



GEA Farm Technologies

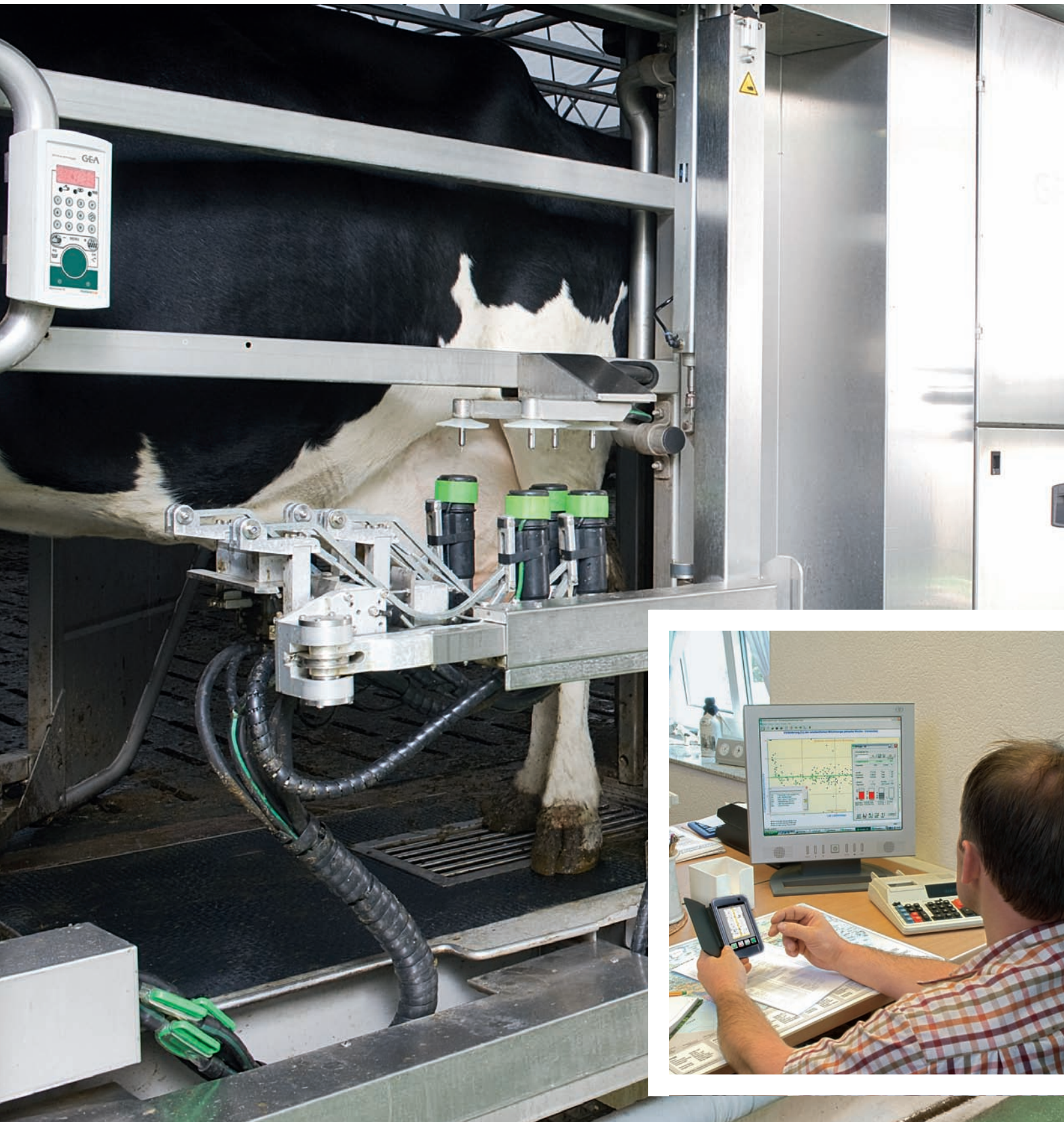
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Multi-Box Robotic Milking System

- Expandable capacity is designed for growth
- Economical investment — one application arm can serve up to five boxes.
- Ensures the highest milk quality.

GEA Milking & Cooling | **WestfaliaSurge**

GEA Farm Technologies — The right choice.



Take Your Time from Milking to Managing

Robotic milking technology brings a new way to think about milking and managing your cows — and your time. You are no longer tied to extremely rigid milking schedules. In fact, you no longer even need to be present in the milking barn to manually attach milking units. Your daily schedule is now much more flexible.

With the reliable, *Mlone* robotic system, cows determine their own milking times throughout the day and night. This leaves you with more time for herd management tasks that usually land further down on your to-do list. It also leaves you with a more accommodating time schedule for your personal life.

Robotic milking technology allows you to use your valuable time to better manage your herd.

GEA Farm Technologies — Robotic Milking Philosophy

At GEA Farm Technologies, the milking center is more than just a location where cows are milked. It is a working area that organizes all necessary herd management functions and the milking equipment into a logical flow.

The *Mlone* multi-box system is ideally suited for this centralized approach, allowing herd managers to optimize their daily work. In contrast, other decentralized solutions, with individual milking boxes, focus solely on the milking of “normal” cows — and they do not properly integrate the entire herd into the barn layout.

The GEA Farm Technologies Milking Center Includes:

- The core; *Mlone* robot
- Cooling system and tank
- Holding pen
- Selection and treatment area
- Calving area
- Herd manager's office
- Technology room

Planning for Success

The key to robotic milking success is proper planning. It is critical to understand that you are not just replacing your conventional milking system with a robot. You must consider your entire operation as a whole, and make important management decisions before determining if robotic milking technology is right for your dairy.

Factors to Consider:

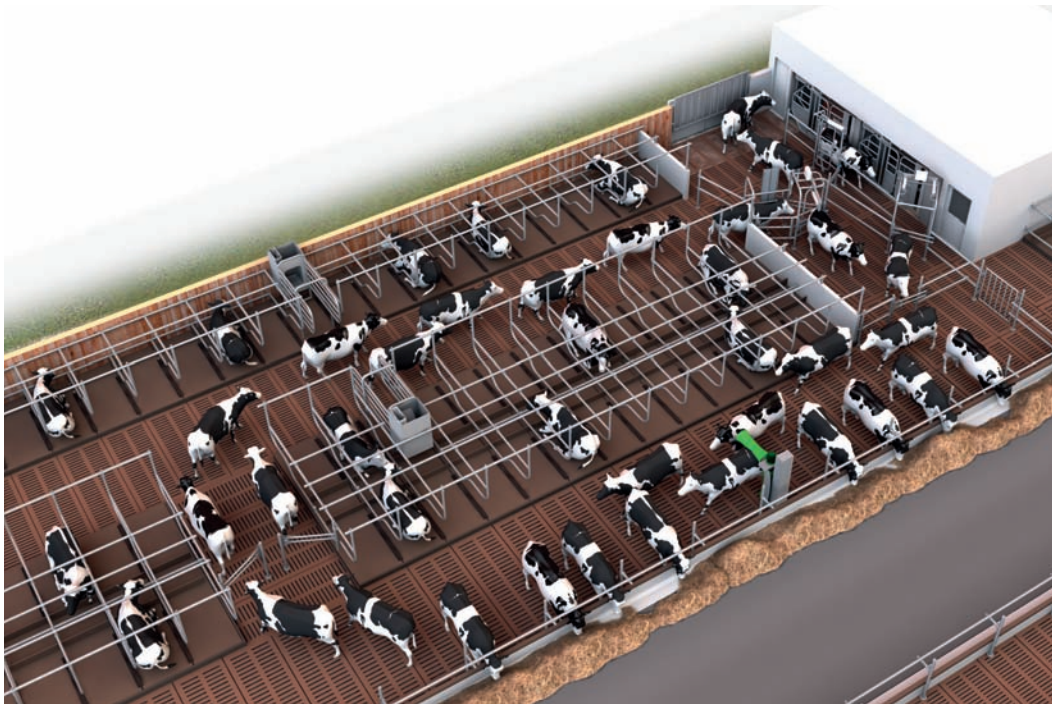
Special needs cows — a dairy does not permanently contain only healthy, milkable cows. Your herd includes dry cows, fresh cows, temporarily sick, and treated animals. Managing special needs cows should be a primary focus when planning a robotic milking facility.

Intelligent barn layout — smart cow flow and maximum cow comfort are essential components to your barn layout. Can you use existing housing? Do you have a plan for lying areas, feeding areas, a holding pen, selection and treatment areas, and a calving area? Do cows have constant access to feed, water, and a clean freestall? These are all questions to address in order to optimize your herd's productivity.

Feeding plan — when integrating automatic milking into your operation, your feeding strategy will most likely require an adjustment to fit your new milking style.

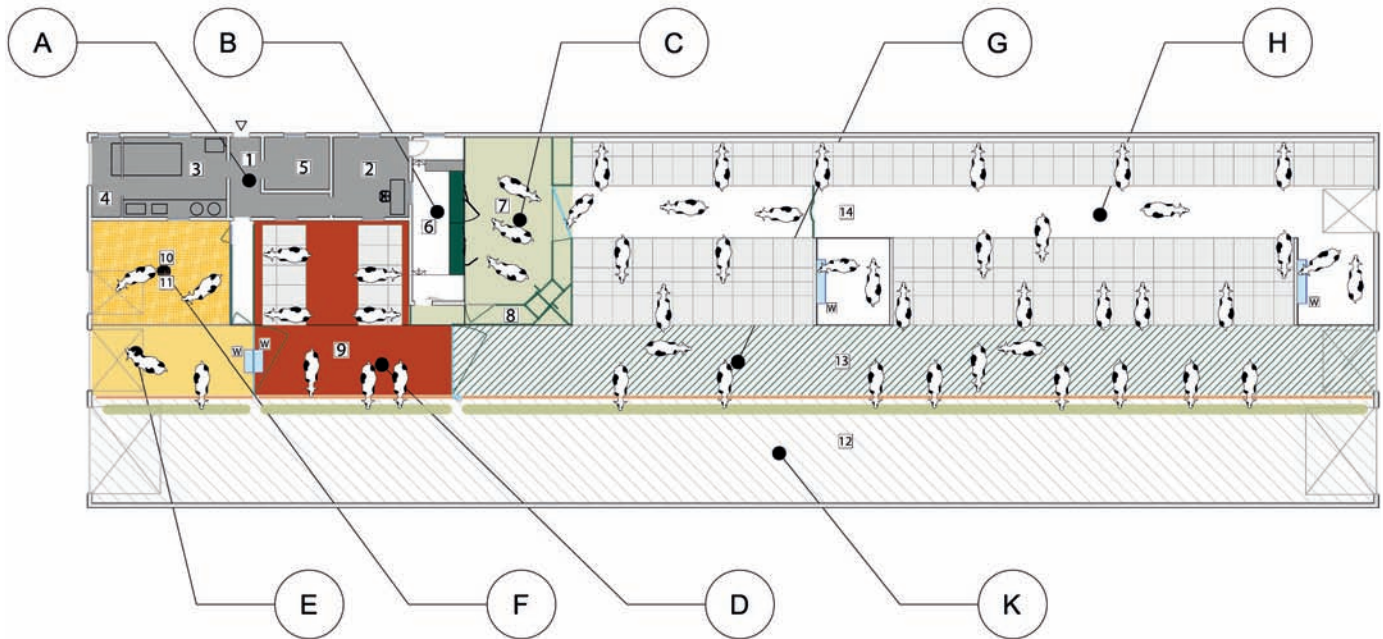
Herd management tasks — managing your herd is now your number-one priority. Be sure all of your tasks — from breeding and pregnancy checks, to transition cow management — can be completed with your new barn concept, as efficiently as possible.

Growth plan — are you planning on expanding? The Mlone from GEA Farm Technologies can grow with your herd, however, it is important to keep this in mind as you begin to design your milking center and housing areas.



**GEA Farm Technologies will be your support system.
We will accompany you through the entire planning,
installation, and implementation process.**

Intelligent Barn Concepts



Sample Layout — 2-Box Mlone Installation

The milking center concept remains the same, no matter which box configuration suits your dairy. The important technical components are centralized and easy to access. And, the special needs cows are housed close to the Mlone robot.

- | | | | |
|----|------------------------|---|-----------------------------|
| 1 | Hallway | W | Water Trough |
| 2 | Office | A | Office/Technology/Milk Tank |
| 3 | Technical Room | B | Mlone Multi-box System |
| 4 | Milk Tank Room | C | Holding Area |
| 5 | Storage | D | Selection Area |
| 6 | Mlone Multi-box System | E | Special Needs Area |
| 7 | Holding Area | F | Calving |
| 8 | Selection Alley | G | Feeding Area |
| 9 | Selection Area | H | Rest Area |
| 10 | Special Needs Area | K | Feed Alley |
| 11 | Calving | | |
| 12 | Feed Alley | | |
| 13 | Feed Passageway | | |
| 14 | Walking Passageway | | |



1-Box System

The number of cows that can be milked per day and box is not dependant on technology alone. There are multiple factors which will significantly influence throughput (or the number of milkings/cow/day). For that reason, it is more logical to determine the capacity of a system by using the number of milkings. As a rule of thumb, 140-170 milkings/box/day can be used to evaluate the required number of boxes and the maximum capacity of the system.



2-Box System



3-Box System



4-Box System



5-Box System

The Multi-Box Advantage

The GEA Farm Technologies Mlone multi-box system has a decisive advantage: It is designed for growth! Other, single-box systems cannot make this statement, and they limit many medium- to large-sized farms that wish to grow their operation in the future.

The Mlone Multi-Box System:

Expandable capacity — the Mlone milking robot can be bought as a single-box system and expanded to a multi-box system with up to five milking boxes. Thus, you can decide on an increase in cow capacity at any time, by simply adding boxes. The new boxes are easily mounted and connected to the end of the existing Mlone.

More economical — the Mlone offers the highest capacity for the investment cost. The robot's high technology is only procured once — meaning one robotic application arm will service up to five boxes. When you're ready to grow, you simply need to add boxes, NOT invest in additional robotic arms.

Optimal use of equipment — a single vacuum pump, one PC, one wash system, and one application arm can service up to five boxes.

Easily integrated — the milking center philosophy from GEA Farm Technologies can be integrated into various barn concepts and can also be installed in existing buildings.

expansion

expansion

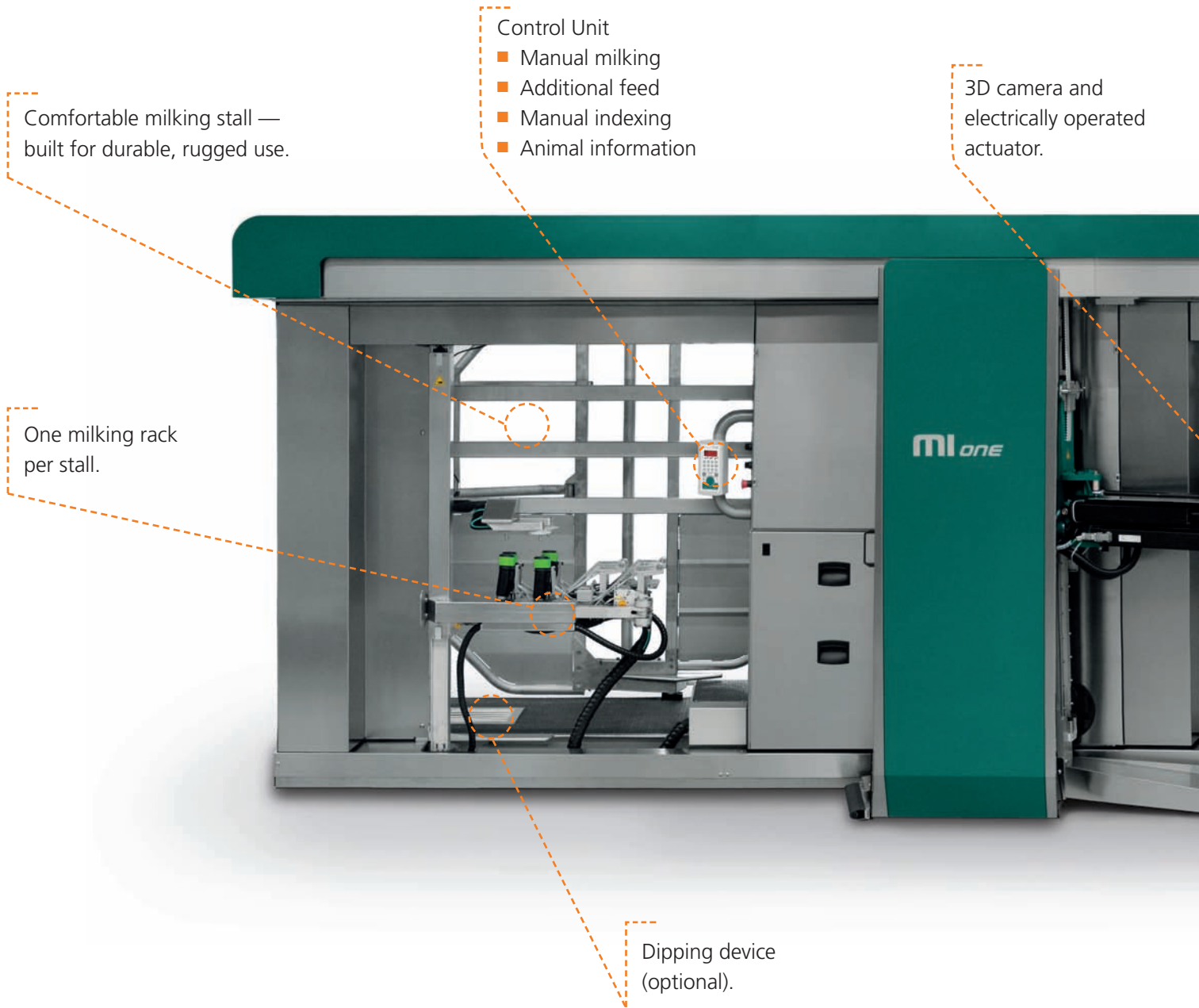
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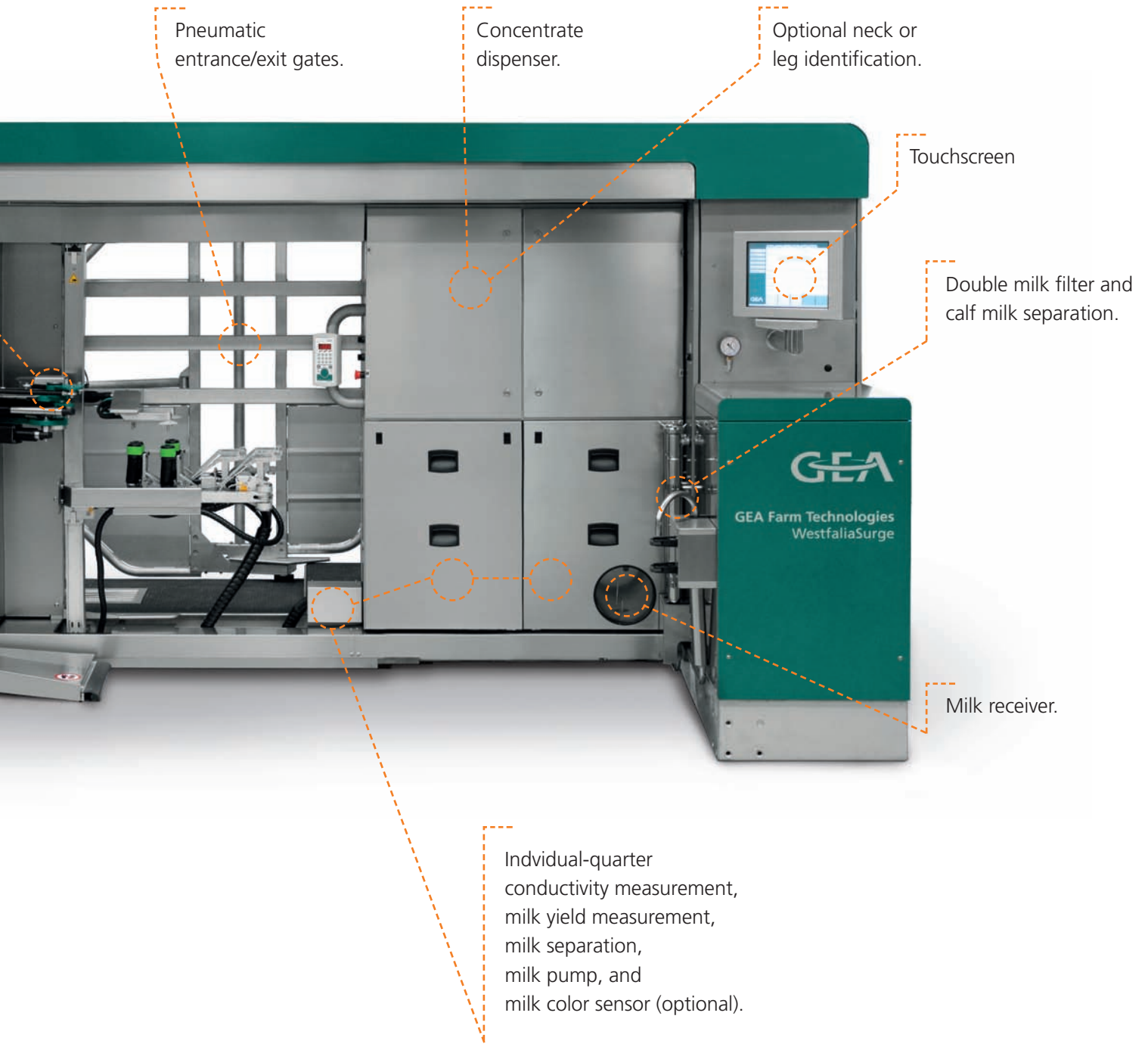
expansion

The **expansion** of the Mlone multi-box system is much simpler and less expensive than the purchase of an entire single box.



Mlone — Stall Components at a Glance





Pneumatic entrance/exit gates.

Concentrate dispenser.

Optional neck or leg identification.

Touchscreen

Double milk filter and calf milk separation.

Milk receiver.

Individual-quarter conductivity measurement, milk yield measurement, milk separation, milk pump, and milk color sensor (optional).

Robotic Milking — Step by Step



1 Pre-Selection: GEA Farm Technologies favors the principle of “selective guided cow traffic.” Only cows identified as “ready to milk” will be sorted to the holding area. All others will be sorted into the feeding area. This ensures that only cows that are ready to milk can access the robot, increasing throughput.



2 Cow Entrance: Cows enter a free-milking box (the gate opens automatically when the box is ready for the next cow) and stand comfortably on a floor that is covered with rubber mats. The pneumatic entry gates have been developed to offer cows a wide, comfortable entrance.



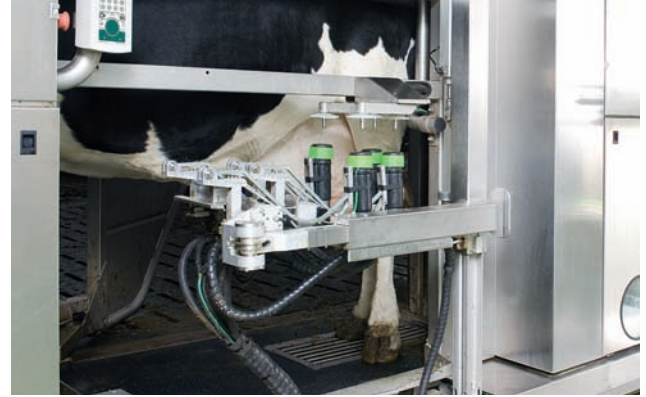
5 Attachment: Each milking box is equipped with its own milking rack. The application robot travels in front of the milking box, and picks up the milking rack and positions it beneath the udder. A 3D camera simultaneously “sees” the teat cup and the teat, and supplies the necessary information for precise attachment of the teat cups.



6 Milking Process: This step includes teat cleaning, pre-dipping, drying, a milk quality check, stimulation, and milk harvest. Once the teat cups are attached, all of these steps are executed in sequence — saving time, preventing system contamination, and ensuring a smooth milking process.



3 Cow Identification: The cow is identified and its data is requested from the herd management computer. You can choose from neck or leg identification with the Mlone milking system. Both can be used with activity measurement as well.



4 Automatic Indexing: The robot shifts the feed basin based on individual cow data, and matches the box length to the size of the cow. This correctly positions each individual cow for the application of the teat cups.



7 Teat Cup Removal: The Mlone supports individual quarter milk flow monitoring, and can detach the teat cups by quarter (or by total milk flow — depending on your preference). Vacuum is switched off when the flow rate reaches the pre-determined threshold, and teat cups retract smoothly from the teats and drop back into their holders.



8 Cow Exit: The pneumatic exit gate offers cows a wide opening to comfortably exit the box. Then, cows can be sorted toward feed and water, or a treatment area, if a herd management task is necessary.

Advanced Attachment Process

The Mlone utilizes the latest technology to quickly and efficiently attach teat cups.

How it Works

Positioning of the milking rack — each milking box is equipped with its own individual milking rack. The application robot travels in front of the milking box, and picks up the milking rack and positions it beneath the udder. All milking boxes utilize the same application robot.

Teat finding process — a 3D camera, secured to the robotic application arm, detects the shape and position of individual teats and simultaneously positions the teat cups accordingly. The camera is not affected by external light sources, and it does not contain any rotating lasers or ultrasonic sensors, like some existing systems. Also, because the camera is attached to the application arm, it does not remain under the cow during milking, minimizing its risk for damage.

Other Advantages

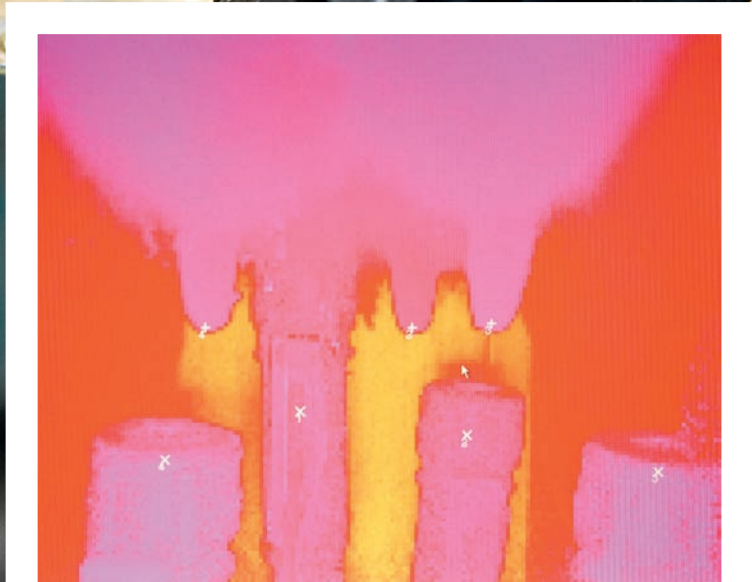
Proper teat cup positioning — the milk rack supports each individual teat cup/quarter during application and throughout milking. And, all milk hoses are aligned optimally from the unit. This guarantees the ultimate in teat cup positioning — customized for each cow.

Teat cup protection — the teat cups sit, flexibly mounted, on the milking rack throughout milking. Therefore, in case a teat cup comes off, it can never come into contact with the ground.

Optional manual attachment — the design of the Mlone milking rack allows for trouble-free manual application of the teat cups when required.



The GEA Farm Technologies teat finding system increases attachment reliability. The milking rack positions the teat cups properly under each individual cow, ensuring proper milk-out.



Milk Quality and Milk Safety — Our No. 1 Priority

Dairy producers can be confident that the milk harvested from the Mlone robotic milking system is of the highest quality.

Teat cleaning — each individual teat is gently cleaned for 15 seconds and allowed to dry in an air flow.

Fore-milk is diverted — the first streams of milk are separated from the primary milk supply and discarded.

Milk quality control — milk conductivity (and, optionally, milk color) testing for each individual quarter accompanies the entire milking process. Suspicious milk can be reliably detected, separated, and diverted from the primary milk supply — by individual quarter if desired.

No cross contamination — the separate cleaning of each teat in its own teat cup ensures there is no risk of cross contamination of mastitis-causing bacteria between quarters.

Rinsing and cleaning — three different cleaning processes are available:

- Backflush: automatic after every cow milking.
- Short cleaning: selective box wash (approx. 4 minutes) while the rest of the system is still in milking operation.
- Main system wash: 3-phase wash cycle, recommended at least two times per day.

A block-bleed valve prevents any cleaning solutions from entering the milk supply.



Unique teat cleaning technology ensures no teat is milked unless it is thoroughly cleaned first.



Reliable system cleaning ensures milk quality — cow after cow; day after day.

Support and Service You Can Count On



Dairy design service — on-site consultation is extremely important to our organization. GEA Farm Technologies has a worldwide network of resources dedicated to robotic milking. You can rest-assured our team will advise you on barn layout concepts that properly integrate with robotic milking management.

Customized solutions — we design customized barn layouts on our CAD software system. You will be able to immediately see the results of your ideas in detailed drawings.

Mlone off-site monitoring — your Mlone robotic milking technician can monitor your system remotely, and determine if service is required — before you even notice a problem.

Reliable service — a milking robot has to operate day and night, 365 days a year — for many, many years. This can amount to more than 8,500 operating hours per year. GEA Farm Technologies dealers can offer a range of maintenance contracts — and of course, be at your dairy immediately if any milking emergency arises.

**With GEA Farm Technologies,
you invest in the Mlone robotic milking system.
We invest in supplying you on-site consultation,
knowledgeable service technicians, and 24/7 support.**

GEA Farm Technologies

The right choice.



GEA Farm Technologies

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