



 **Semex ai24™**

More than just
Heat Detection

Accurate Heat Detection with
Health Monitoring



Semex ai24™
Heat Detection



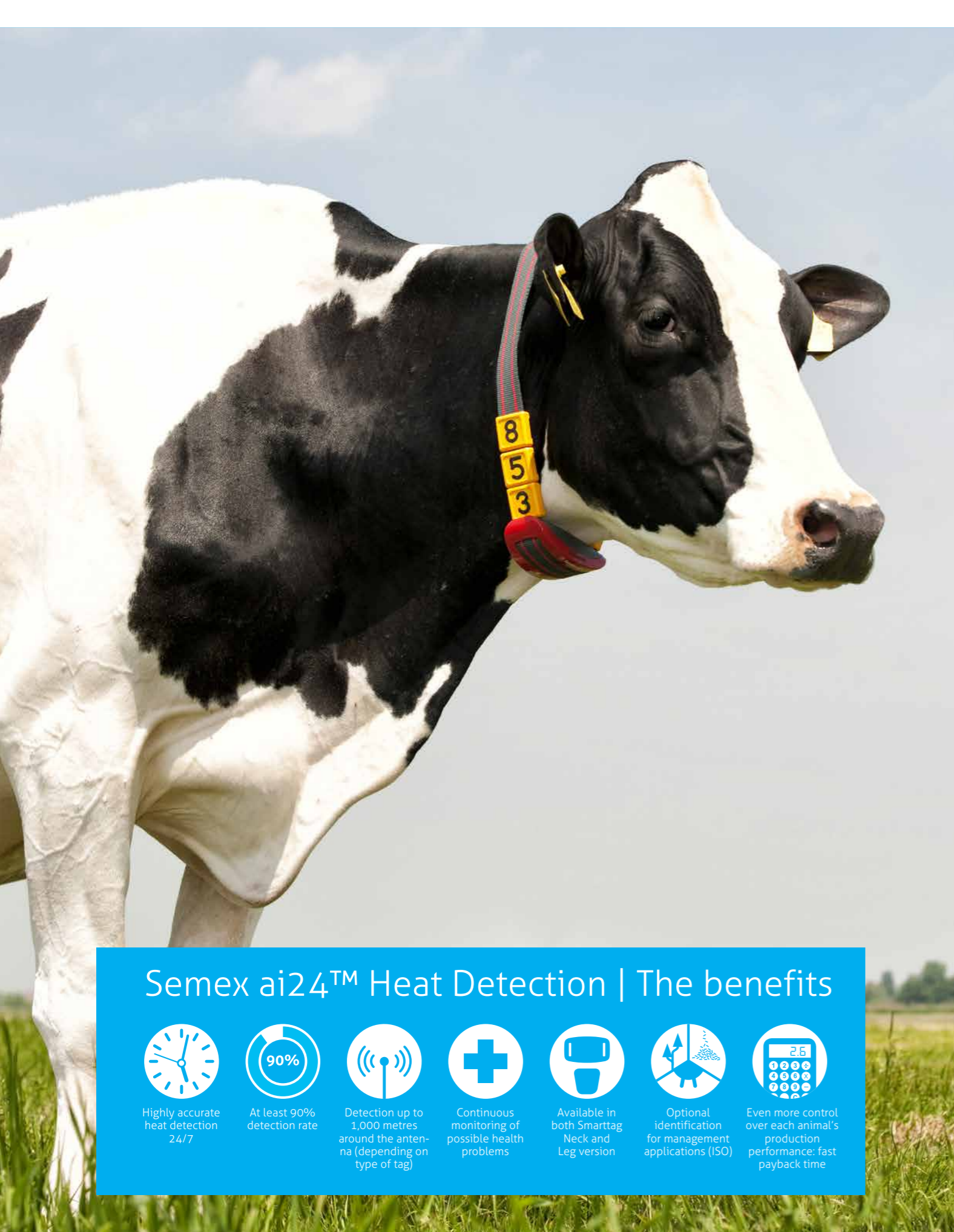
Accurate Heat Detection with Health Monitoring

Efficient and effective management is the key to a successful dairy or beef farm. Many dairy farmers are facing the need to upscale and produce sustainably. This means you are constantly faced with the challenge of tracking your animals at individual level and treating them preventively if required. After all, it is only by focusing on individual milk production and cost control across your whole farm that you can significantly increase your earnings. Semex ai24™ offers you the suitable support solution with the Semex ai24™ Heat Detection system with integrated Health Monitoring.

The fertility results, as well as the well-being and health of your animals, have a direct correlation with good milk production. Therefore there is great added value for your business management in being able to automatically pick up signals that give an indication of the health of each animal, together with accurate heat detection. On a 24/7 basis, Semex ai24™ Heat Detection with integrated Health Monitoring detects behaviour and movements which indicate that an individual animal is in heat or has possible health problems. The system automatically provides you with the right information about animals in heat, and animals within the herd that require extra monitoring in regard to their health. You are always in control; to ensure insemination at the best time, or to intervene at an early stage in the event of any health issues. This is how you achieve and maintain the best possible production performance from each animal.

Semex ai24™. Vital element for growth.

Semex ai24™ Heat Detection with Health Monitoring: available in both Smarttag Neck and Leg.



Semex ai24™ Heat Detection | The benefits



Highly accurate heat detection 24/7



At least 90% detection rate



Detection up to 1,000 metres around the antenna (depending on type of tag)



Continuous monitoring of possible health problems



Available in both Smarttag Neck and Leg version



Optional identification for management applications (ISO)



Even more control over each animal's production performance: fast payback time





More options than just Heat Detection

Semex ai24™ offers a complete range for reliable Heat Detection with integrated Health Monitoring. The system accurately detects the behaviour and movements of your animals 24/7 and will send you a timely attention alert if an animal requires extra care - whether this concerns heat detection for insemination at the best time, or an animal with possible health problems. You are the one in control to treat your animals at the right moment and in the right manner. This will save you time and creates a calm atmosphere, whilst you achieve and maintain the best possible results from each animal in your herd. The Semex ai24™ Smarttag Neck and Leg offer many different functions in addition to the highly accurate Semex ai24™ Heat Detection. Whatever your wishes may be when it concerns monitoring your individual animals, Semex ai24™ always provides the best technology for a suitable solution.

Semex ai24™ Smarttag Neck



- RealTime Heat Detection
- Eating Monitoring
- Attention alert if the tag is placed the wrong way around
- Optional ISO Identification

RealTime Heat Detection

Sniffing and chin resting - neck movements that indicate heat - are effortlessly detected by the Semex ai24™ Smarttag Neck. Day and night. The data is available immediately (RealTime) via long-range data transfer. Up to at least 75 metres around the antenna in the barn, or even up to 500 metres around the Long Range antenna for grazing.

Semex ai24™ Eating Monitoring

Eating Monitoring indicates the time per day that an animal takes in roughage or grazes. The Smarttag Neck continuously monitors the animal for these movements. Changes in eating behaviour indicate that there may be something wrong with a particular animal. Timely monitoring and the opportunity for early intervention in health problems help you to avoid a drop in milk production and any treatment and culling costs. Furthermore, you can monitor your animals extra closely in the vulnerable period before and after calving - when they are more susceptible to disease because of changes in environment, feed, energy balance and stress.

Attention alert if the tag is placed the wrong way around

Correct attachment of the neck tag benefits the diverse measurements and the functionality of identification technology. The Smarttag Neck automatically sends an attention alert if the tag is placed the wrong way around or moves into an incorrect position during use. Slight changes in the position of the tag on the neck are automatically compensated by the software.

ISO Identification (optional)

A reliable high performance solution for identification in management applications such as milking, feeding and separating. Outstanding identification technology that never stops working, even if the battery is flat.

Semex ai24™ Smarttag Leg



- RealTime Heat Detection
- Activity Monitoring
- Optional ISO Identification

RealTime Heat Detection

Leg movements that indicate heat are perfectly detected by the Semex ai24™ Smarttag Leg. Day and night. The information is available in RealTime thanks to the long range data exchange. Up to at least 75 metres around the antenna in the barn, or even up to 1,000 metres around the Long Range antenna for grazing.

Semex ai24™ Activity Monitoring

Activity Monitoring measures the number of steps the animal takes and alerts the farmer when this number drops significantly compared to the average figure from the preceding days. The Smarttag Leg accurately detects this drop. The system sends you an attention alert, allowing you to trace any sick or lame animals at an early stage. This means that a drop in production or high treatment costs can be prevented.

ISO Identification (optional)

A reliable high performance solution for identification in management applications such as milking, feeding and separating. Outstanding identification technology that never stops working, even if the battery is flat.



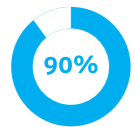


More benefits with Semex ai24™ Heat Detection



Highly accurate Heat Detection 24/7

Approximately 60% of cows show signs of heat during the night. There is a high risk that you miss these heats, or that you are unable to respond in time. With Semex ai24™ RealTime Heat Detection you can detect heat 24/7 in the entire barn and take advantage of the optimum insemination time. As a result, you are able to reduce the number of inseminations, the costs and the calving intervals. With Semex ai24™ Heat Detection technology, all animals in heat are visible to you. Always and anywhere.



At Least 90% detection rate

Semex ai24™ Heat Detection technology is the most reliable solution for continuous and highly accurate heat detection. This system even enables you to detect expressions of heat that are difficult to spot or not immediately visible. The Semex ai24™ Smarttag Leg and Neck provide equally reliable detection results. The registered data is saved in the memory of the tag during 24 hours, which means that you will not have to miss any information. Even if the animal has been out of the antenna's reach for a short while. As soon as the tag reconnects with the system, all data from the preceding 24 hours is once again transmitted. All animals in heat in your barn are visible to you. Always.



"Semex ai24™ Heat Detection detects heats that you do not notice yourself."
Matthijs Meijer



"Semex ai24™ Heat Detection provides improved insemination results and more insight into the health of our animals."
Henk en Alida Udink



Detection up to as much as 1,000 metres around the antenna
Semex ai24™ Heat Detection can detect cows in heat and health indicators at great distances. The antenna in the barn has a range of at least 75 metres around, both with the Smarttag Neck and Smarttag Leg. The long range antenna for grazing cows has a 1,000 metre range when used with the Smarttag Neck and up to 500 metres with the Smarttag Leg.* Long range detection is particularly useful if you use milking robots. You are no longer dependent on your animals coming to the robot; you have up-to-date information on your animals at your fingertips all the time. You can also use the Semex ai24™ Heat Detection system for heifers that you keep elsewhere in the barn. Keep tabs on all your animals in heat – wherever they are.



Continuous monitoring of possible health problems
Developments surrounding automatic tracking of the individual animal are constantly evolving. This is a necessity in order to actually increase the production performances of the total herd at a dairy farm. The Semex ai24™ Smarttag provides Activity Monitoring in the leg version and Eating Monitoring in the neck version. Both versions will give you a good indication of the well-being and health of the individual animal. Check your animals in a timely manner and treat those who need extra attention. Regardless of the size of your herd: Semex ai24™ Heat Detection technology with integrated Health Monitoring will provide you with the right information at an early stage, so you are able to take adequate measures.

* The range of the long-range antenna depends on local circumstances.



Available in both Smarttag Neck and Leg version

The Semex ai24™ Smarttag for Heat Detection with integrated Health Monitoring is available in a leg and a neck version. You select which version best suits your farm. For both versions the reliability in regard to Heat Detection is equally high. And for both tags you can also rely on an average expected service life of 10 years thanks to the effective use of the battery.

- The Smarttag Leg for Heat Detection with Activity Monitoring is easy to fit with the Semex ai24™ patented leg strap.
- The optimal shape and weight of the Smarttag Neck with Eating Monitoring ensure that it always stays in the right position: at the base of the neck. The Semex ai24™ neck strap ensures that the Smarttag remains securely in place and does not twist.



Optional ISO Identification for management applications

Both the Smarttag Neck and the Smarttag Leg can optionally be combined with Semex ai24™ ISO Identification technology; a reliable high performance solution for identification in management applications such as milking, feeding and separating. Outstanding identification that never stops working, even if the battery is flat.



Even more control over the optimal production performance of each animal: Fast payback time.

Semex ai24™ Heat Detection with integrated Health Monitoring provides you with the right information to achieve and maintain the best performance from each animal. Accurate identification of the optimum insemination time enables more effective inseminations. The results: a reduced number of inseminations, lower insemination costs, shorter calving intervals and optimisation of the milk production with increased returns.

Attention alerts in the event of changes in eating behaviour or reduced activity help you to detect any disorders your animals may have at an early stage, allowing you to intervene in good time. This is how you prevent a drop in milk production and save on treatment and culling costs. Semex ai24™ Heat Detection will quickly achieve higher returns for you. For years to come.



Fast payback time: a calculation example

Semex ai24™ Heat Detection makes it possible to achieve and maintain the best performance from each animal. Better returns and increased profit result in a fast payback time. Naturally, the earnings and payback time depend on market conditions and your own personal starting point as a dairy farmer. However, to give you an idea, here is an example of how the payback time can be realised. For this example we will assume:

- A dairy farm with 120 cows.
- An average earning of €2 per cow per day of shorter calving interval*.
- An average semen price of €40 per dose.

Payback time Semex ai24™ Heat Detection system

COSTS

- The purchase price of a Semex ai24™ Heat Detection system for a farm with 120 cows is **€ 13,000**

EARNINGS

- On this farm, the calving interval is reduced from 400 to 385 days
Earnings from reduction time of calving interval: $(400-385) \times € 2 \times 120 =$ € 3,600 per year
- The farm's insemination number drops from 2.5 to 2.2
More efficient insemination earns this farm: $(120 \times 2.5 \times €40) - (120 \times 2.2 \times €40) =$ € 1,440 per year
- Annual earnings for the use of Semex ai24™ Heat Detection **€ 5,040**

PAYBACK PERIOD

Purchase price / annual earnings
€13,000 / €5,040 =

2.6 years

Please note: labour savings, a lower calving age of heifers and possible lower health costs have not yet been included in this calculation example.

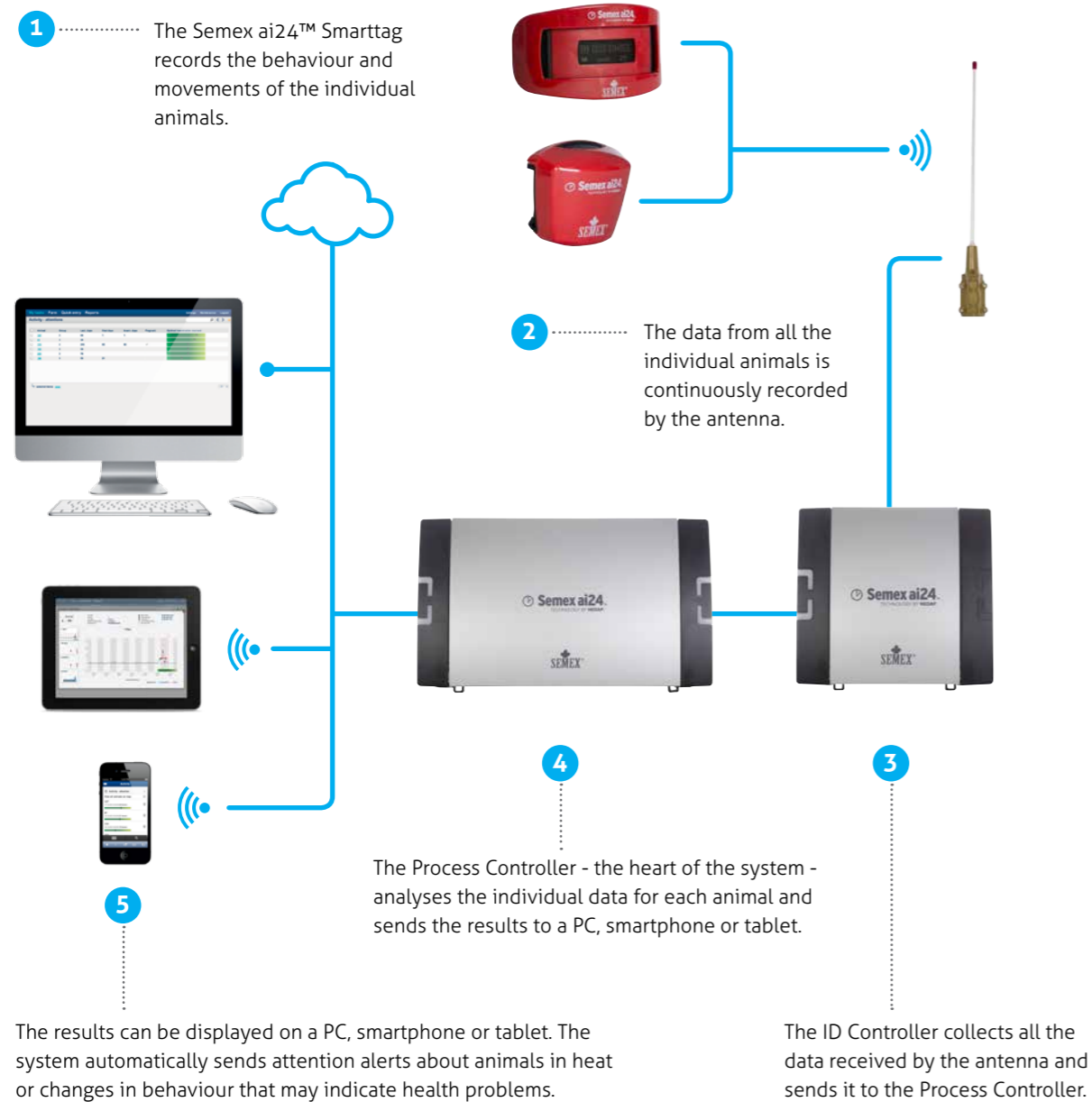
* Assuming an average situation in Europe, where reduction of the calving interval earns between €1 - €3 per cow per day.



More options with the Semex ai24™ Technical Platform

Our Heat Detection technology is controlled by the Semex ai24™ Technical Platform for dairy management. This platform is a flexible and scalable basis for automation on dairy farms based on individual electronic animal identification. Individual care and monitoring of production and health remain manageable at all times; regardless of the size of your herd. Management by exception: you can specifically focus on the animals that need it.



The Semex ai24™ Heat Detection system - how it works





System options

The Semex ai24™ Heat Detection system can always be adapted according to your wishes and requirements. Semex ai24™ offers you various options in regard to the Antenna and the Smarttag.

Semex ai24™ Antenna

Antenna, RealTime Heat Detection	Long Range Antenna, RealTime Heat Detection *
	
Data transfer up to at least 75 metres around the antenna in the barn.	Long-distance data transfer during grazing: - up to 1000 metres around antenna with Smarttag Leg - up to 500 metres around antenna with Smarttag Neck

Semex ai24™ Smarttag

Semex ai24™ Smarttag Leg	Semex ai24™ Smarttag Neck
	
- RealTime Heat Detection - Activity Monitoring - Optional: ISO Identification	- RealTime Heat Detection - Eating Monitoring - Optional: ISO Identification

System features

Scalable

Do you have plans for upscaling your farm in the future, for example with a larger herd, more groups or more barns? No problem for the Semex ai24™ Technical Platform. The system can be modified to suit any farm size, with extra Smarttags and possibly an additional antenna - and therefore with a limited investment. The basis of the platform can accommodate any amount of upscaling and any farm size.

Flexible

The Semex ai24™ Technical Platform for the dairy farm can control several applications such as heat detection, separation, feeding and milk measurement from just a single Process Controller. This flexible system is easy to adapt according to your needs and requirements. If in the future you should wish to include more applications to the system in addition to heat detection, you have already installed the required foundation to expand on with low investment.

Centralised software

All the software of the heat detection system is contained in the heart of the system: the Process Controller. This is extremely convenient, as any updates can be processed in one central place within the system. And moreover, you do not need to install software on your PC, tablet or smartphone. All you need to view the interface of the system is a browser.

Mobile applications

Being informed about the situation in the barn - always and anywhere? This is possible too. You can easily link the platform to mobile applications such as tablets and smartphones. The interface of the Technical Platform is then adapted for mobile use.

Integration of software packages

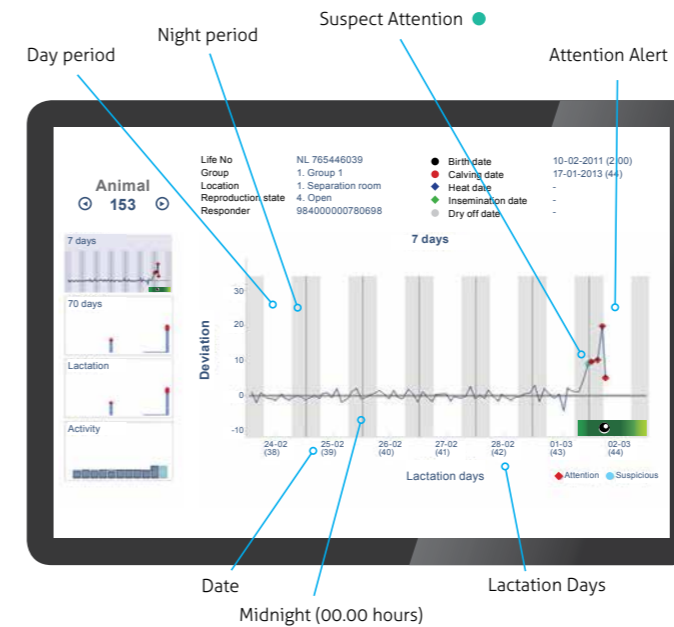
The Semex ai24™ Technical Platform - and with this, also Semex ai24™ Heat Detection - can be linked to nearly all management programmes via Taurus or a customised link. This means that you can steer your business from one management programme at all times.

* The range of the Long Range antenna depends on local circumstances. To get the best possible reception, the antenna must be installed at a height of at least 8-9 metres in an obstacle-free place. NB: The Long Range antenna is not suitable for a single-antenna solution for different houses or outlying fields on the same farm. It is not possible to use the antenna for animals continuously kept a long way from the antenna.



How the system works

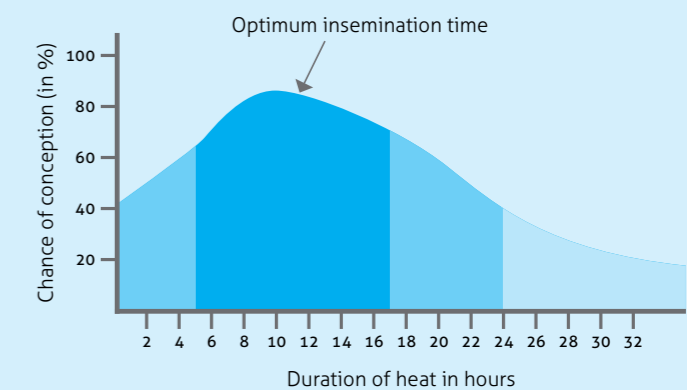
Basis principles of Semex ai24™ Heat Detection with Health Monitoring



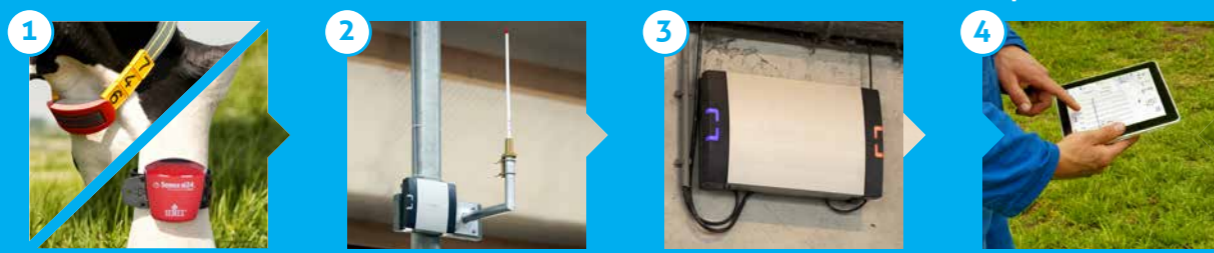
- The behaviour and movements (leg or neck movements) of each cow are measured and recorded in two-hour periods.
- This data is compared with data from the same period during the preceding days.
- Is there a significant change (higher or lower) in the recorded progressive average regarding the behaviour or movements? If so, attention alerts are possible at several levels:
 - attention regarding suspected heat
 - attention regarding heat with optimum insemination time
 - attention regarding reduced leg activity
 - attention regarding reduced eating behaviour

Optimum insemination time

You can generally assume that when a cow is actually in heat, the best time to inseminate her is straight after the first attention. The probability of conception is at its highest then, because the semen cells will make contact with the egg at the optimum time.



Semex ai24™ Heat Detection in 4 Steps



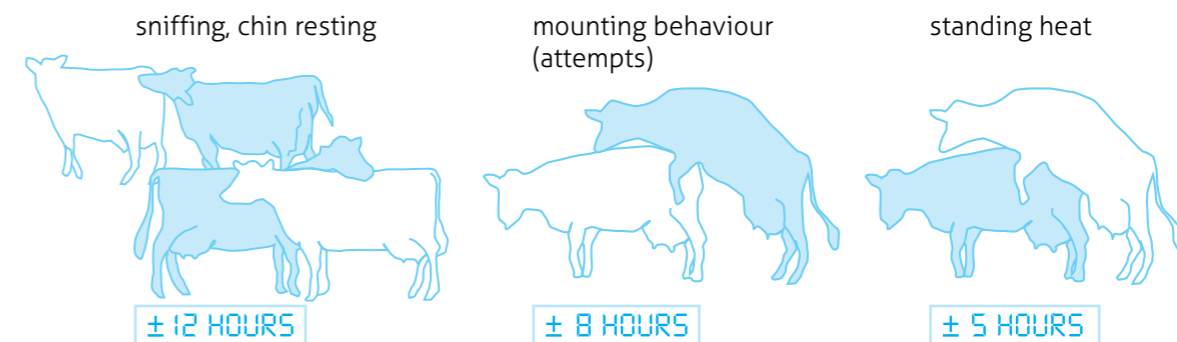
1 The Semex ai24™ Smarttag accurately detects heat or possible health problems 24/7.

2 The antenna continuously receives the data from each individual animal, long range.

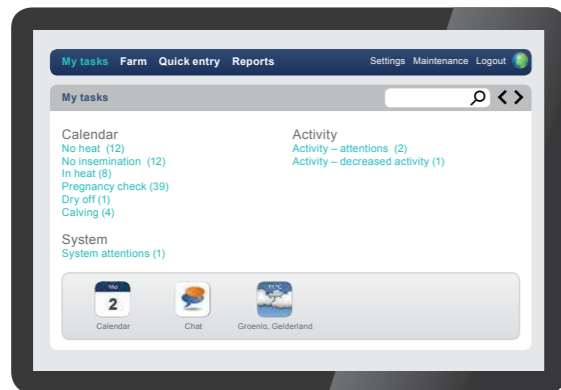
3 The system provides an attention alert in the event of significantly increased activity which indicates heat, or when changes in behaviour occur which indicate possible health problems.

4 You view the data concerning animals in heat and/or those that require extra attention via your PC, tablet or smartphone.

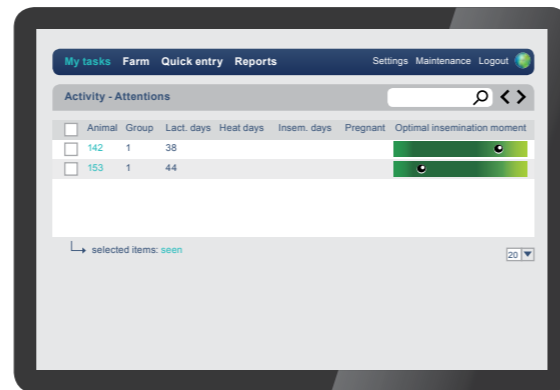
The cow's heat cycle



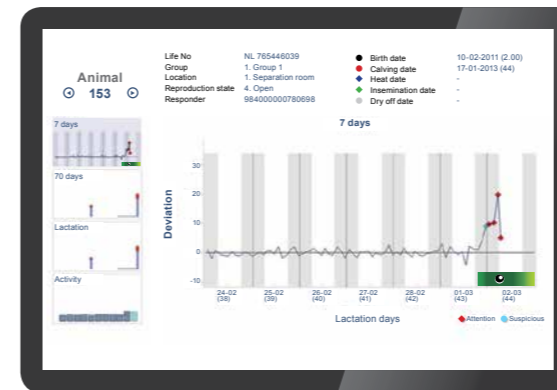
Interface Semex ai24™ Heat Detection with Health Monitoring



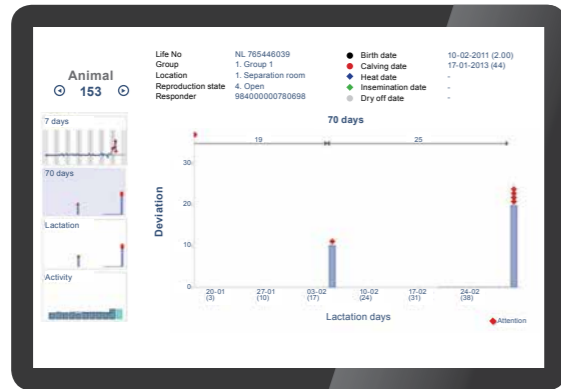
System overview
My tasks



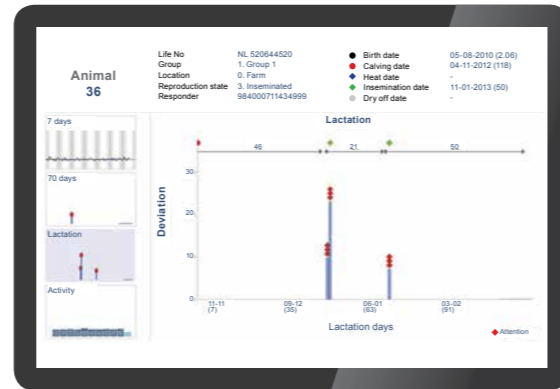
Heat detection
Optimum insemination time



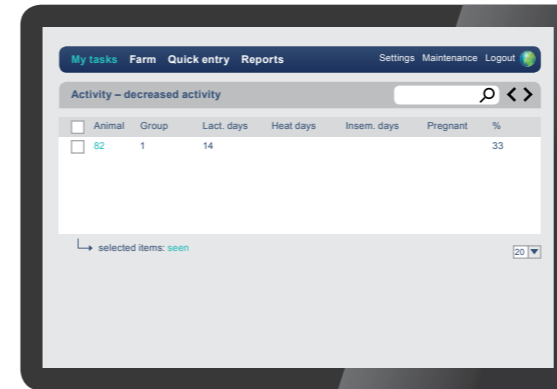
Heat detection
Graph 7 days: heat expression activity preceding week



Heat detection
Graph 70 days: heat expression activity during approx. 3 cycles



Heat detection
Graph lactation: heat expression activity during entire lactation of the animal



Activity monitoring*
Overview reduced activity



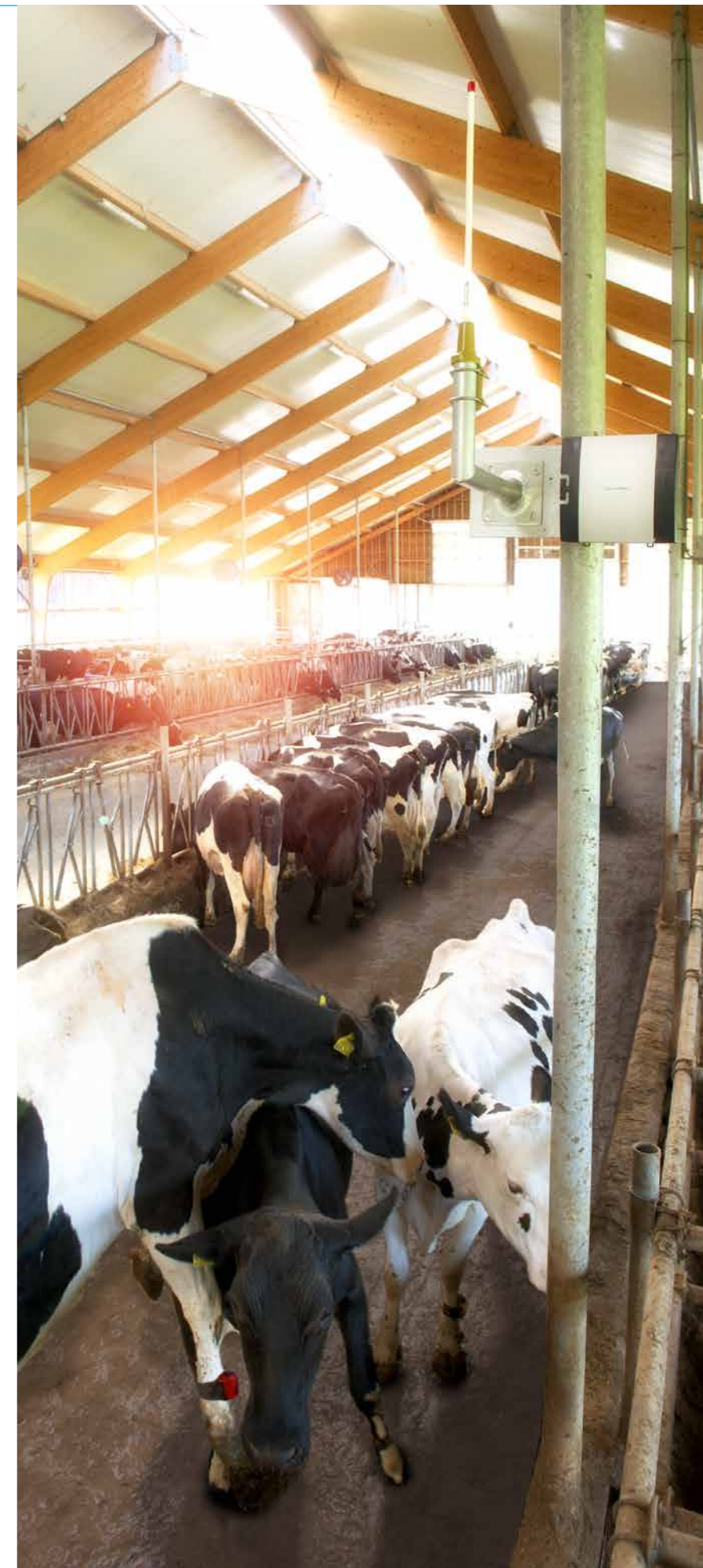
Activity monitoring*
Graph reduced activity: leg activity preceding 10 days



Eating monitoring**
Overview reduced eating behaviour



Eating monitoring**
Graph reduced eating behaviour: eating behaviour preceding 10 days



* Only visible for Semex ai24™ Smarttag Leg ** Only visible for Semex ai24™ Smarttag Neck



Genetics for Life®

World renown for delivering high quality bovine genetics, Semex has been solving problems and satisfying producers through its distributor network for over 35 years. Working shoulder-to-shoulder with their clients, Semex's staff is the best trained in the industry, offering profitable genetic solutions for producers worldwide. With a successful history as its foundation, Semex is committed to ensuring success for its clients, owners, employees and partners for generations to come.

Semex ai24™

As a herd manager you know how valuable your time is. You need time to feed cows, time to milk cows and time to breed cows. Most importantly, though, you need that precious time away from the cows to do the things that mean most in your life. Semex's ai24™ whole herd management solution with both health monitoring and heat detection capabilities can't put more hours in your day, but it can put more time on your side.

It's time for Semex ai24™.



Semex ai24™
representing:

Nedap Livestock Management
P.O. Box 104
7140 AC Groenlo
The Netherlands

T +31 (0)544 471 444
E livestockmanagement@nedap.com

 **Semex ai24™**
Put Time On Your Side™

nedap.com/livestockmanagement