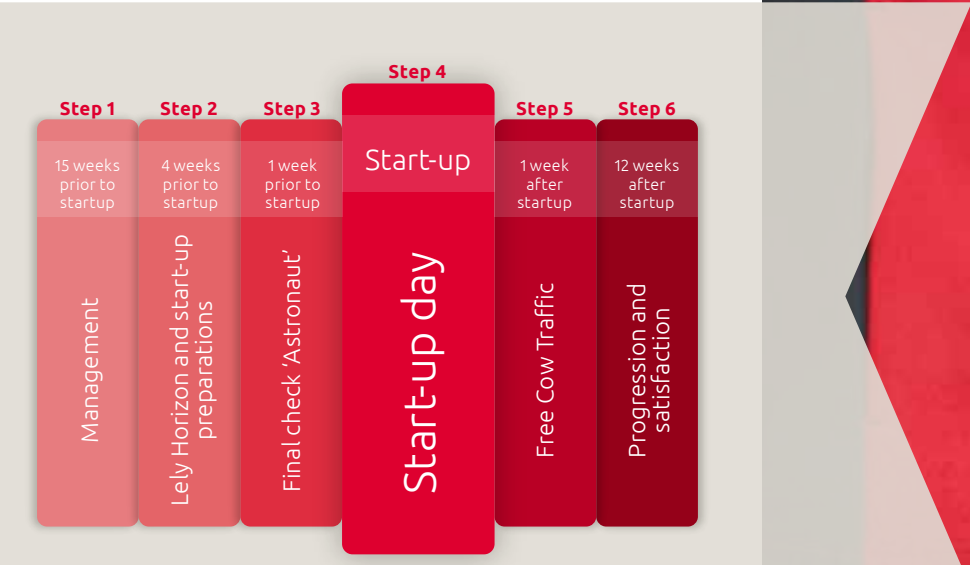
Together we do a final check, go through the milking robot routines, group the cows, and start milking.

Free Cow Traffic

Shortly after start-up, the cows become used to the Astronaut. Together we fine-tune the Horizon management program, introduce Free Cow Traffic, and explain the milk sampling process. Again, any further questions can be answered.

Progression and satisfaction

By means of a farm walk and a check on Lely Horizon, we discuss the current status. We go through your daily routines, milk sampling results, and all available tools. We will evaluate the start-up period. Are you satisfied did we reach the set goals? The start-up period ends and we begin with the next step to further optimize your farm at your choice. Together we will define which services will support you best.



Lely Astronaut accessories

The Lely Astronaut robotic milking system is designed with a dedicated focus on optimum well-being for both you and your herd. With this in mind, we have complemented our milking robot with a range of exceptionally useful accessories.

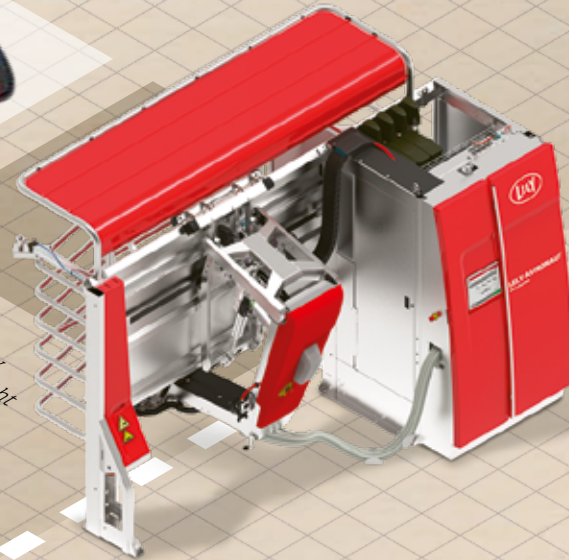
Lely Cow Locator
This system provides you with the location of every cow and saves time in finding her in the barn.



Lely tags
Provides herd insight 24/7. They are available with different functions, for example rumination and heat detection.



Weighing floor
An easy way to daily monitor the cow's weight changes and improve management related to health, breeding and feeding.



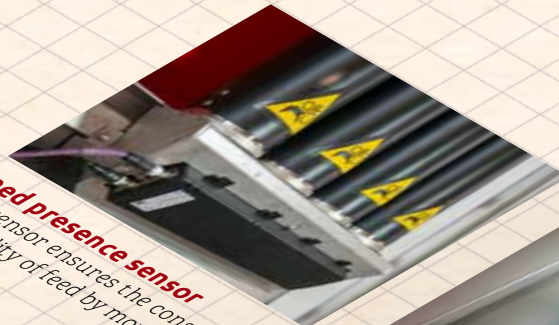
Lely Pura steam cleaning system
This system kills bacteria in the teat cups without the use of detergents.



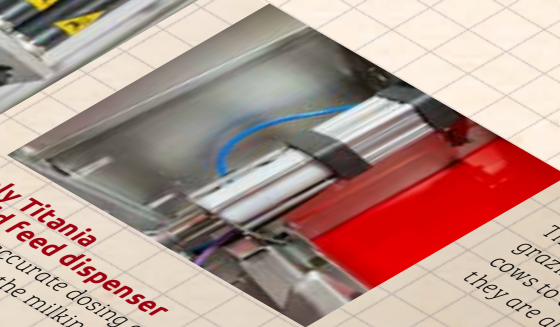
Sampler for Lely Astronaut
The Sampler makes milk recording easy. Automatically taking milk samples of every milking in the period of milk recording.



Feed presence sensor
This sensor ensures the constant availability of feed by monitoring the supply.



Lely Titania liquid feed dispenser
Enables accurate dosing of liquid feed during the milking.



Lely Grazeway selection box
This selection box suits your grazing strategy and only allows cows to enter the pasture when they are allowed to.



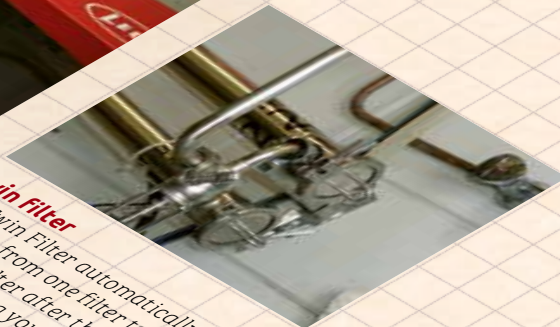
Lely MQC-C milk quality control system
This system monitors the somatic cell count per milking, giving direct insight into the udder health status.



Lely MAUse separation unit
This unit collects the separated milk. Horizon supports you on which milk you want to separate and collect.



Twin Filter
The Twin Filter automatically switches from one filter to the other filter after the main cleaning, giving you the most flexibility when to replace the filters.



"It's amazing how the data we get from the Lely Astronaut A5 can help us make sure we're milking the right cow at the right time. We are now able to recognize who our best producers are and who we need to look at from a connectivity or somatic cell standpoint to see who potentially has mastitis. Utilizing these tools that the Astronaut gives us has just been excellent."

*- Ryan Horsens, Horsens Homestead Farms
Cecil, Wisconsin*

Explore the possibilities with the next milestone in milking

Only you know what you'd like your possibilities to be. Let them drive you to open your mind to the solutions that are out there. Stepping back and considering the future can be the first step toward a more fulfilled life. What would you do if you could free up time? Focus on being a better farmer, a better partner—or both? Your local Lely Center invites you to explore your possibilities. Call **1-888-245-4684** or email marketinglna@lely.com

Start exploring with your local milking experts

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