

SenseHub Dairy User Guide

SenseHub™ DAIRY

MSD Animal Health

Public

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1 SenseHub™

SenseHub™ is a sophisticated, modular, cow monitoring solution that delivers actionable information on the reproductive, health, nutritional, and wellbeing status of individual cows and groups. With SenseHub™, dairy farmers can make data-driven decisions for maximized productivity. It offers a choice of neck or ear tags along with varied application plan levels, payment options, and user devices. All components can be expanded or changed to fit changing needs. Simple to install, use and maintain, and easily upgradable, SenseHub™ delivers value from the start, with long-term investment protection.

SenseHub™ offers farmers a new way to use advanced cow monitoring to improve the productivity and efficiency of their farm. Unique features and capabilities of SenseHub™ include:

- Unmatched heat, estrus, detection accuracy, with precision insemination timing guidance.
- Market-leading health monitoring and insight at the individual cow and group levels.
- An advanced solution from the global market-leaders in cow monitoring and livestock identification and based on technology and products proven on millions of cows worldwide.
- Extensive flexibility and choice of form factors, payment plan levels, user devices, and payment options.
- The first cow monitoring system supporting multiple tag form factors – ear and neck Tags.
- Best-in-class interface that enables easy and efficient use, along with simple configuration to suit different farms and management practices.

Assemble the SenseHub™ solution package to best suit the needs of your farm. With a choice of neck tag or ear tag, application plan levels, user devices, and payment plans, in addition to the flexibility to change the package at any time according to your needs. SenseHub™ always makes sense for your business and operation.

1.1 Safety First

In addition to always following all local codes and regulations, remember to always place wiring in such a way that it is distant from the natural curiosity of cows.

WARNING

Always follow all local codes and regulations when working with electricity and on ladders.

1.2 Conventions Used in this Manual

This manual is written to help technicians install and help Farmers use the SenseHub™ System. The following conventions are used throughout:

NOTE

Note identifies information that is of interest or is important.

CAUTION

Caution identifies an item or items that may cause harm to equipment or data.

WARNING

Warning identifies an item or items that may cause personal injury or loss of data.

There are currently several different Application Plans available for the SenseHub™ System:

- Essential – RFID Tags and Report Generator
- Young Stock – Monitoring of calves from birth to 12 months of age. This is a separate plan in addition to one of the adult plans, Starter, Advanced, or Premium.
- Starter – Reproduction Monitoring
- Advanced – Reproduction and Health Monitoring
- Premium – Reproduction, Health ,Group, Milk Monitoring, and Report Generator
- Lifetime – Whole life monitoring from Calf to Cow

NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

There are also currently two different payment plans:

- Go – Farms using this payment plan are paying a monthly fee per tag purchased for the farm.
- Up – For this payment plan the tags are covered for 7 years for Monitoring Neck tags and for 5 years for Monitoring Ear Tags.

2 SenseHub™ Setup Guide

This section describes the important first steps after the SenseHub™ System is physically installed on the farm.

2.1 Monitoring Neck Tag Placement

Fit the tags on the cows as soon as possible. Tags need to be on the cow for seven to ten days to gather activity and rumination information. The information collected depends on the type of tags in use. This baseline of information is used to judge behavior in the future.

NOTE

Two people are needed to fit the tags on the cows.

WARNING

Extreme care and caution must be exercised when attaching tags/collars to cows.

2.1.1 Attaching Monitoring Neck Tags to Cows

Read these instructions from start to finish before attempting this procedure.

1. Remove the collar from the box.



NOTE

The tag is already mounted and positioned on the collar.

2. Record the Tag Number and Cow Number

   When assembling the tags, record the tag number, cow number, group, and status in a list.

Keep this list handy since the information will be used later. This table may be printed as required.

Cow Number	Tag Number	Group

3. Stand on the right side of the cow and pass the collar with the tag over the top of the cow.



4. Pay attention to; the correct amount of slack, 2 fingers at the top of the cow's neck, and that the tag is placed directly behind the left ear.



CAUTION

Correct attachment of the Monitoring Neck tags is vital to their performance. Tags that are placed too high on the cow or too low on

the cow or on the wrong side of the cow result in inaccurate data collection.



For a video demonstration on how to mount Monitoring Neck tags on cows in headlocks go here.

For a video demonstration on how to mount Monitoring Neck tags on cows in treatment stalls go here.

For a video demonstration on how to mount Monitoring Neck tags on cows in the milking parlor go here.

2.1.2 Removing Monitoring Neck Tags from Cows

From time to time it will be necessary to remove tags from cows. Read these steps from start to finish before attempting to remove tags.

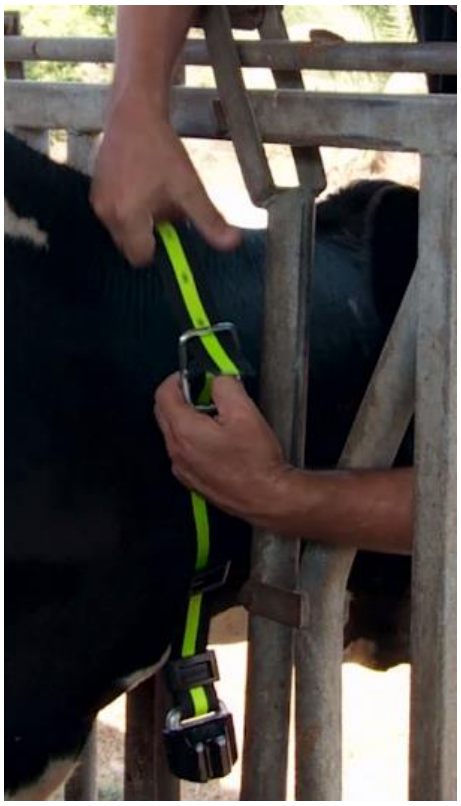
NOTE

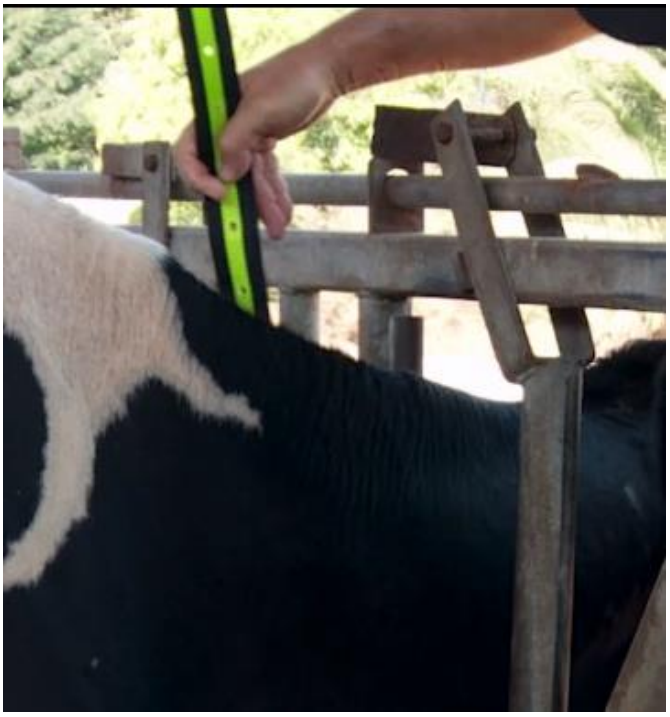
Two people are needed to remove Monitoring Neck tags from cows.

WARNING

Extreme care and caution must be exercised when removing tags/collars from cows.

- Unbuckle the buckle and pull the tag away from the left side of the cow over the headlocks.





For a video demonstration on how to mount Neck Tag/Monitoring Neck tags on cows in headlocks go here.

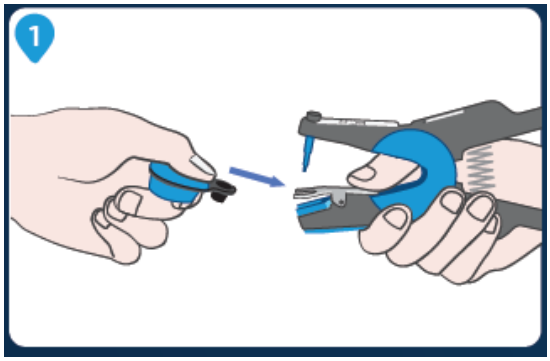
For a video demonstration on how to mount Neck Tag/Monitoring Neck tags on cows in treatment stalls go here.

For a video demonstration on how to mount Neck Tag/Monitoring Neck tags on cows in the milking parlor go here.

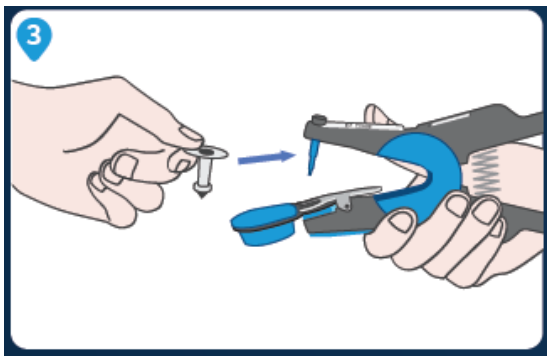
2.1.3 Attaching Monitoring Ear Tags to Cows

This explains how to attach a Monitoring Ear Tag as the only tag in the ear of the cow. Read these instructions from start to finish before attempting this procedure.

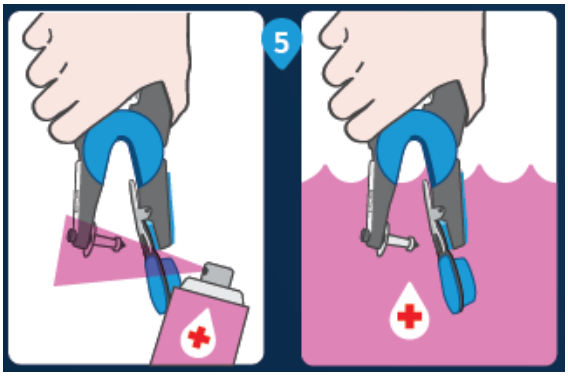
1. Attach the Monitoring Ear Tag to the Universal Ear Tag Applicator.



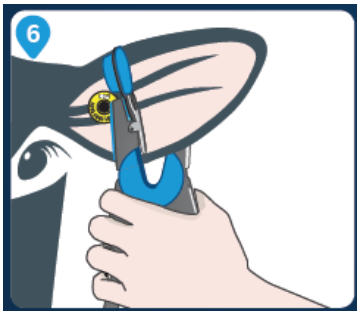
2. Attach the back of the tag to the Universal Ear Tag Applicator.



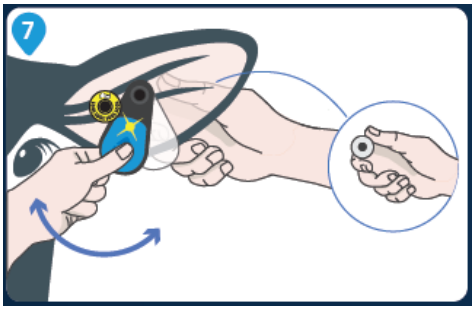
3. Sterilize the tag either with spray or by Immersing the loaded Tag Applicator in a sterilizing solution.



4. Attach the Monitoring Ear Tag to the ear of the cow.



5. Swing the tag back and forth while holding the back.



6. Enter the Tag and Cow information on this sticker found on the box of tags so they can be entered into the SenseHub™ application later.



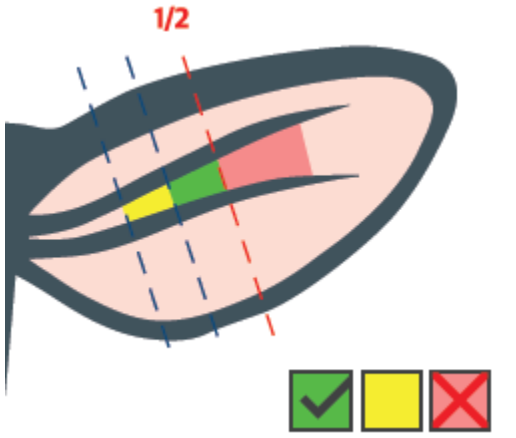
2.1.4 How to Place Monitoring Ear Tags to Cows as a Second Tag

When it comes time to attach the Monitoring Ear Tag to the cow there may already be a tag in place in the ear. Follow these rules when deciding where to place the Monitoring Ear Tag in the ear for the best results.

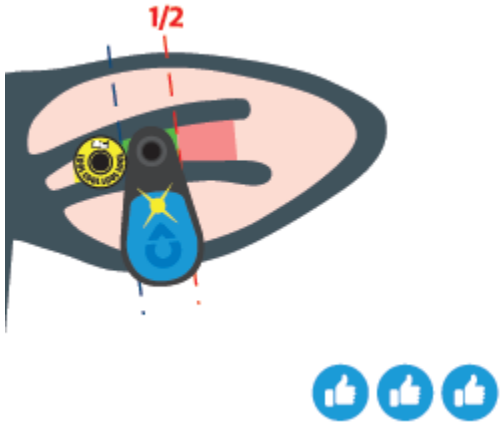
NOTE

Placing the Monitoring Ear Tag too close to the head of the cow may cause the tag to get caught in the ear and limit the freedom of motion on the tag.

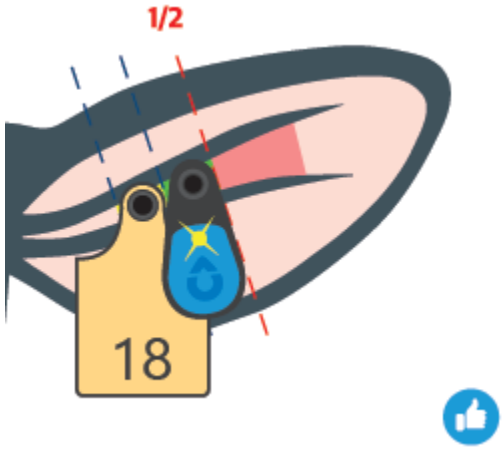
1. The picture below describes the entire area of the ear of the cow and identifies the best place to attach the Monitoring Ear Tag.



2. The best place for the Monitoring Ear Tag is directly on the center line, ½, of the ear.



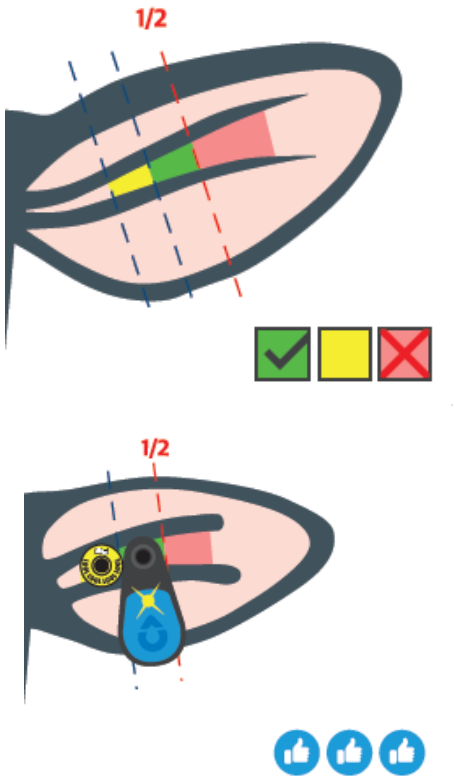
3. Place the Monitoring Ear Tag in the green zone and the visual tag between the Ear Tag and the head of the calf.



4. When attaching the tags to the cows follow the instructions as explained in Attaching Monitoring Ear Tags to Cows.

2.1.5 How to Place Monitoring Ear Tags on Young Stock

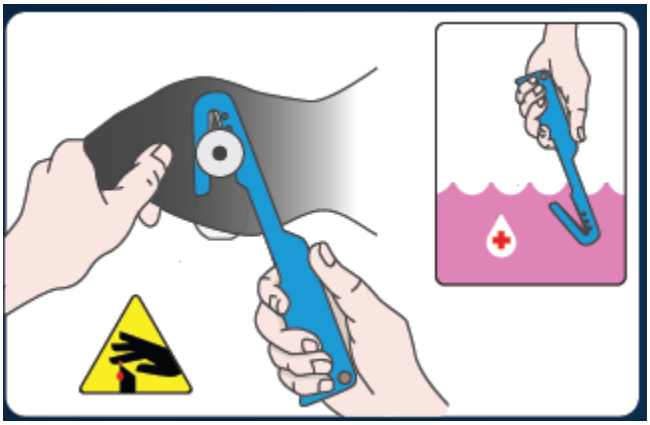
It is important to place Monitoring Ear Tags on Young Stock as described in the pictures below. Notice the difference.



2.1.6 How to Remove Monitoring Ear Tags

When removing the Monitoring Ear Tag, if the animal is culled for example, follow these instructions.

1. Grasp the ear of the cow firmly.
2. Using the Allflex Safety Ear Tag Removal tool, slip the blade of the tool between the base of the small male side and the ear.



3. Pull the tool firmly and quickly to cut through the shaft of the small male pin and remove the Monitoring Ear Tag from the cow.
4. Make sure to clean the Tag Removal tool between uses.

NOTE

If any irritation occurs to the hole, consult your veterinarian for the appropriate treatment.

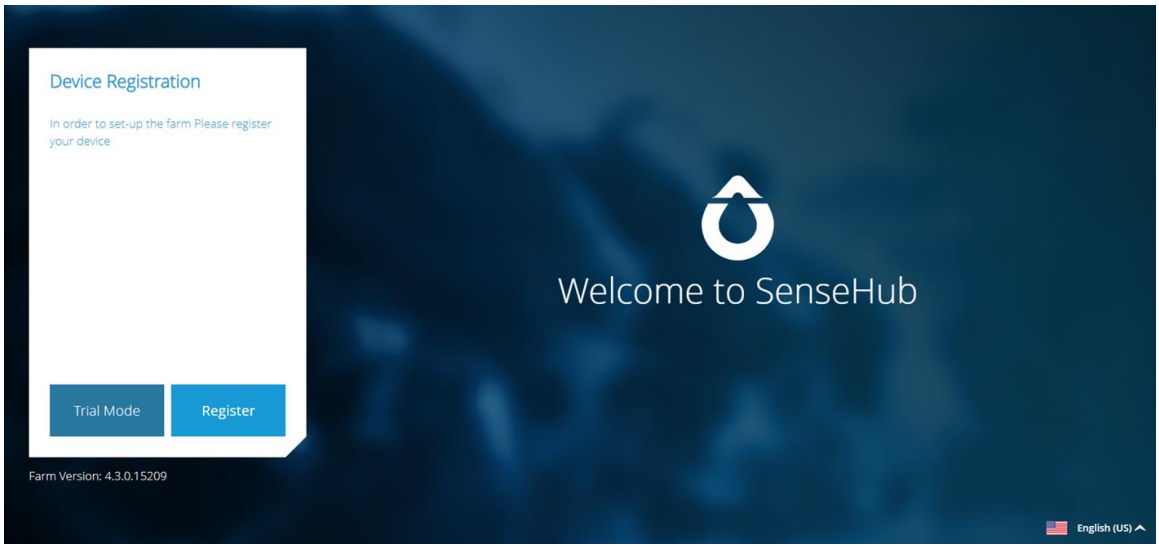
2.2 SenseHub™ Basic Configuration

Follow these steps to configure your SenseHub™ system.

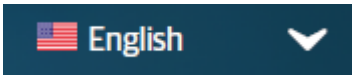
1. Download and install the SenseHub™ Web Application from here. This application allows a local network connection to your SenseHub™ System. Installation instructions can be found on page 24.

2. Double-click on the SenseHub™ Web Application 

Icon, the application launches. The PC used to run the Web Application should be connected to the Internet.



   a. The application connects to the installed SenseHub™ Controller and begins the registration process.

   b. Choose the Language 

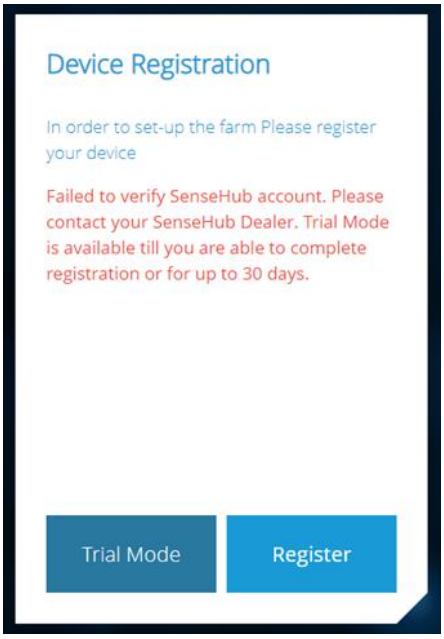
you wish to use for the Registration Process.

      i. The Emails sent during the verification process are sent according to the language chosen here.

   c. Click Register to begin the Registration Process or choose Trial Mode to enter Trial Mode.

   d. The Farm Version currently running on the Controller is displayed. This is information that you might need for support.

If the internet is not yet available on the farm you may see this message directing, you to enter Trial Mode until registration is available and can be completed.

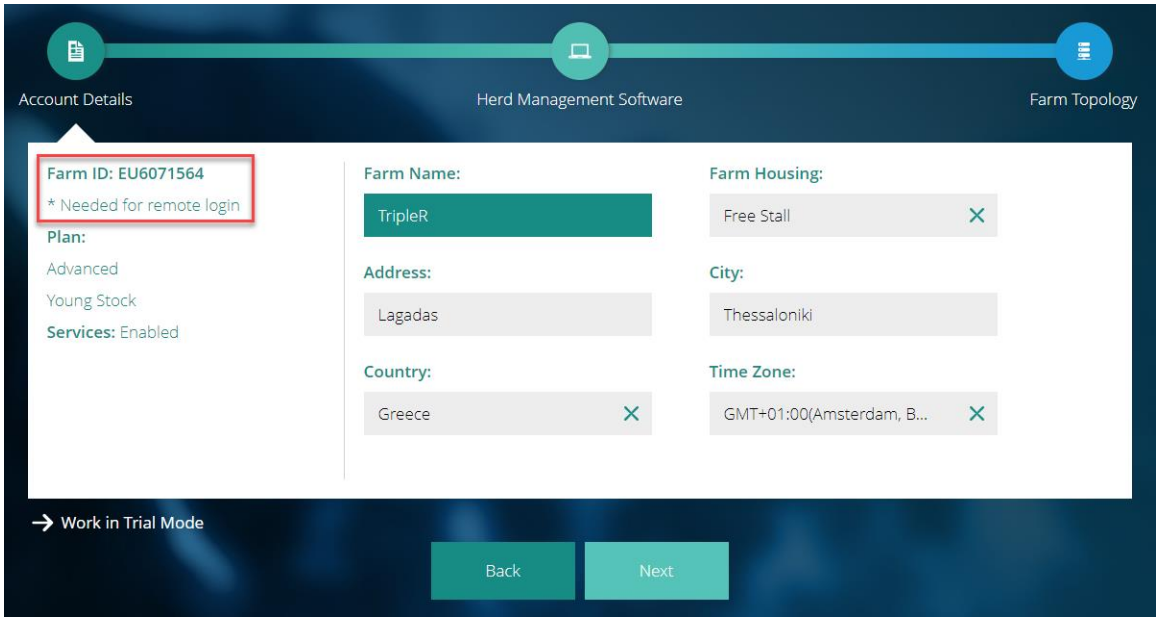


Trial Mode is available for 30 days after which Configuration and Registration must be completed.

NOTE

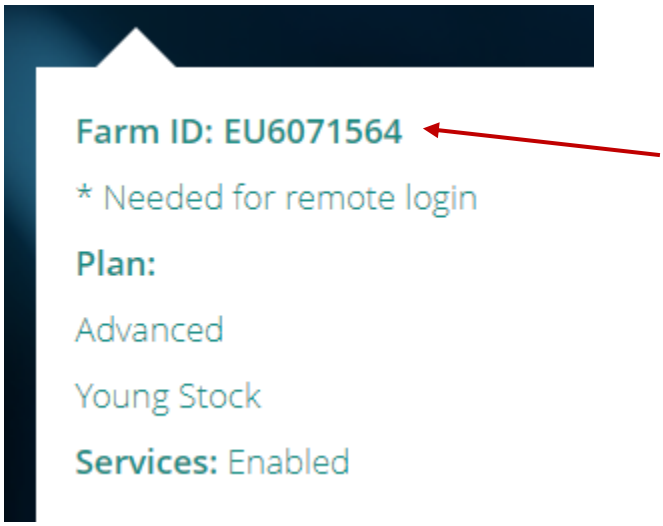
When System Registration is completed after Trial Mode, reports and graphs that were available during Trial Mode may not be available after registration is completed as these depend on the Application Plan

3. Review/complete the Account Details section, When finished click Next.



NOTE

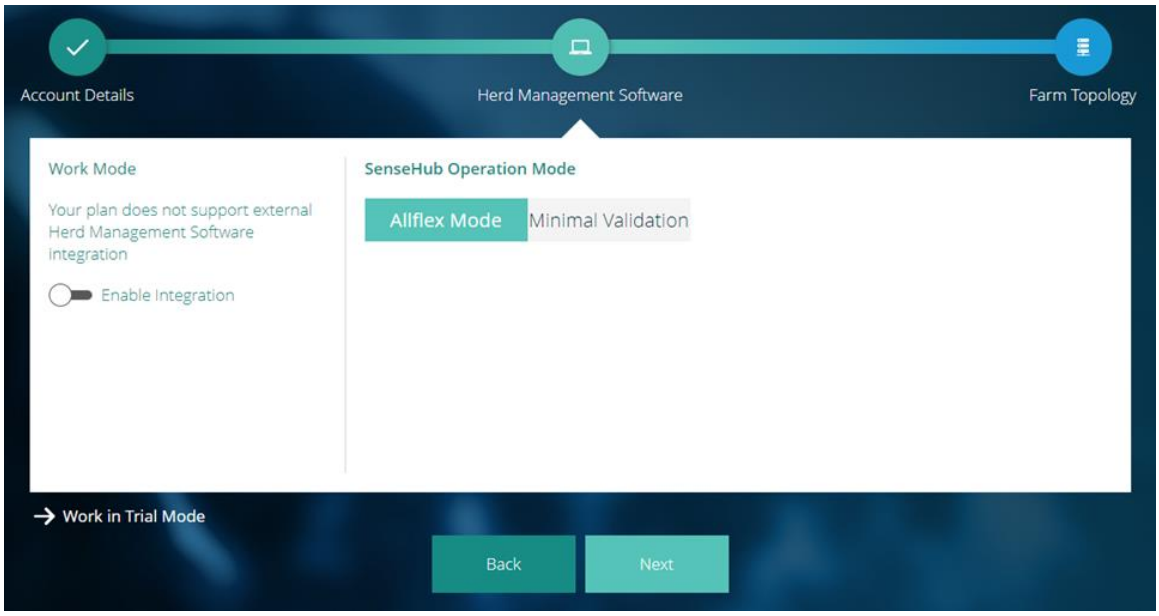
Record the Farm ID as written. This Identification String is required to log in to your SenseHub™ Controller.



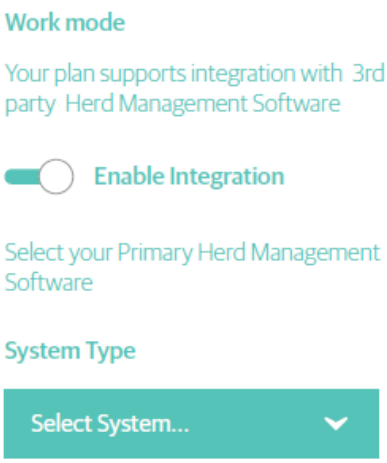
The Farm ID is very important for Remote and Mobile Connections to your SenseHub System.

4. Will SenseHub™ be linked to a Herd Management System?

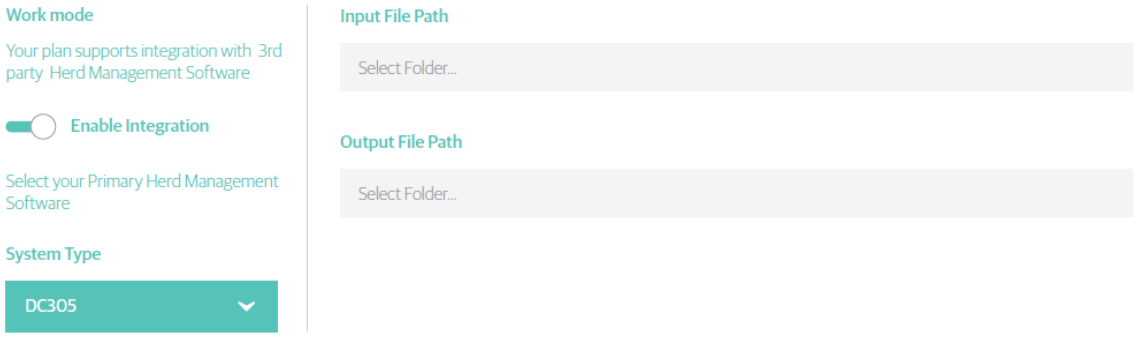
   Is there a Herd Management System in use on the farm and will there be an exchange of data between that system and the SenseHub™ System. If no continue to step 5.



a. If this SenseHub™ system is linked to a Herd Management System, choose that system from the Integration Drop-down menu, and then copy the Registration Key to the correct place in that system.



b. If so, then choose the Herd Management System in use. If you are working with DC 305 or PC Dart configure the Input and Output File paths as well.



When choosing to work in DC305 or PC Dart Modes the input and output file paths must be defined. These are the file paths where DC305 / PC Dart places the Status File, Input File Path, and where SenseHub, Output File Path, places its output files.

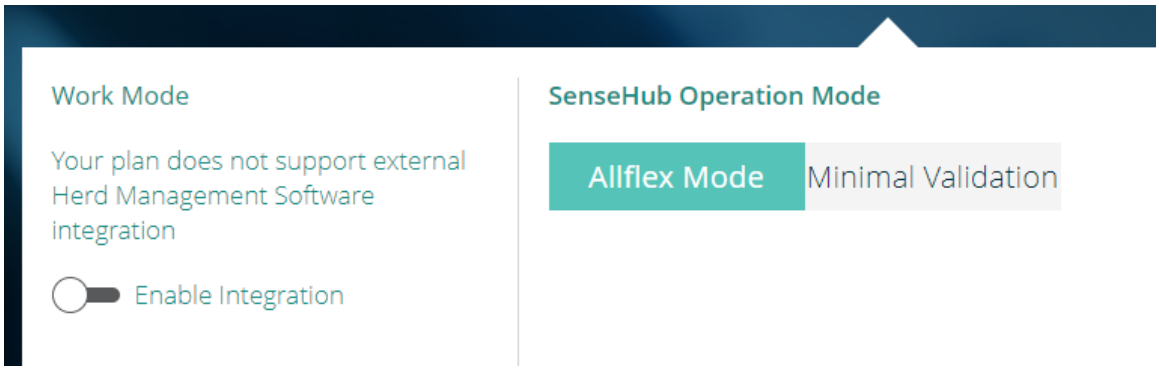
Create the Input and Output file paths on the same PC where the SenseHub Status File Service is installed. The installation is described on page 24.

NOTE

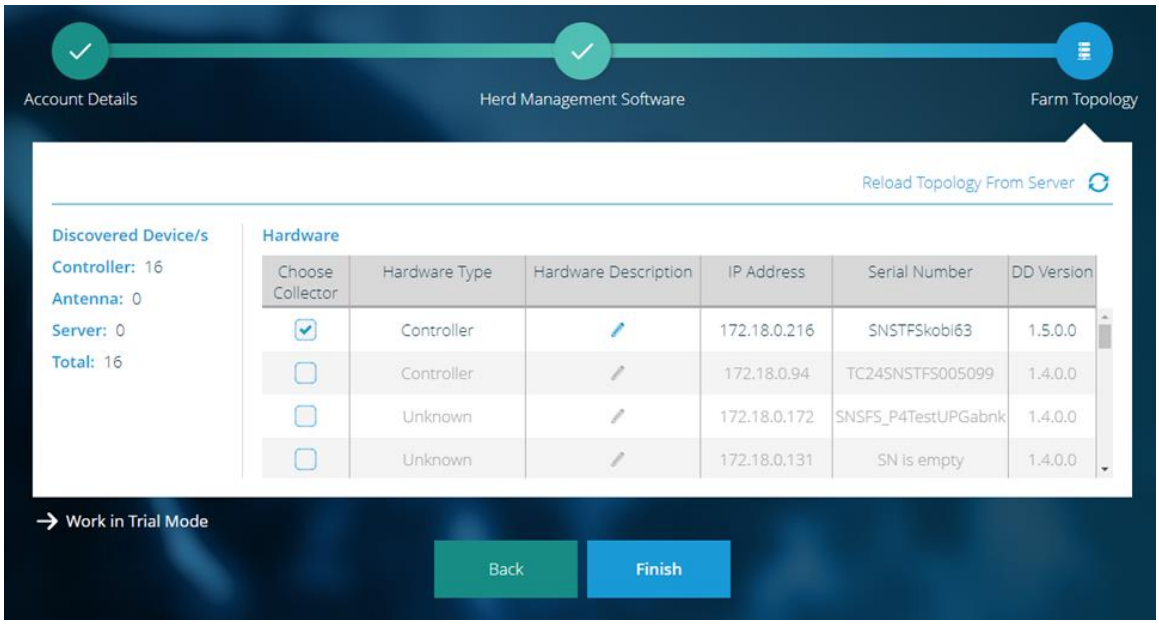
It is highly recommended to browse on the local PC where the SenseHub Status File Service is installed using Windows Explorer to the correct file location and then copy that path to the correct window in the browser as the input or output file path as required.

5. Will the SenseHub™ System work in Allflex or Minimal Validation Mode.

   Allflex Mode is the default system configuration and will give farms the best results. After making your choice, click Next.

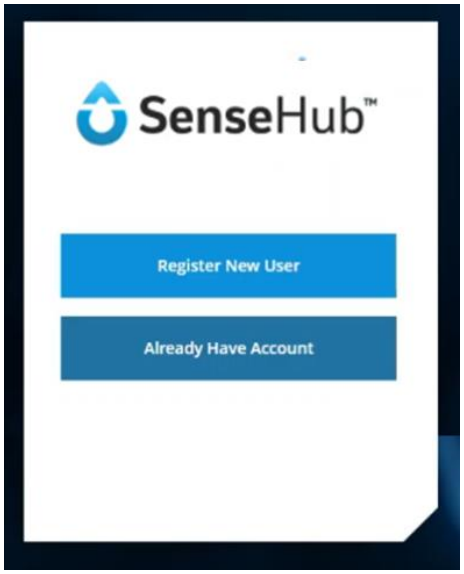


6. Review the SenseHub™ System Farm topology. Give the Controller and Antenna significant names that are associated with where they are installed so they can be found quickly. When complete click Finish.



2.3 SenseHub™ Registration

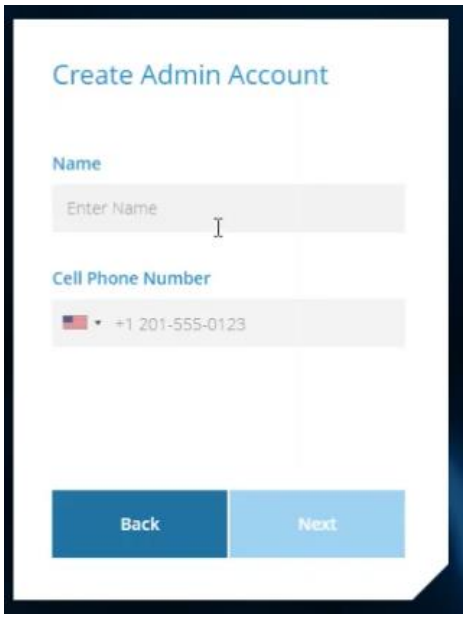
Once completing the configuration section, the system automatically moves to the registration portion of the wizard.



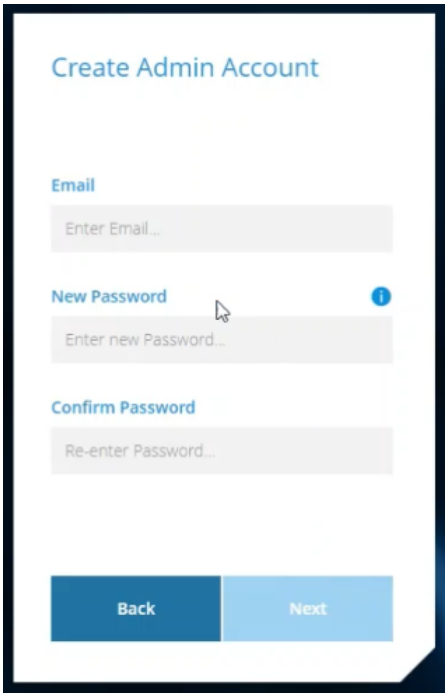
NOTE

When Registering after Trial Mode, all the reports, graphs, and series that were available during Trial Mode may not be available after registration is completed as these depend on the Application Plan in place on the farm.

1. Enter here the Username and Password created for you. Both these fields are mandatory.



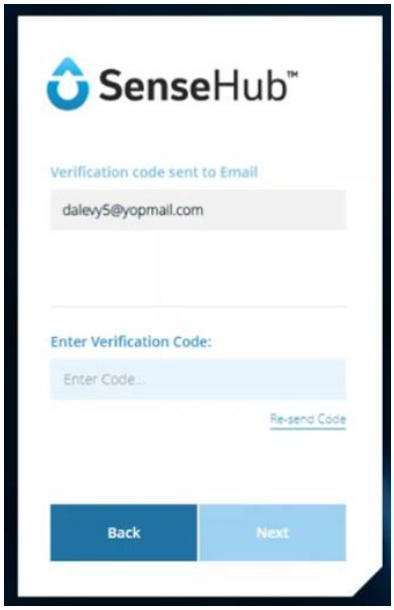
2. Verify/Edit the Account Details.

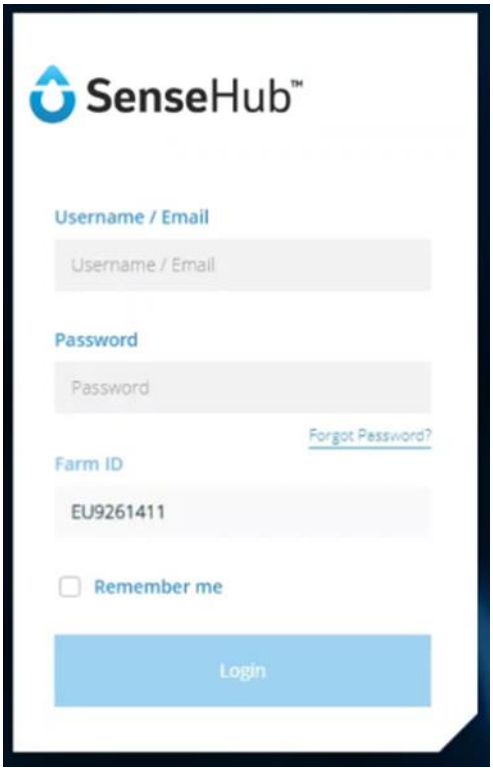


NOTE

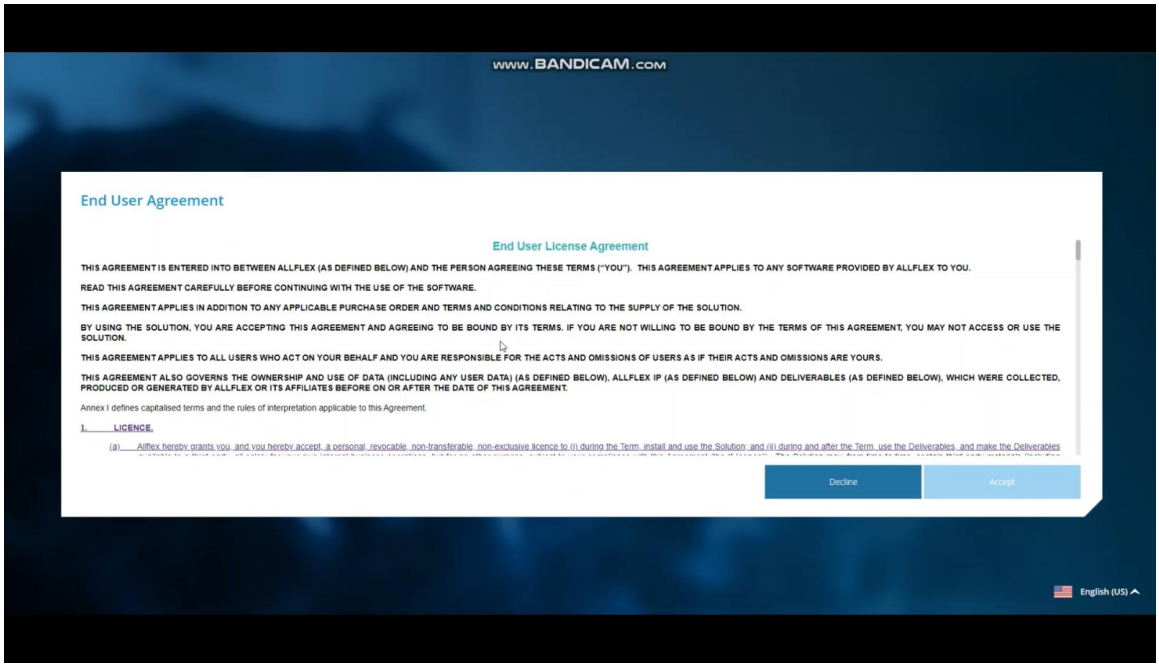
The password must contain at least 8 characters. There must be at least one Capital Letter, one small letter, one symbol, and one number.

3. Enter the verification code. The system will send you a verification code to the Email used during the registration process.



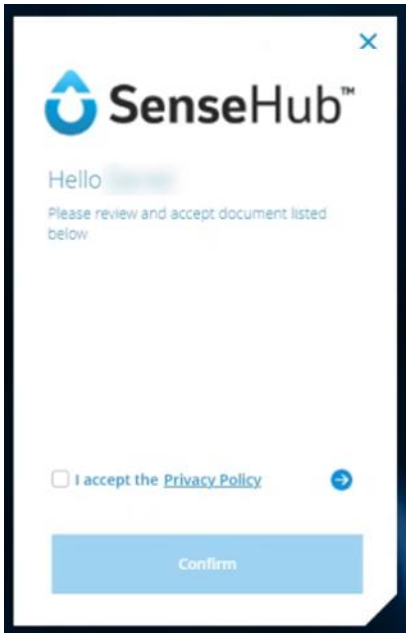


4. When complete you will be asked to sign in.
5. The Admin User is required to read and sign the End User License Agreement.



NOTE

The Farm ID was assigned during Step 3 on page 14. If you have not yet done so record this now.



6. All users are required to read and accept the Privacy Policy.
    a. Mobile Users are required to read and accept the privacy policy from the web before logging in to the mobile application.
7. Registration and Verification are now complete.

2.4 SenseHub™ Mobile Application

The SenseHub™ Mobile Application is available for both Android and Apple Devices.

NOTE

The minimum Android version is 7.X.
The minimum iOS version is 12.X.





NOTE

Trial Mode users will only be able to use the Mobile Application when accessing their SenseHub™ Systems over the local network, LAN.

2.5 Minimum Requirements

Correct operation of SenseHub™ requires these minimum requirements:

Property	Minimum Requirement
Neck Tag Version	The Tag Version used must be 01.34.44.46 or higher. When migrating from Heatime® HR, update the tags before migrating the Farm/Customer
Ear Tag Version	The Tag Version used must be 11.24.12.12 or higher.
DF 230 Version	Version 30.36
DF 240/DF 241 Version	Version 40.36/Version 41.22
Windows PC Minimum Version	Windows 10
Google Chrome Minimum Version	107.0.XXXX.xxx
Video Resolution	The minimum Resolution is 1920x1080
Farm Network Connection	See Farm Network Connection Requirements

Property	Minimum Requirement
SenseHub™ Tools Installer (includes the Web Application)	Download from here
On-premises router/firewall configuration	Ports 22, 80, 443, 2134, 61616 open for outbound communications for TCP, UDP, SSH, FTP, SFTP.

NOTE

For remote connections enter https://st.scrdairy.com/ in your Chrome Browser. Remote connections are only available after completing configuration and Registration, that is detailed above.

2.5.1 Farm Network Connection Requirements

The table below describes the minimum network speeds required both for upload and download on farms where SenseHub is installed.

Number of Animals	Upload Speed Mbps	Download Speed Mbps
Less than 50	0.5	1.5
50-200	2	6
201 – 500	4	8
501 – 1000	5	15
1001 – 5000	25	80
5001 – 15,000	50	150

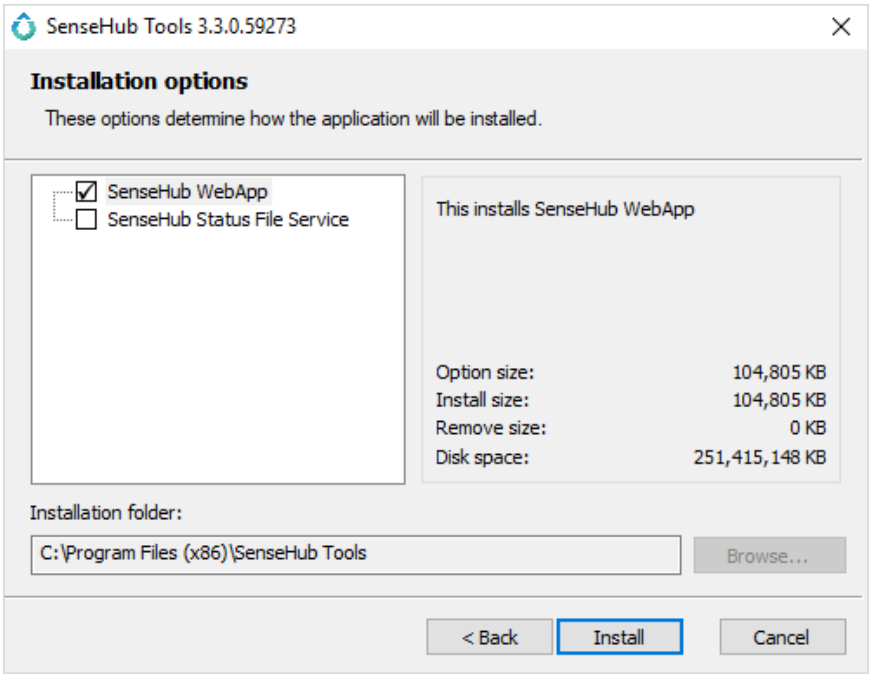
2.6 Using the SenseHub™ Tools Installer

After downloading the SenseHub™ Tools installer run the application to install the SenseHub™ Web Application. Other tools that may be required, like the SenseHub™ Status File Service, are also available in the Tools Installer.

1. Double-click SenseHub Tools – Setup.exe, the installer launches. Click Next to proceed.



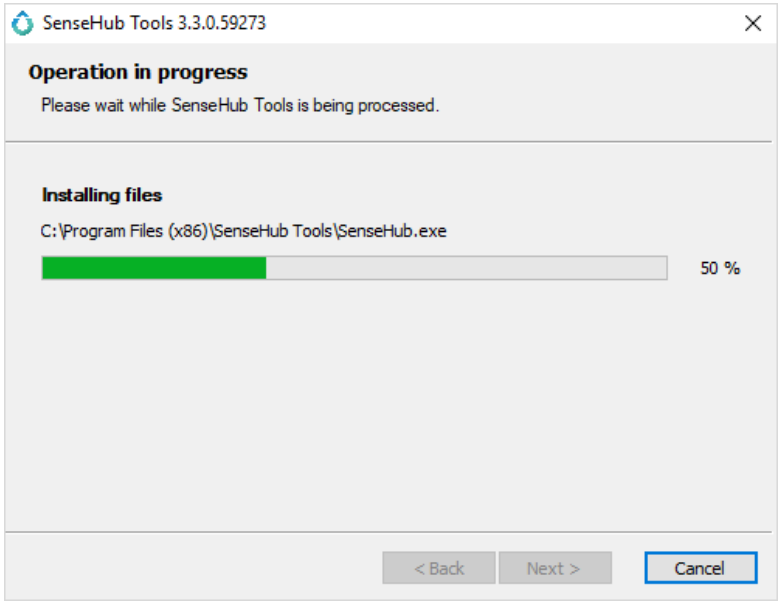
2. Choose the options that you need to install.



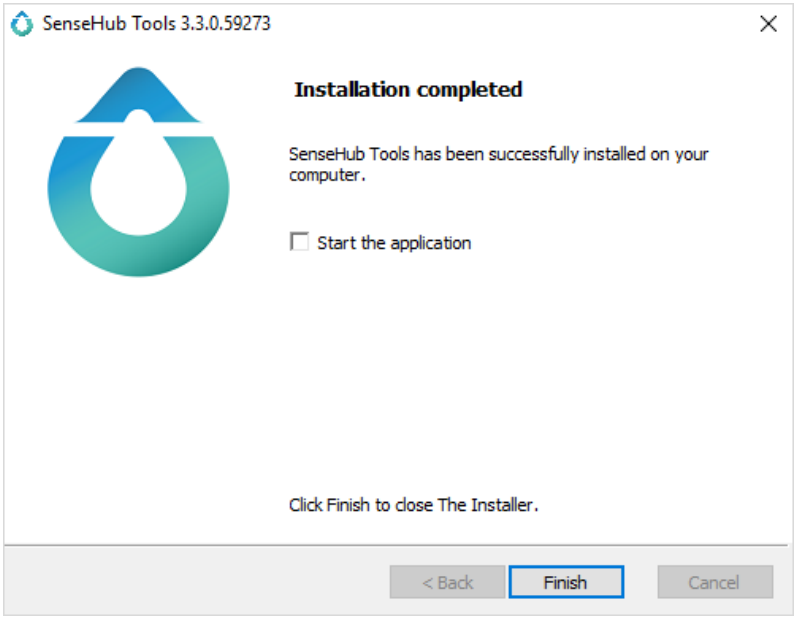
- The SenseHub™ WebApp is the web application required to access the SenseHub Controller.
- The SenseHub Status File Service is the service required to link between Herd Management Systems that use the Status File Protocol, like DC 305, and the SenseHub Controller.

  After choosing all the required components click Install.

3. The installation begins and progresses.



4. When the installation completes a confirmation is displayed. Click Finish to exit the installer.



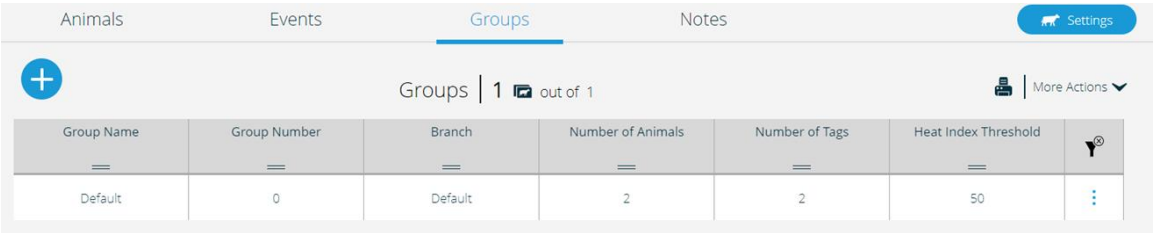
NOTE

It is only necessary to run the installer once. The applications will update automatically once installed.

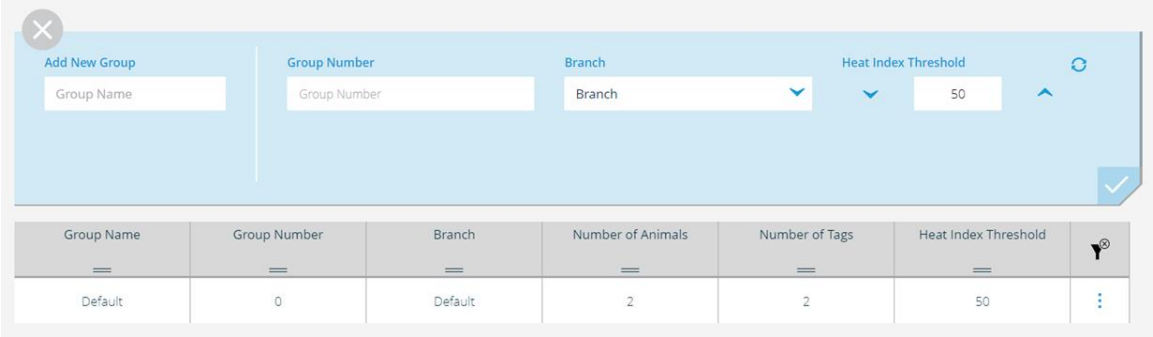
2.7 Creating Groups

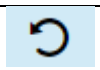
The next step in setting up your SenseHub™ System is to create groups. Create groups that correspond with the actual groups on the farm.

1. From the Dashboard click Farm and then Groups; the Groups page appears.



2. Click to add a group.



Field Name	Description
Group Name	The name of the group. This field is limited to 20 characters.
Group Number	The number of the group. All groups must have a number.
Branch	The economic category of this group. The possible categories are Milking, Dry, Heifers, Calves, or default.
Heat Index Threshold	The Heat Index Threshold for this group. When cows in this group get to a Heat Index that is equal to or above this number the cows will enter the Heat Report.
	Click here to return all the fields to default.

3. When all the information is complete and correct click  to save the Group.

NOTE

Changing the Heat Index Threshold can significantly affect how the SenseHub™ System detects heats and can significantly affect the fertility rates on the farm. Do not change the Heat Index Threshold unless directed by SCR or your SCR Dealer.

2.8 First Time Animal Entry using SenseHub™

Entering your herd for the first time in SenseHub™ system does require some preparation.

NOTE

Farms that are migrating from Heatime HR should use the migration tool. Detailed instructions on how to use the migration tool are found on page 228.

2.8.1 Required Data when Entering Heifers/Cows

This data is required when entering Heifers into SenseHub™:

Heifer Status	Required Information
Ready (for Breeding)	Birthdate
Bred Heifer	Birthdate + Breeding Date and Number
Pregnant Heifer	Birthdate + Effective Breeding Date and Number

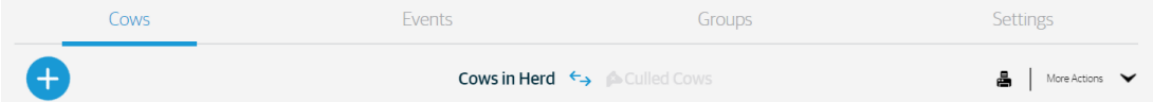
This data is required when entering Cows, with one or more calvings, into SenseHub™

Cow Status	Required Information
Fresh/Ready/Open Cow	Last Calving Date. The cow is classified as Fresh if: • the calving date entered is less than 70 days in the past for first lactation cows. • 60 days in past for second and higher lactation cows.
Inseminated Cow	Last Caving Date, Breeding Date and Number.
Pregnant Cow	Last Caving Date, Effective Breeding Date and Number.
Dry	Last Caving Date, Effective Breeding Date and Number, Dry-off Date.

2.9 Entering Heifers in SenseHub™

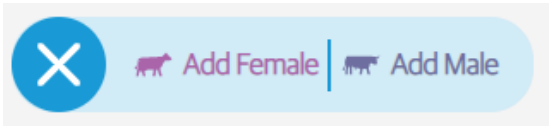
Follow these instructions to enter Heifers of all lactation statuses in SenseHub™.

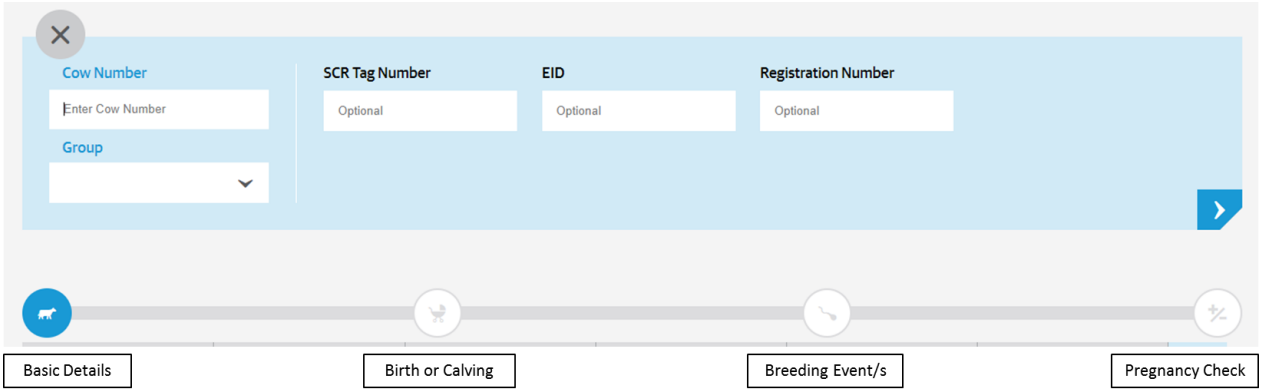
1. From the Dashboard click  Farm and then Animals, the Animals in Herd list appears.



   The list of Culled Animals, once there are Culled Animals from the herd, is also found here.

2. Click  to begin adding a Heifer to the herd.
   a. Choose the gender of the animal.





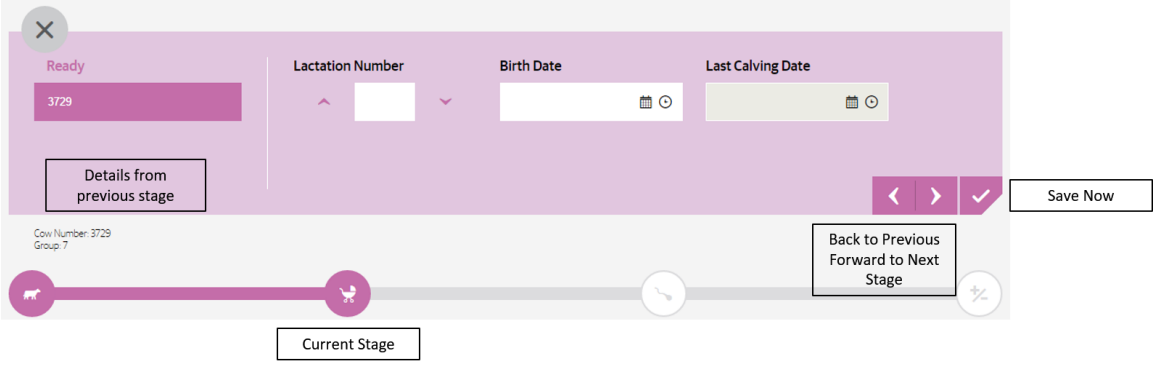
   b. Begin by entering the Basic Details about the Heifer, Cow Number, the Group where the Heifer is housed. The SCR Tag Number, EID Number, if used on the farm, and the Registration Number assigned to the Heifer, may be entered here but they are all optional.

3. Click  Next to add more, required, information.

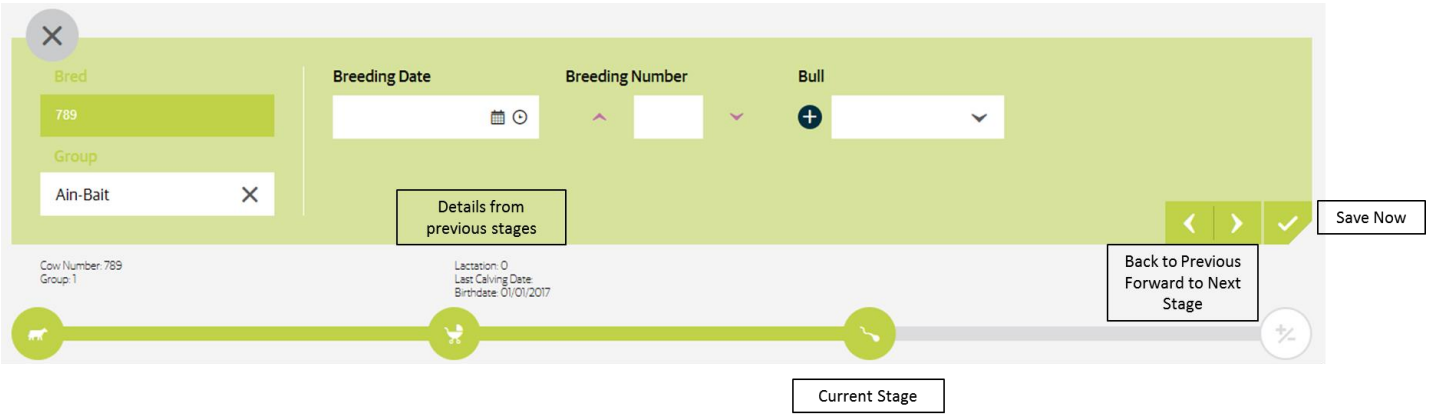
4. Enter here the current Lactation, 0 for Heifers, and the Birthdate of the Heifer.

NOTE

The Birthdate is required for Heifers.



5. When complete click  Save Now, otherwise click  Next.
6. Enter here the most recent Breeding Date and Number. The Bull used is optional and once a Bull is entered it can be chosen from the Drop-down List.



7. When complete click  Save Now, otherwise click  Next.

8. Enter the Pregnancy Check Date and the Result when complete click  Save Now to save the Heifer.

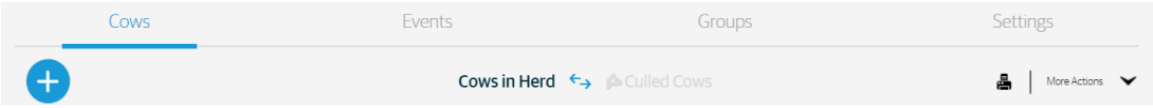


9. The Heifer and all entered details are now saved in SenseHub™.

2.10 Entering Cows in SenseHub™

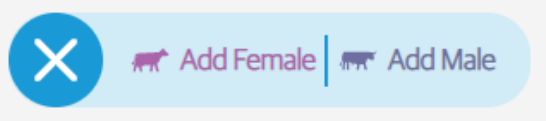
Follow these instructions to enter Cows of all lactations and lactation statuses in SenseHub™.

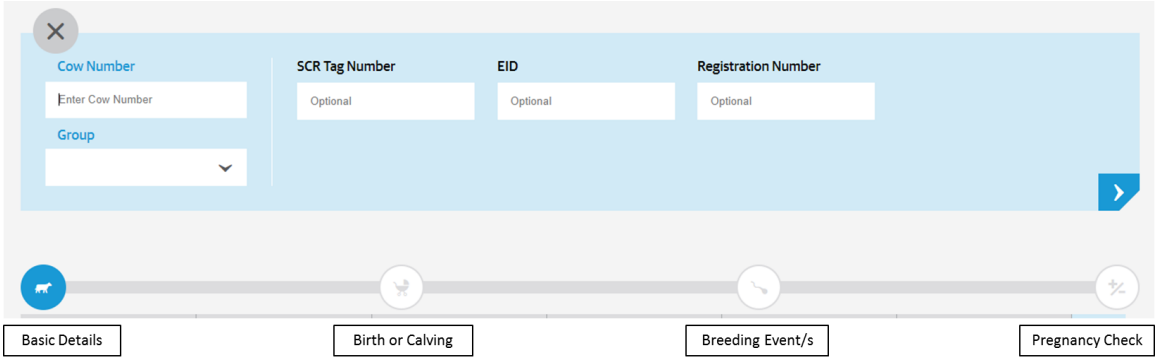
1. From the Dashboard click  Farm and then Animals, the Animals in Herd list appears.



   The list of Culled Animals, once there are Culled Animals from the herd, is also found here.

2. Click  to begin to add a Cow to the herd.
   a. Choose the gender of the animal.

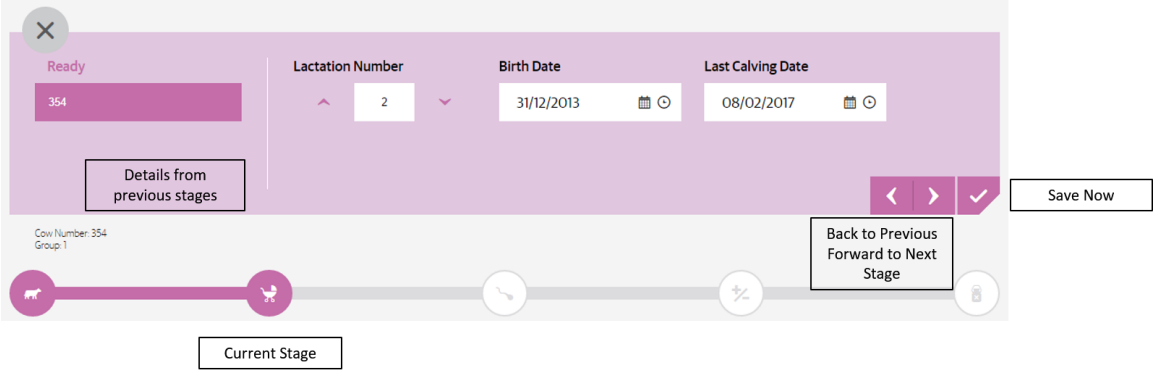




   b. Begin by entering the Basic Details about the Heifer, Cow Number, the Group where the Cow is housed. The SCR Tag Number, EID Number, if used on the farm, and the Registration Number assigned to the Cow, may be entered here but they are all optional.

3. Click  Next to add more, required, information.

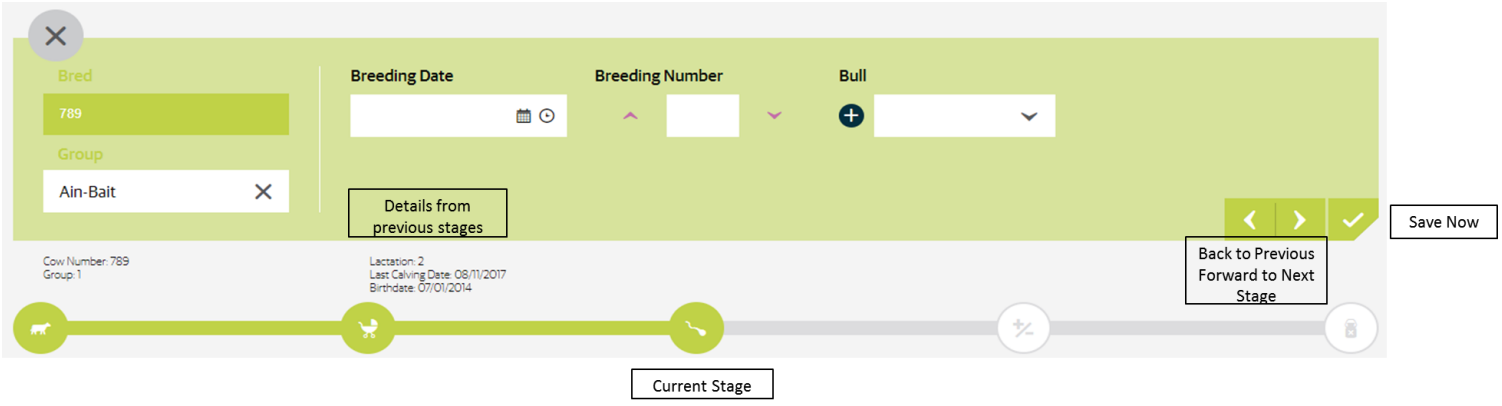
4. Enter the Current Lactation, Birthdate, and Last Calving Date for this cow.



5. When complete click  Save Now, otherwise click  Next.
6. Enter here the most recent Breeding Date and Number. The Bull used is optional and once a Bull is entered it can be chosen from the Drop-down List.

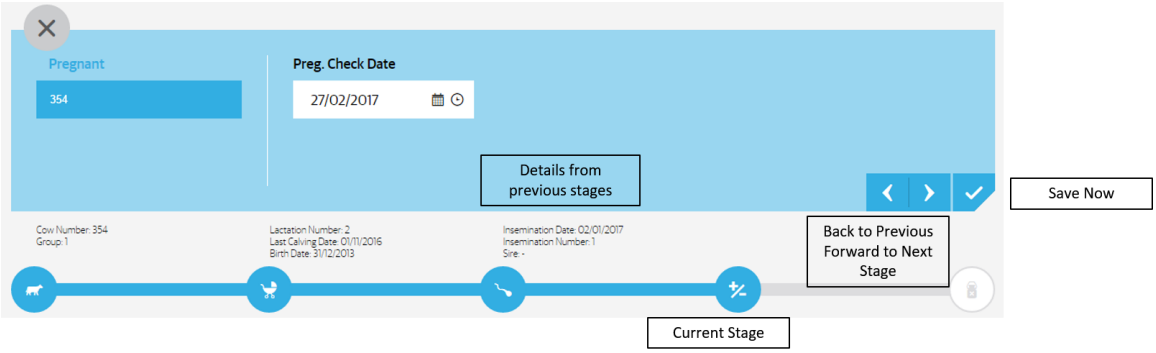
NOTE

When migrating cows for the first time to SenseHub™ data on previous lactations is not needed.



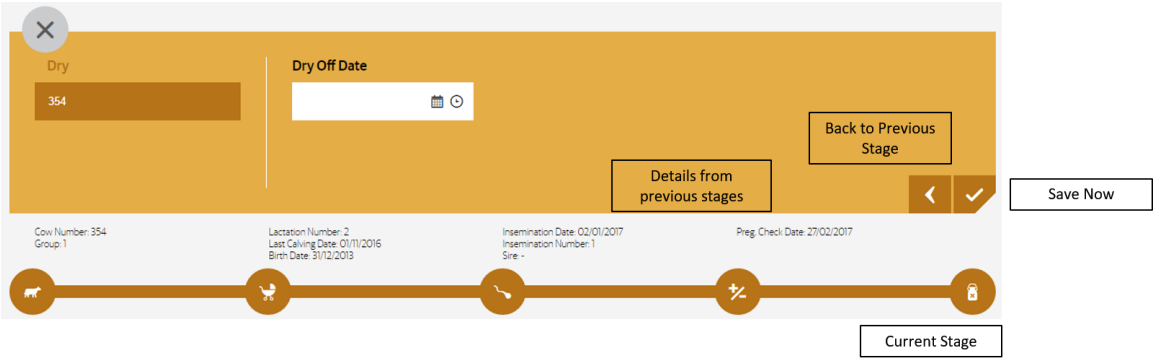
7. When complete click  Save Now, otherwise click  Next

8. Enter the Pregnancy Check Date.



9. When complete click  Save Now, otherwise click  Next

10. Enter the Dry-off date for the cow. When complete click  Save Now.

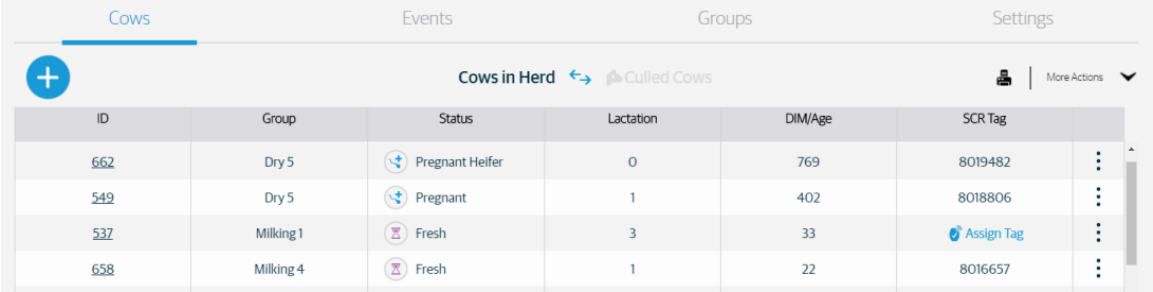


11. The Cow, and all the entered details, are saved in SenseHub™

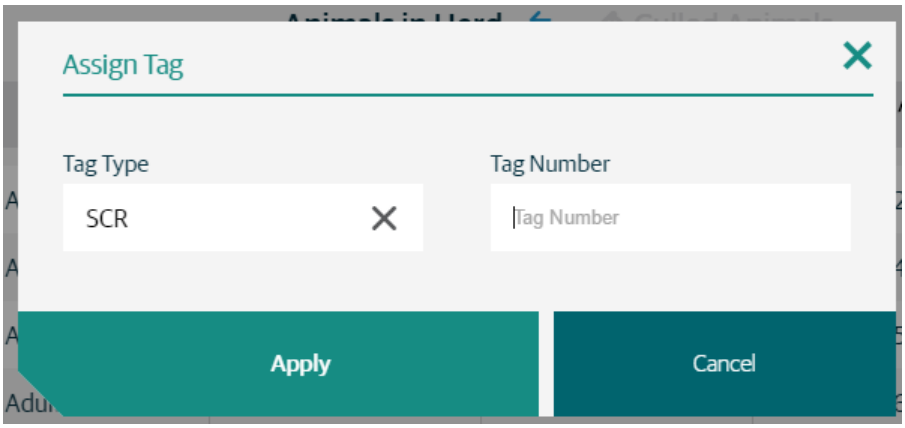
2.11 Pairing Cows and Neck Tag/Ear Tag Tags

After attaching the tags to the cows, configuring, and registering the SenseHub™ system and entering the herd, cows can be paired with their tags.

1. From the Dashboard click Farm and then Cows, the Cows in Herd list appears.



2. Click on Assign Tag; the Tag Assignment Pop-up appears.

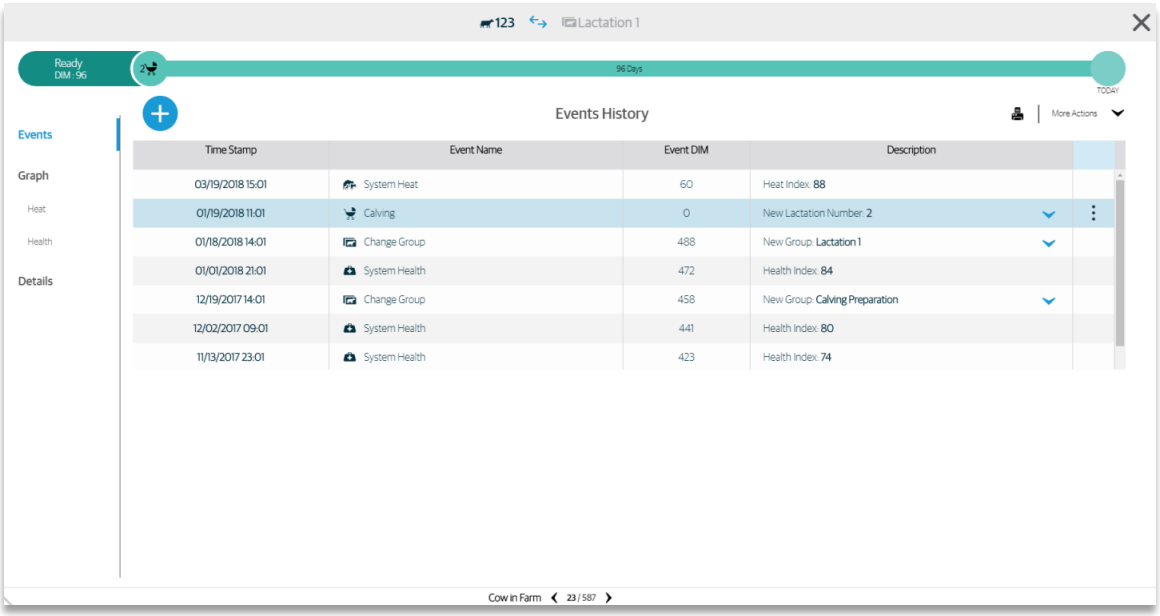


3. Enter the Tag Number and click apply. This tag is now assigned to this cow.

2.12 SenseHub™ Cow Card

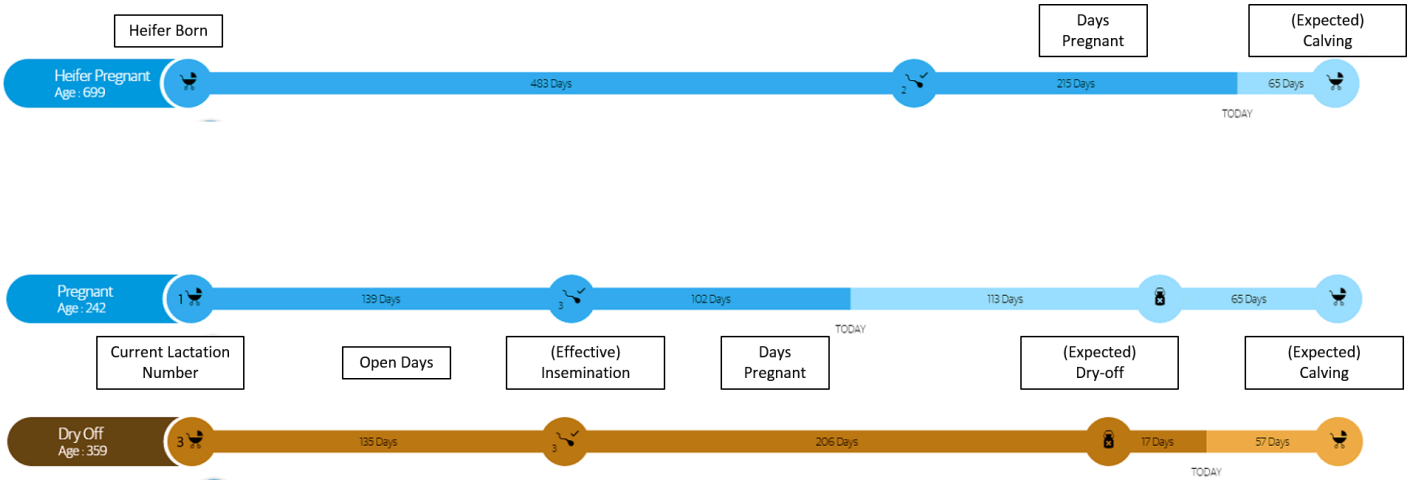
The Cow Card contains a great deal of information about the cow. The Cow Card is made up of the Lactation Timeline and three tabs:

- Events – Important happenings for this cow, grouped by lactation.
- Details – The information and description of the cow.



2.12.1 Timeline

The Lactation Timeline is a graphic summary of the current lactation for the cow. It contains the major events and the total number of days since the last calving for the cow.



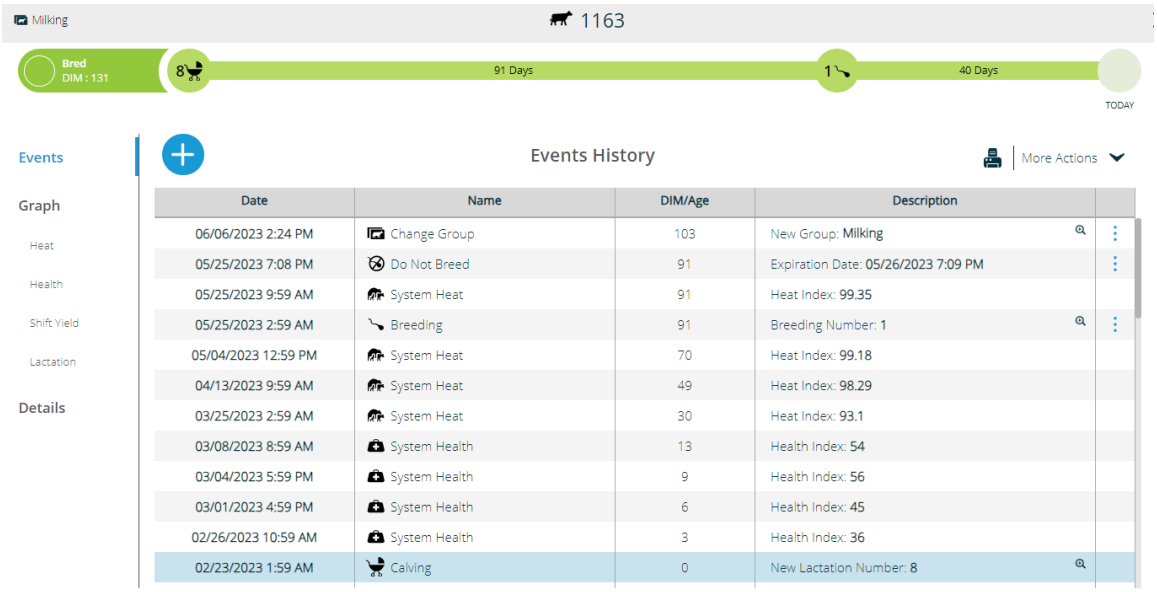
Lactation Timeline Colors are explained in this table.

Color	Icon	Description
		Heifer, From Birth until end of Voluntary Waiting Period.
		Fresh. Cows from Calving till the end of the Voluntary Waiting Period. (configurable)
		Ready/OK. Cows/Heifers ready for insemination.
		Inseminated. Cows/Heifers after they have been inseminated at least once until they are checked for pregnancy.
		Pregnant. Cows/Heifers once they have been recorded after a positive pregnancy check.
		Dry. Cows after they have been dried-off and the Dry-off recorded.

Color	Icon	Description
		Open. Cows/Heifers after they have a recorded negative pregnancy check.

2.12.2 Events

All the happenings to each cow in the herd are called events.



Event Icons	Description
	Calving. This icon appears where a calving is reported.
	Health. This icon appears when the Health Index of a cow falls below the threshold.
	Distress. This icon appears when a cow is determined to be in distress.
	Do Not Breed. Used to designate cows that will not continue to a subsequent lactation.

Event Icons	Description
	Heat. This icon appears when a system heat is registered.
	Insemination. This icon appears where an insemination is entered/recorded for the cow.
	Pregnancy Check. This Icon appears when a cow is checked for pregnancy. Can be positive or negative.
	Culling. This icon appears when the cow is culled, removed from the herd.
	Dry-off. This icon appears where the dry-off is entered/recorded for the cow.
	Change Group. This icon appears when a group change is entered/recorded for the cow
	Abortion. This icon appears when an abortion is entered/recorded for the cow.
	Designate Tag. This icon appears when a tag is assigned to a cow or when a tag already assigned is changed to a different tag.
	Update Tag Firmware. This icon appears when the firmware for a tag is updated successfully.

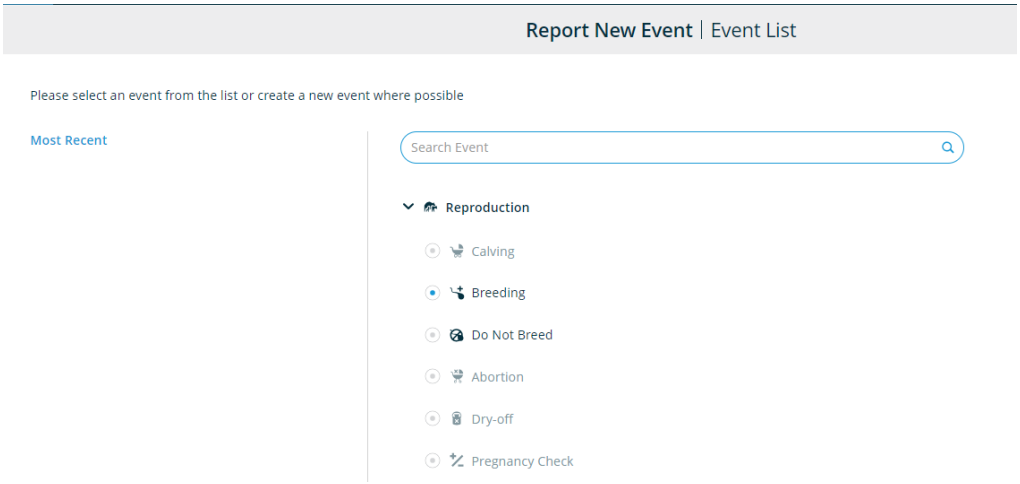
Event Icons	Description
	Remove Tag. This icon appears when a tag is removed from a cow and the event is entered/recorded.

2.12.2.1 Entering Events

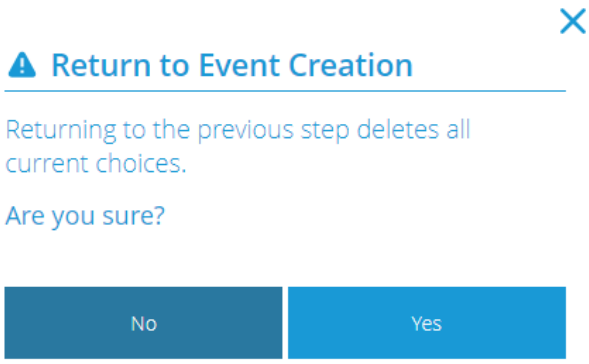
This section describes how to enter Events in the SenseHub™ System. The  Add Event button is found either at the top of the Cow List, Farm → Cows, or at the top of any Cow Card.

1. To Enter an Event click on  Add Event; the Add New Event screen appears.

   Only the allowed events for this point on the Lactation Timeline are available. They appear darker.



2. Choose the desired event and click Next  in the lower right-hand corner.
3. Click Report Event to save the event, or click Previous to return to the previous screen. Animals that were chosen will be un-chosen.

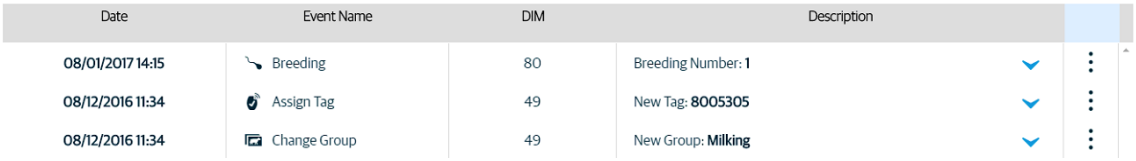


Click on  Report Event to save the event.

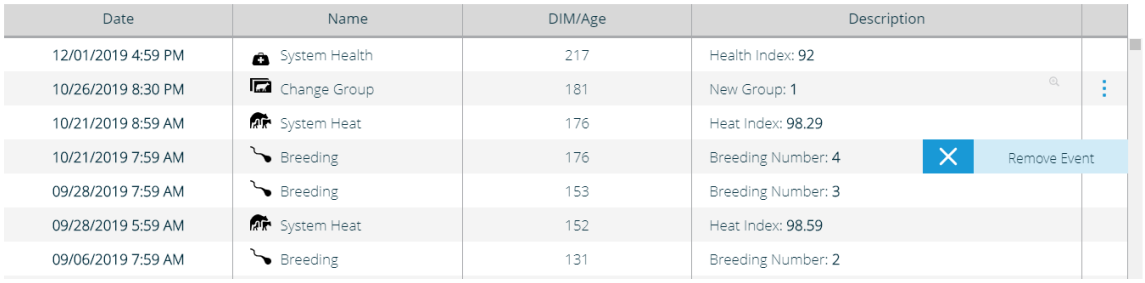
2.12.2.2 Removing Events.

Sometimes events need to be removed. Follow the below to Remove Events.

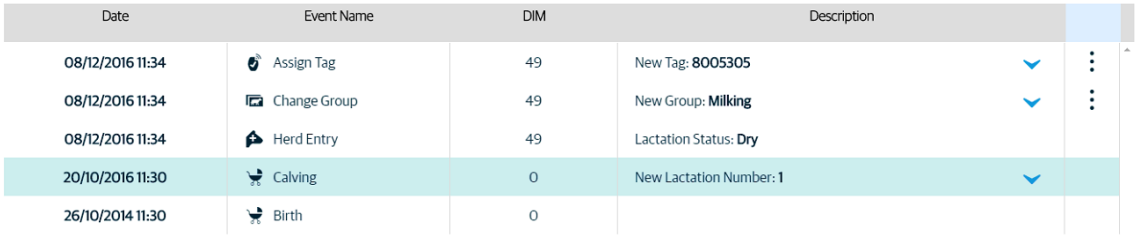
1. Find the desired event on the event tab.



2. Click the Vertical Ellipses and choose Remove Event.



3. The event is removed.



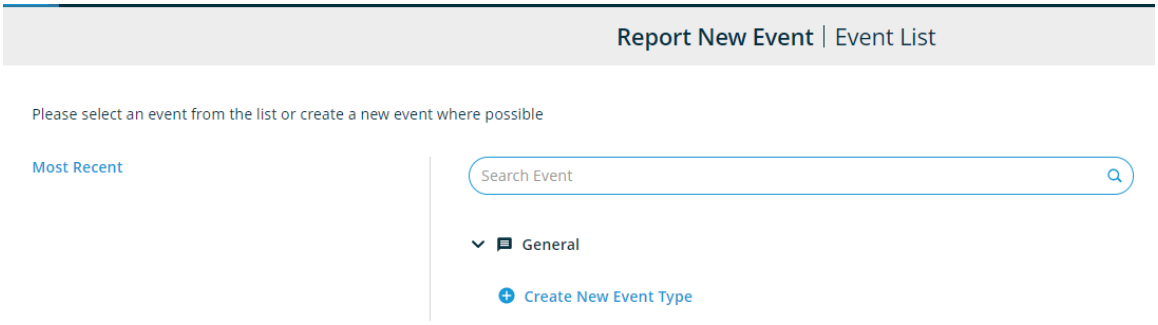
NOTE

It is only possible to remove the last, topmost, event. Past events that affect more recent events, such as inseminations to the more recent pregnancy check, may not be removed.

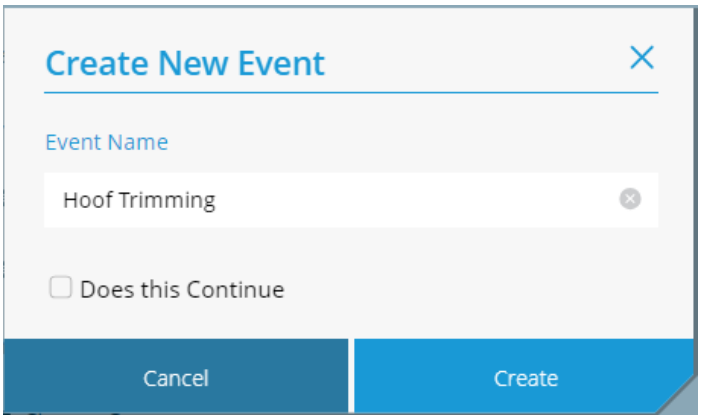
2.12.2.3 Creating New Event Types

SenseHub Farmers can enter and add their own event types.

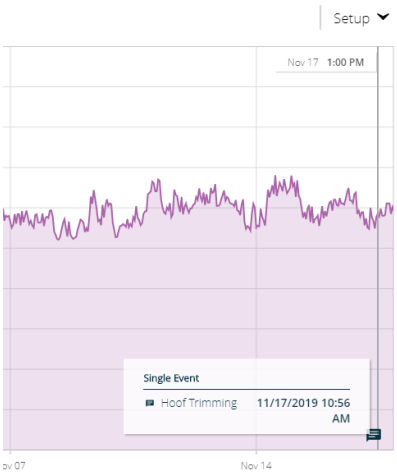
1. Click on  and then choose General Event to add a General Event.



2. Enter the Event Name and if this event continues, exists for more than just today.



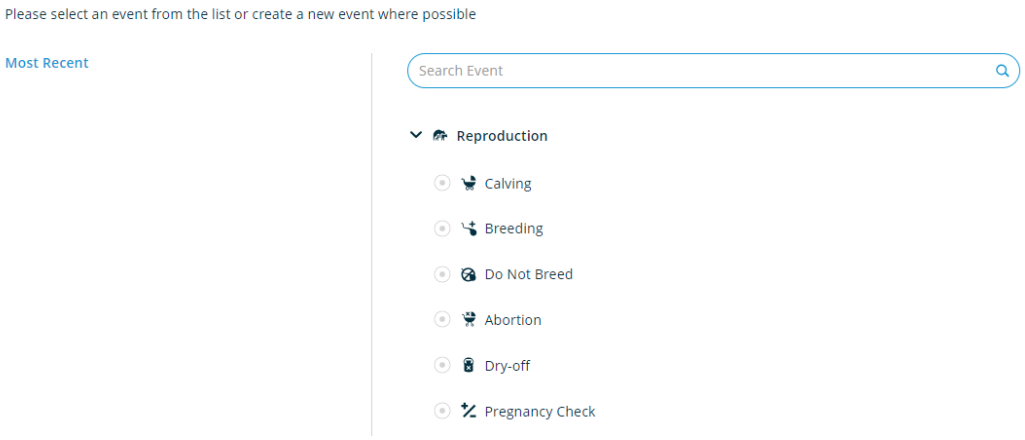
3. When complete, click Create to save the event.
4. The event now appears on the graphs for this cow


Setup
Nov 17 1:00 PM
Single Event
Hoof Trimming 11/17/2019 10:56 AM
Nov 14

2.12.3 Multiple/Batch Event Entry

Events like Breeding, Pregnancy Checks, and Group Changes, among others, can be entered in batches.

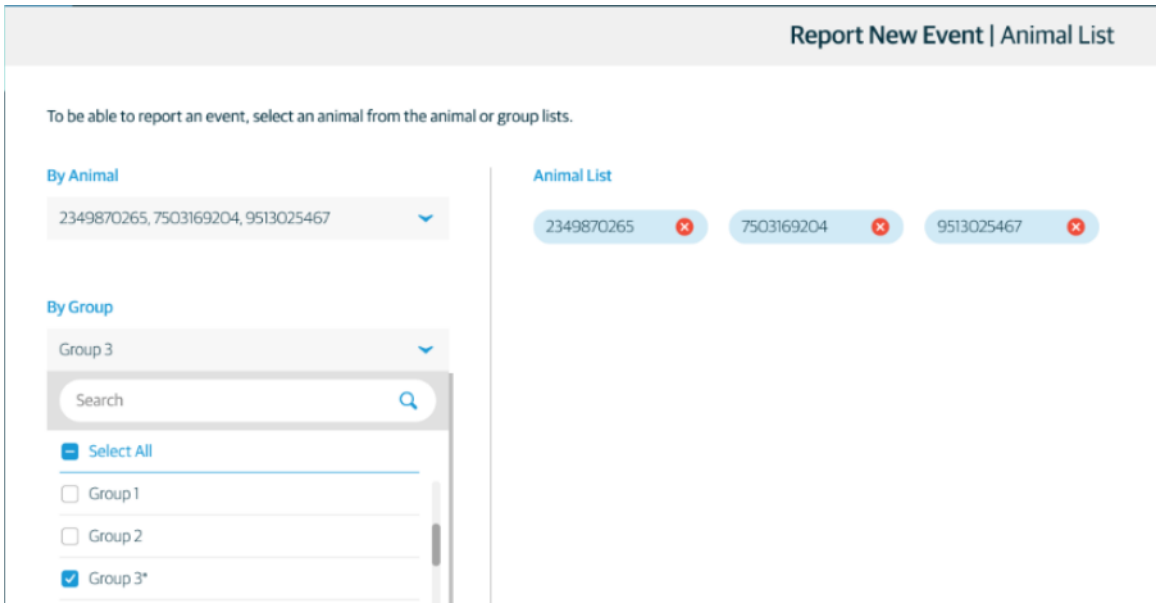
1. Go to Farm → Events and click on Add Batch Event.
2. Select the Event Type for the batch.



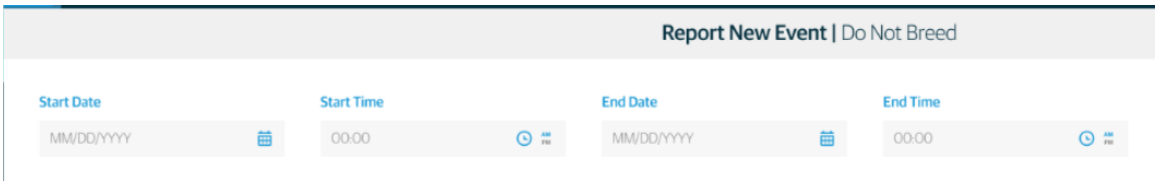
NOTE

All events are available.

3. Select the Animals for the batch or select the Group for the batch and click Next.



4. Set the parameters of the Event. When complete click Report Event. Report Event.



   a. Sometimes you may wish to report different parameters for each cow.

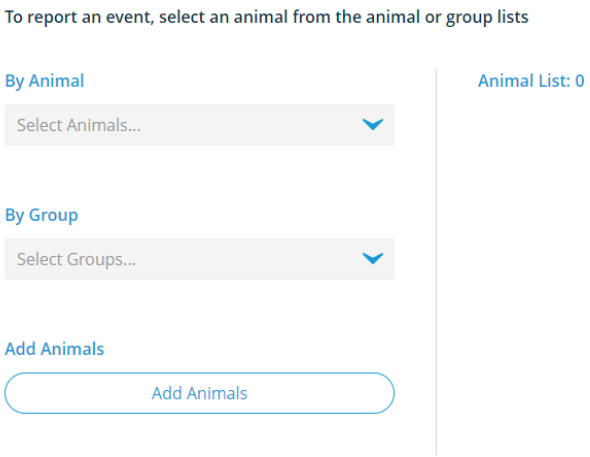


When complete click on Report Event Report Event to save the event.

2.12.3.1 Batch Entry using CSV File

CSV Files can also be used to upload a list of animals for batch event entry.

1. After choosing the type of event to report click next.
2. Instead of choosing the list of Animals or the Group of animals, choose Add Animals Add Animals .



3. A Dialogue opens to allow browsing to the location of the CSV File. After choosing the file click Open.
4. The list of Animals is uploaded.
    a. Items in the first column of the CSV that are not Animal Numbers of animals found on the farm will generate an error message.

NOTE

CSV files with more than one column can be used, but the Animal IDs MUST be in the first column.

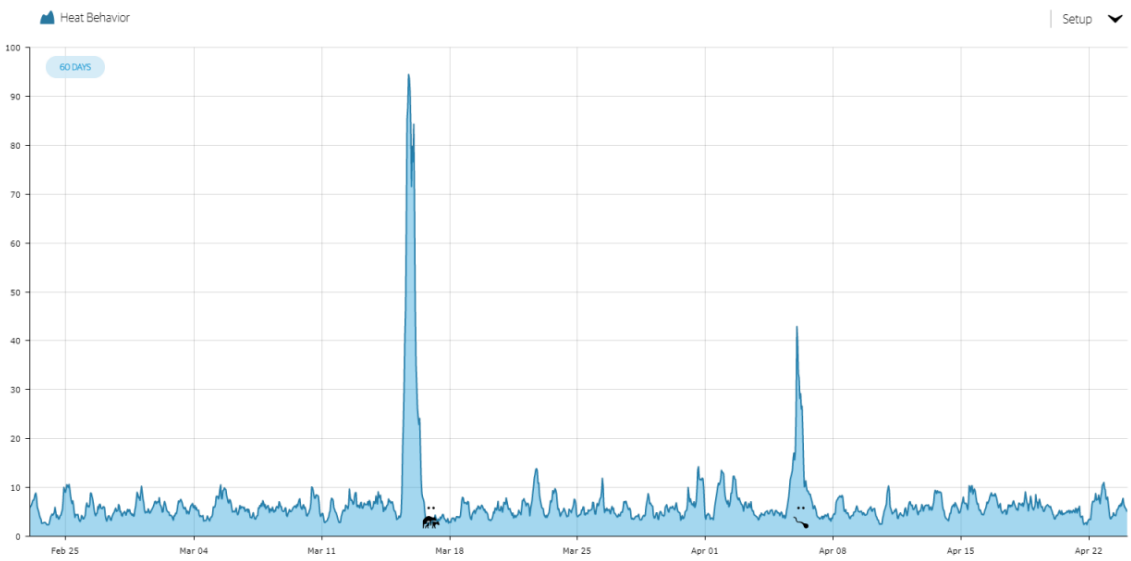
2.12.4 Graphs

The SenseHub™ System produces several useful graphs to help you manage your herd.

- Heat Graph
- Health Graph
- Shift Yield Graph
- Lactation Graph

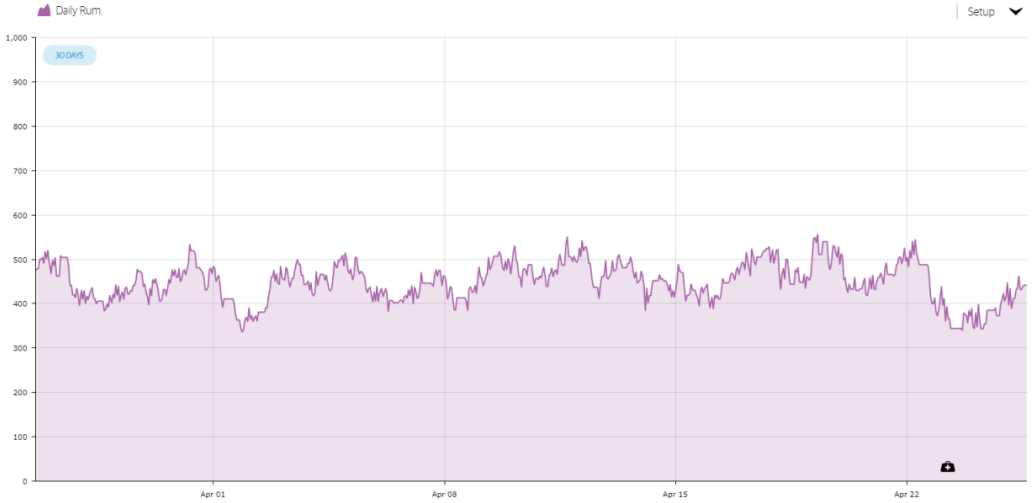
2.12.4.1 Heat Graph

The Heat Graph displays the Heat Behavior of the cow.


Heat Behavior
Setup
60 DAYS
100
90
80
70
60
50
40
30
20
10
0
Feb 25
Mar 04
Mar 11
Mar 18
Mar 25
Apr 01
Apr 08
Apr 15
Apr 22

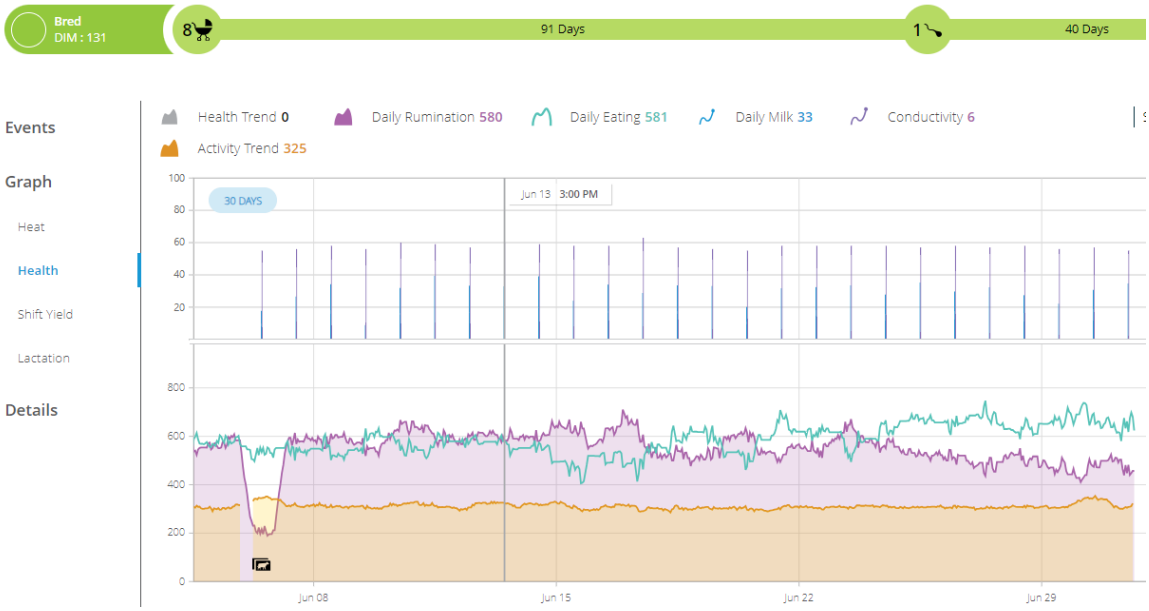
2.12.4.2 Health Graph

The Health Graph shows the relative health of the cow using Total Daily Rumination minutes.



2.12.4.3 Health Graph with Milking Enabled

When milking is enabled, more series are added to the Health Graph.



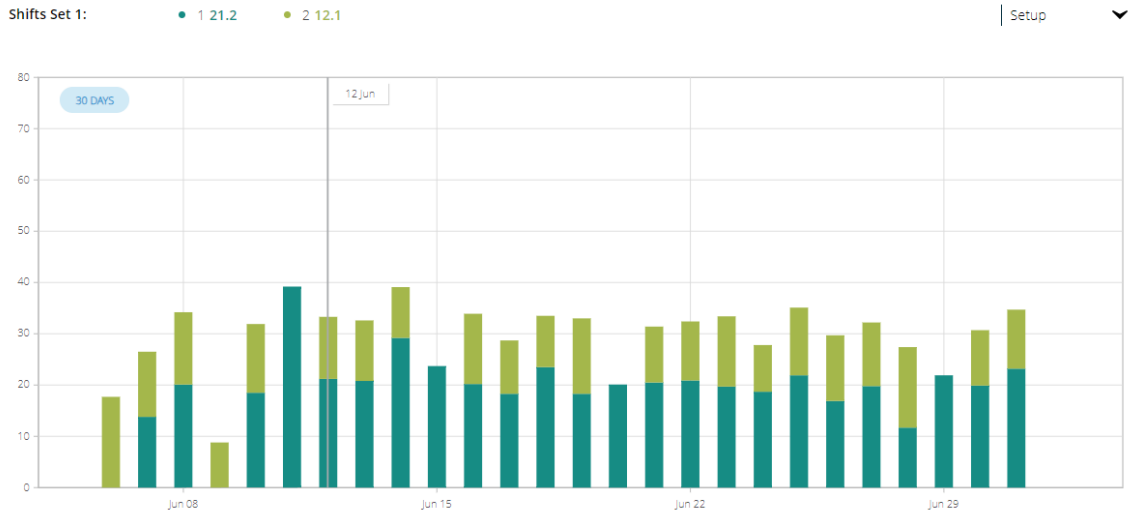
- When the crosshairs are aligned the values along the axis are displayed in the upper area of the graph

Field	Description
Health Trend	This is displayed only for Animals in the sucking branch.

Field	Description
Daily Rumination	The number of minutes of rumination on this day for the cow
Daily Eating	The number of minutes of eating on this day for the cow
Daily Milk	The daily milk yield for this cow
Daily Conductivity	The conductivity measure on this day for this cow
Activity Trend	Shows the cows historical activity trend indicating the times when the activity pattern changing

2.12.4.4 Shift Yield Graph

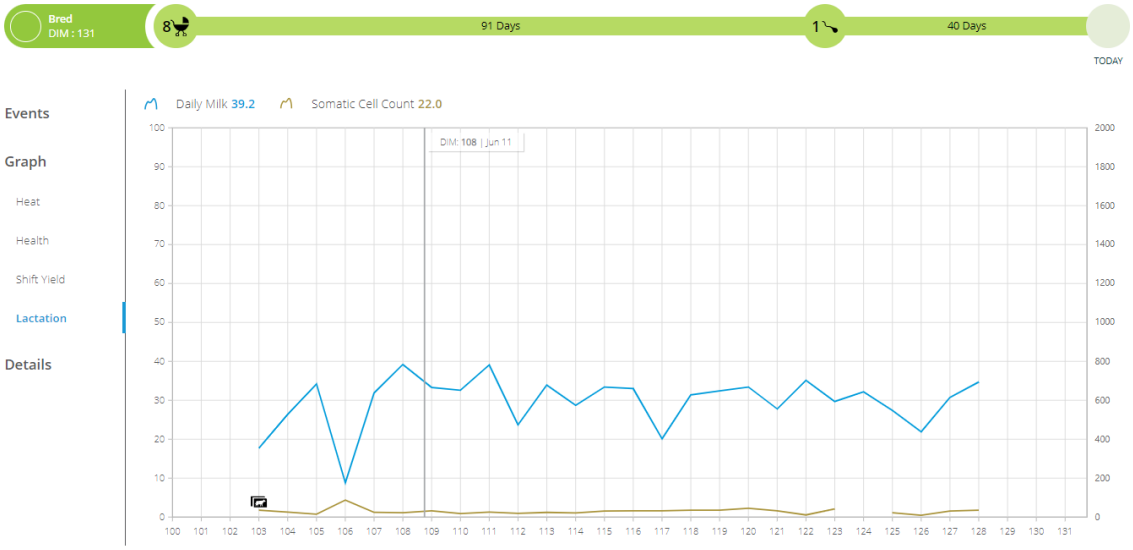
The Shift Yield graph displays the yield for this cow during each shift, by default, for the previous 30 days.



- Each shift is represented by a different color and the yield for each shift is displayed next to the color for the shift in the top bar of the graph.

2.12.4.5 Lactation Graph

The Lactation Graph displays the yield and somatic cell count for each animal for the entire lactation.



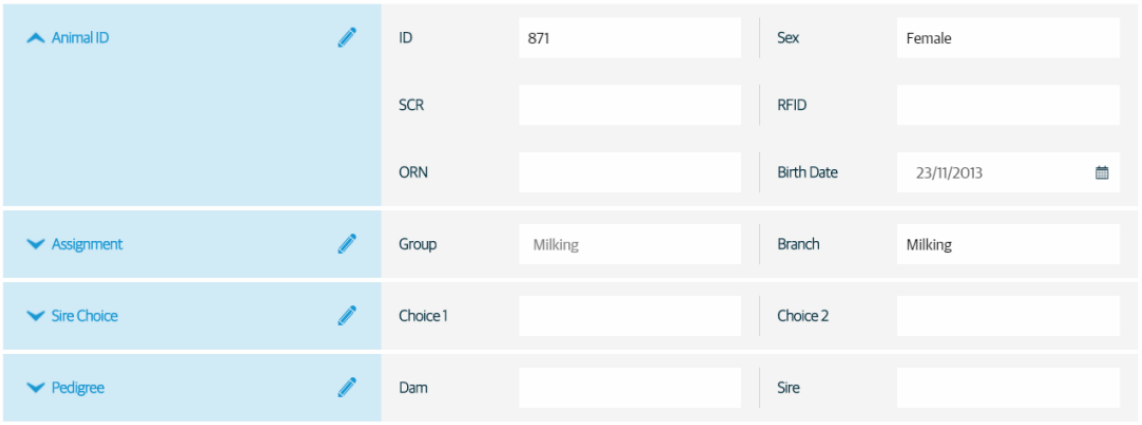
- The upper bar has the current Days in Milk, Breeding and Pregnancy Check Events. The predicted Dry-off is displayed once the cow has a positive pregnancy check.
- The graph shows the milk yield alongside the Somatic Cell Count for each day of the lactation.

2.12.5 Details

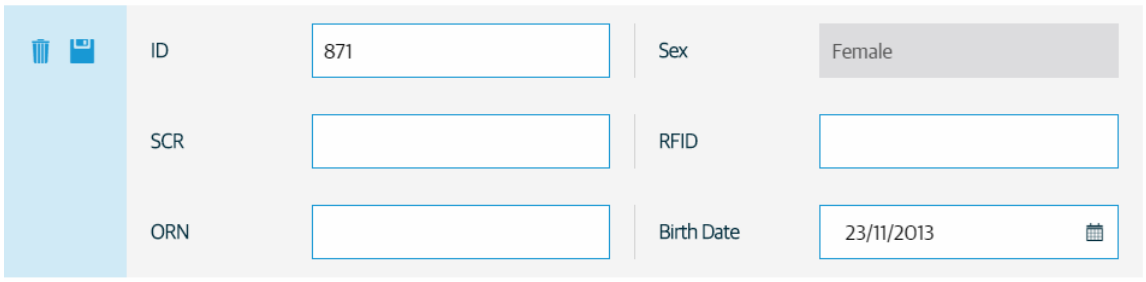
The Details section shows all the essential information about the cow.



1. To expand any of the areas click on the  arrow; the area expands.

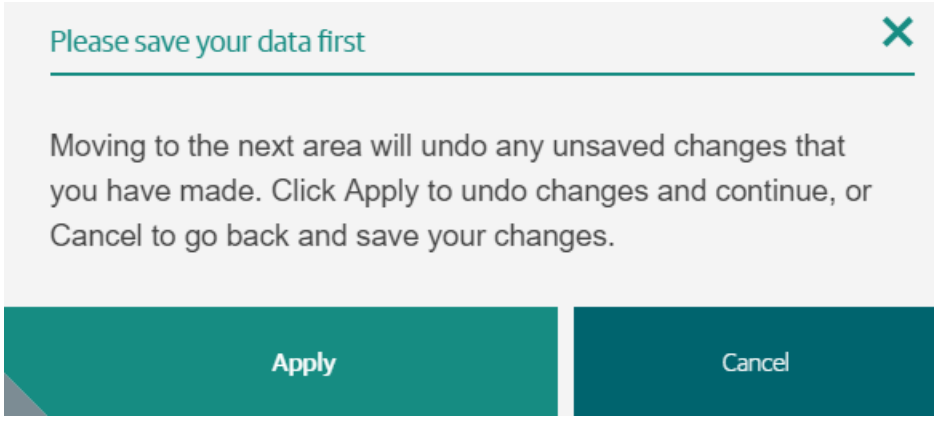


2. To edit any of the information click on  Edit and the items available for editing are highlighted around the edges.



3. Click  to save the changes or  to discard them.

4. If you try to leave without saving a message appears.



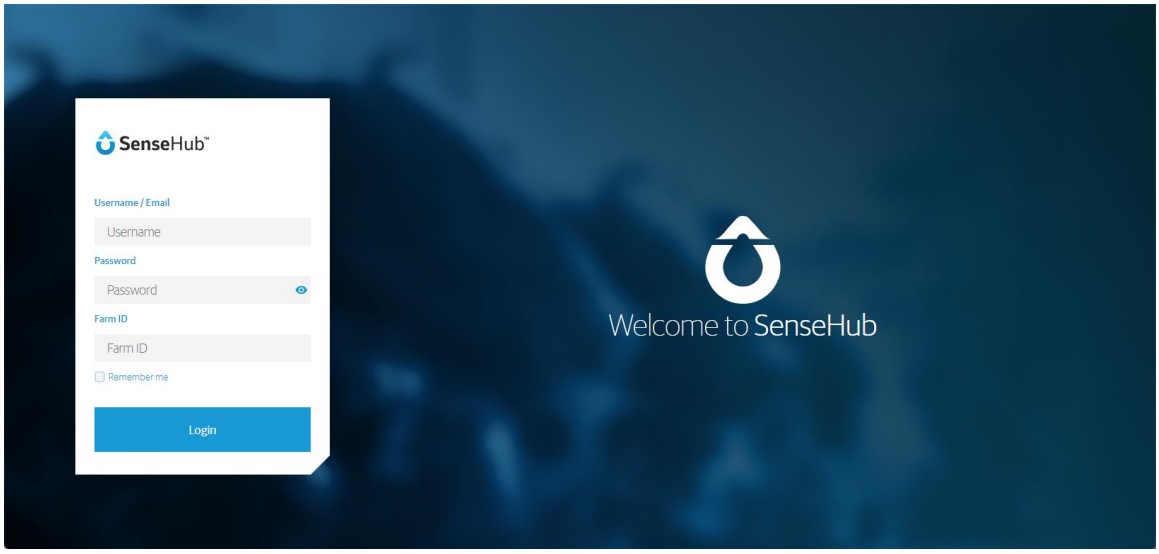
3 Using SenseHub™

Thanks to the clear and concise interface, SenseHub™ is quite easy to use.

3.1 Overview/Dashboard

Click on the SenseHub™ Icon on the desktop 

, the login page appears.

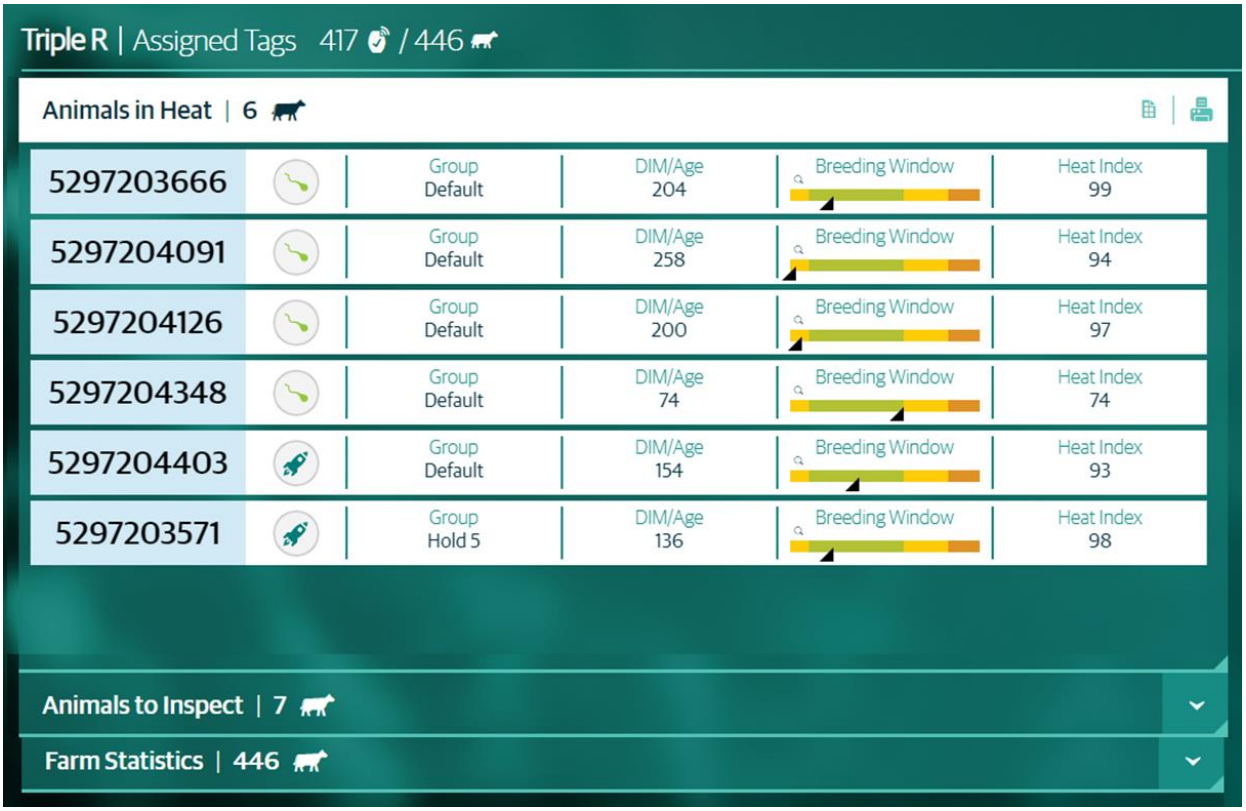


Enter the Username and Password you configured when you set up and registered your SenseHub™ along with the Farm ID that was assigned during registration and click Login. The SenseHub™ Dashboard appears.



3.1.1 Accordion/Widgets

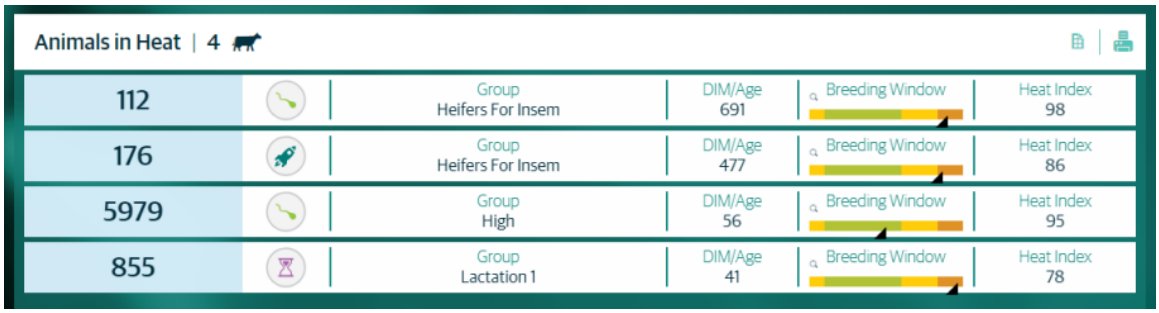
This part of the dashboard contains three important blocks of information.



- Cows that are in Heat.
- Animals that require further attention.
- Vital Farm Statistics.

3.1.2 Animals in Heat

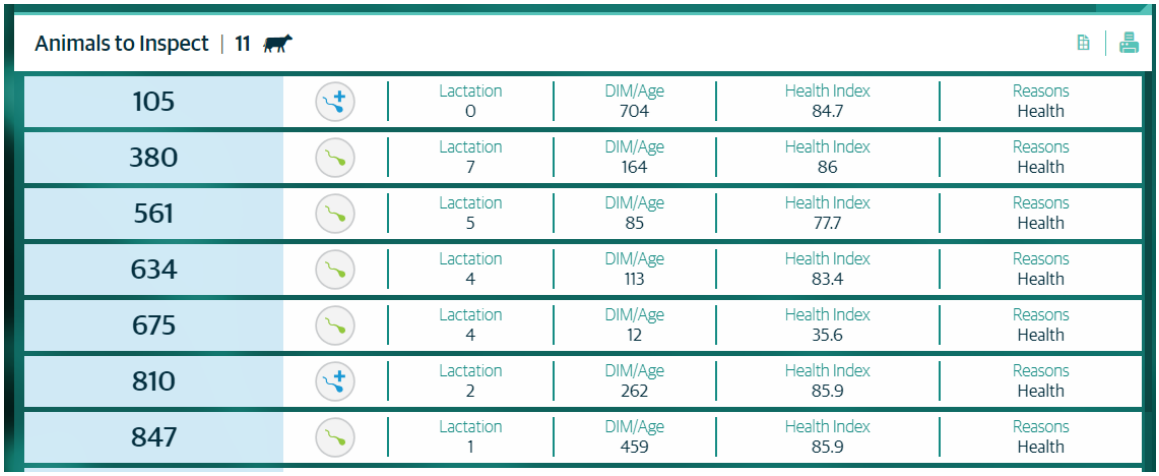
The Animals in Heat section displays the cows that are currently in heat. This information is taken directly from the Animals in Heat Report.



3.1.3 Animals to Inspect

The Animals to Inspect portion contains cows from many different reports. By default, animals from the Health and Distress Reports appear here. Other reports can be added:

- Early Fresh Cows Report
- Suspected for Abortion Report
- Anestrus Cows Report
- Irregular Heat Report

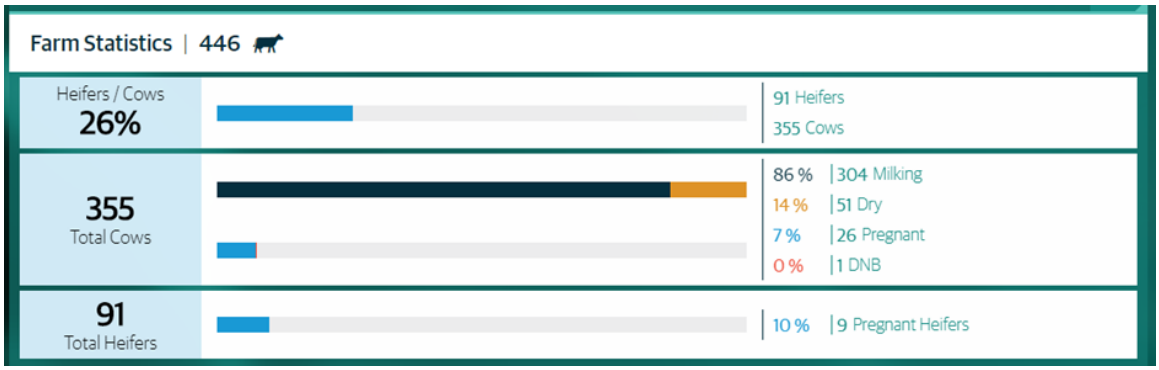


NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

3.1.4 Farm Statistics

The Farm Statistics Widget displays important summary information that gives an overview of the farm, “at a glance.”

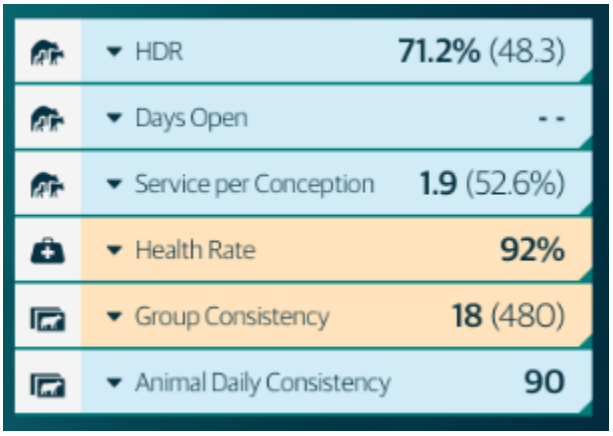


- Heifers/Cows – This line indicates the percent of heifers as part of the population of females on the farm.
- Total Cows – This line examines the number of cows on the farm. The percentage of cows in milk vs the percentage of dry cows is examined. In addition, the percentage of pregnant cows and the percentage of cows set to Do Not Breed is also examined.
- Total Heifers – The total number of Heifers vs the number of pregnant heifers is examined.

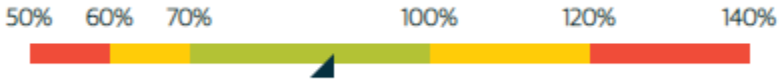
The numbers here and their relationship give an instant snapshot as to the continuity and viability of the herd on your farm.

3.1.5 Key Performance Indicators - KPIs

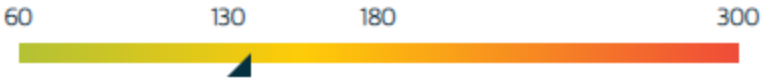
This section displays Key Performance Indicators about the farm.



- Heat Rate Performance – HRP. The Heat Rate Performance equals 21/Average Cycle Length between system heats. A low rate may be the result of, Poor Heat Detection, Problems with the Breeding Program, or Late Embryonic Death.



- Days Open – The number of days in lactation from calving until the Effective Insemination.



- Service per Conception – we count of the number of inseminations required to impregnate a cow (pregnancies), and these are calculated from the pregnant population only.



- Conception Rate (%) - We count of the number of inseminations required to impregnate a cow (pregnancies), calculated from the pregnant population only.

NOTE

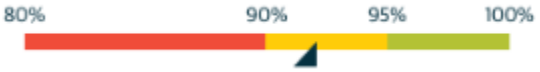
When installing a new system connected to a Herd Management System, it is possible to hide these KPIs.

- These KPIs take time before they are available on the farm:
  - Small Farms – up to 100 Animals with tags – 90 days.
  - Medium Farms – up to 500 Animals with tags – 60 days.
  - Large farms – 501 and over – 30 days.

NOTE

These three KPIs are available on farms using the Starter Application Plan.

- Health Rate – The Health Rate is the average percent of Animals, with tags, that are healthy on the farm over the last week.



- At least 10 cows are required for this measurement.

NOTE

The Health Rate KPI is available on farms using the Advanced Application Plan.

- Group Consistency – The amount the Daily Average Rumination of groups varies or differs from day to day over the last 10 days.



- Animal Daily Consistency – The variability of rumination minutes between cows during the same day in the Milking and Default Cows Branches.



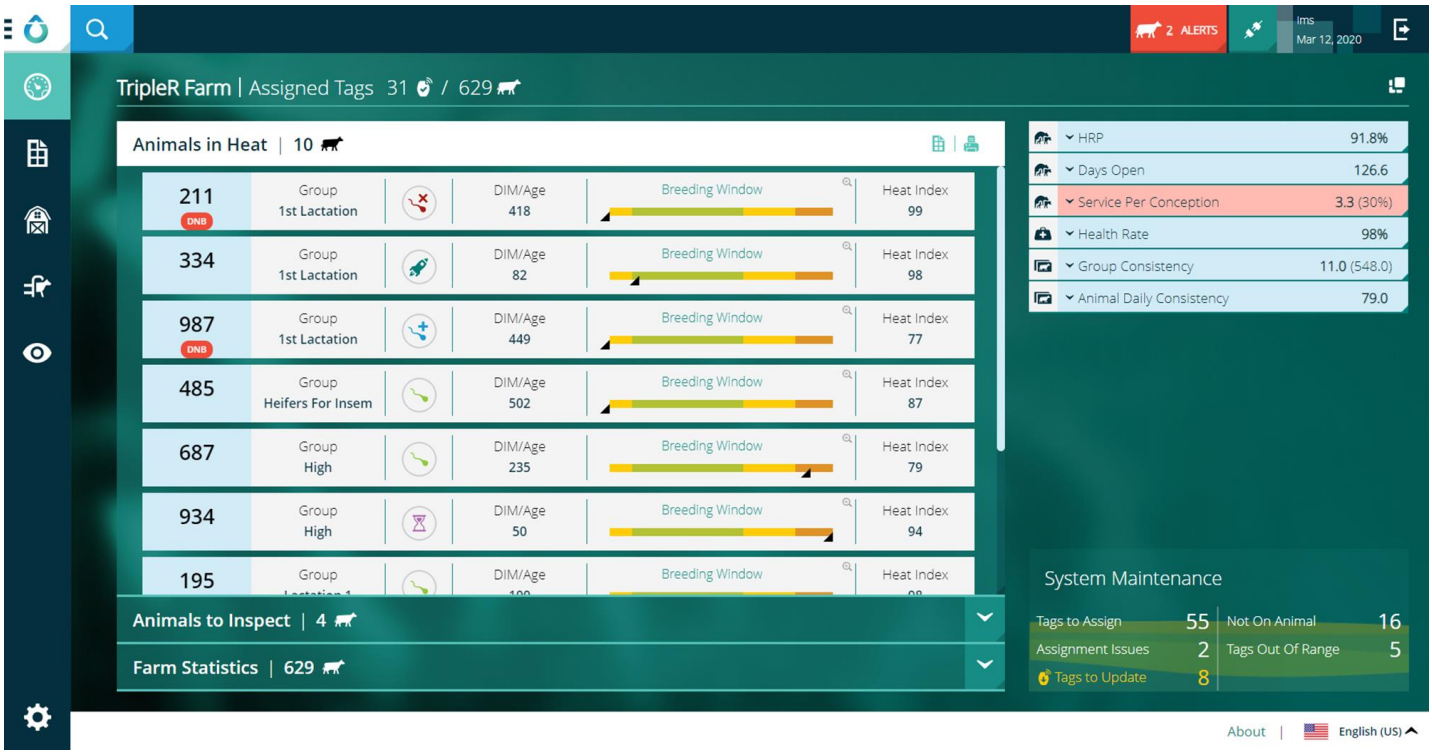
- At least 10 cows are required for each measurement.

NOTE

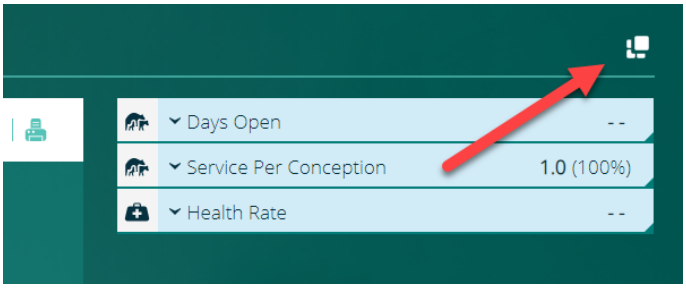
These 2 additional KPIs are available on farms using the Premium Application Plan.

3.1.6 Dashboard Configuration

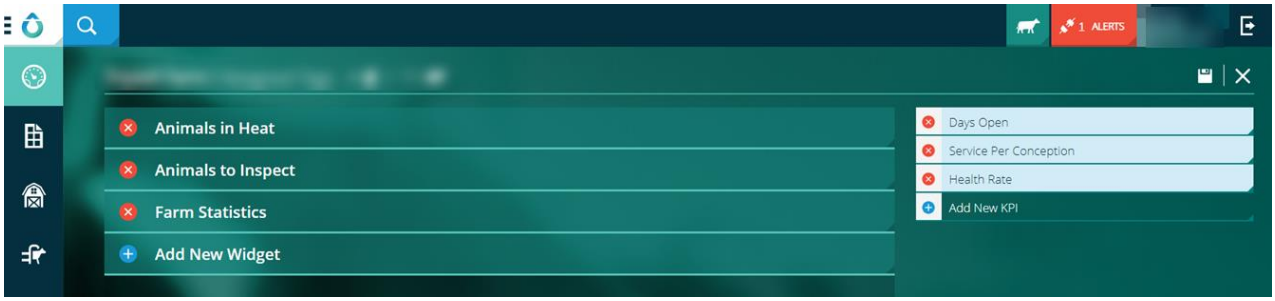
The widget and KPI displays can be configured to give a customized view for the farm.



1. Click on Dashboard Configuration to open the Dashboard Configuration Zone.

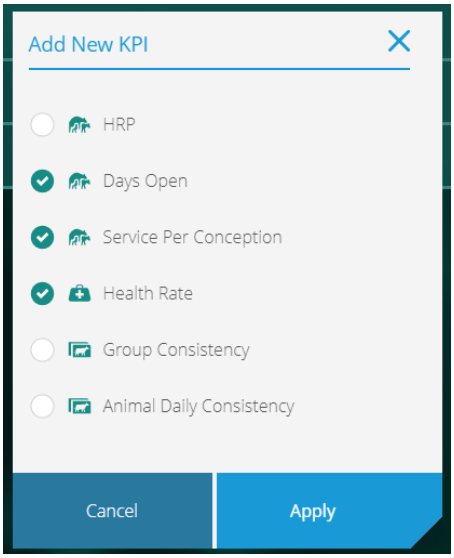


Both the widget and KPI areas are now unlocked for configuration.

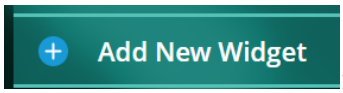


2. Click on 

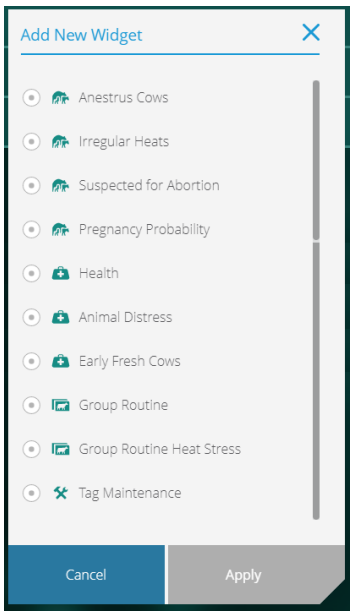
; the Add New KPI dialogue appears.



   a. Choose the desired KPIs and when complete click Apply.

3. Click on 

; the Add New Widget dialogue appears.



   a. Choose the desired reports for the widget. Up to 4 different reports can be selected.

   b. When complete click Apply.

4. When the configuration of the Dashboard is complete, click  save to save the configuration.

3.1.7 System Maintenance

The System Maintenance area displays essential information about maintenance that may be required from time to time in SenseHub™.



- Tags to Assign – These tags are declaring that they are on a cow and the SenseHub™ system has no record of them being paired or assigned to a cow. Review these tags and pair them with cows.
- Assignment Issues - These tags are assigned to a cow, but no data has been received from them since they were assigned. Review these numbers in the system, perhaps these numbers need to be corrected.
- Tags to Replace – The tags that are declaring that their battery is low. These tags should be replaced.
- Not on Cow – These tags are assigned to a cow and are declaring that they are not on any animal. These tags may have become separated from their cow. Look for them so they can be attached again to the correct cow, or a new tag needs to be assigned.

Changing tags, if required, is described on page 155.

3.2 SenseHub™ Alerts

SenseHub™ generates many kinds of Alerts. These alerts are divided into 2 categories:

- Cow Alerts
- System Alerts



3.2.1 Cow Alerts

4 different types of alerts can appear in this area:

- Pre-calving distress.
- Post-calving distress.
- High Activity from the Daily Activity Group Graph.
- Low Rumination from the Daily Rumination Group Graph.
- High Blood
- Abnormal Milk

NOTE

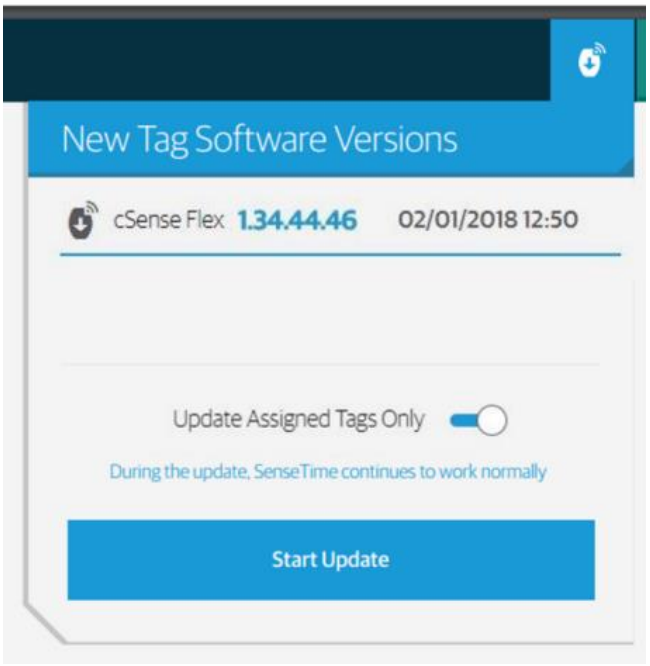
The manual describes all possible alerts, reports, and graphs. The alerts, reports, and graphs available on the farm depend on the Application Plan enabled on the farm.

3.2.2 Tag Software Version Alerts

When SenseHub receives the signal that a new software version is available for the tags currently in use on the farm, the New Tag Software Alert  appears.

Click on the  Tag Update Icon to begin the update process.

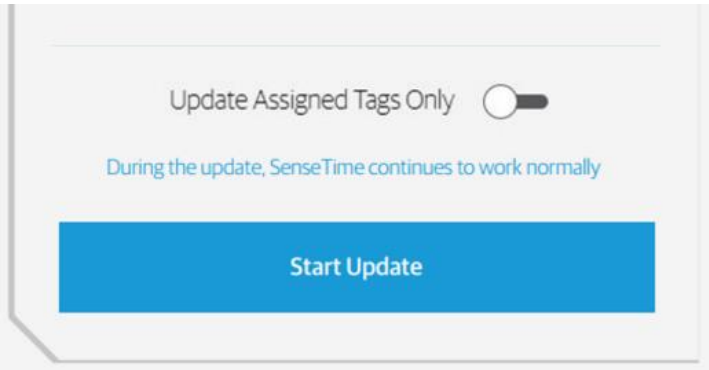
1. The system displays the Tag type and version that is available for update. Click Start Update when ready to begin the update. During this process SenseHub continues to work normally.



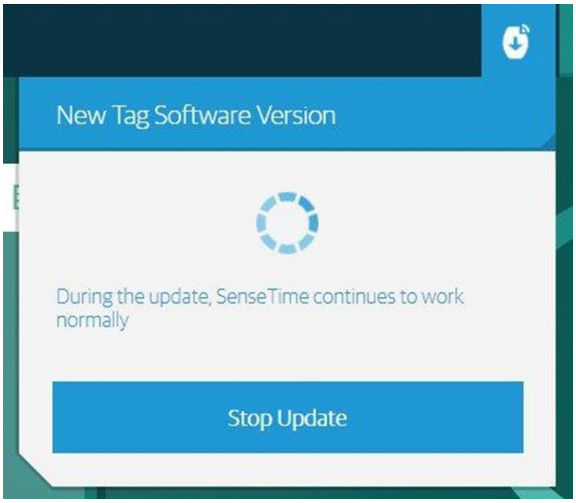
NOTE

By default, only assigned tags are updated.

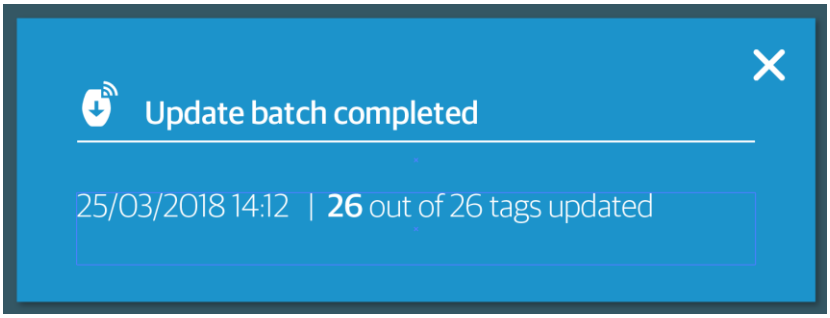
If you wish to update Unassigned Tags at the same time, slide the slider to the right and the update of Assigned and Unassigned Tags is enabled.



2. You can check on the Tag Update process while it is running.



3. When the process completes, a message is displayed.



3.2.3 System Alerts

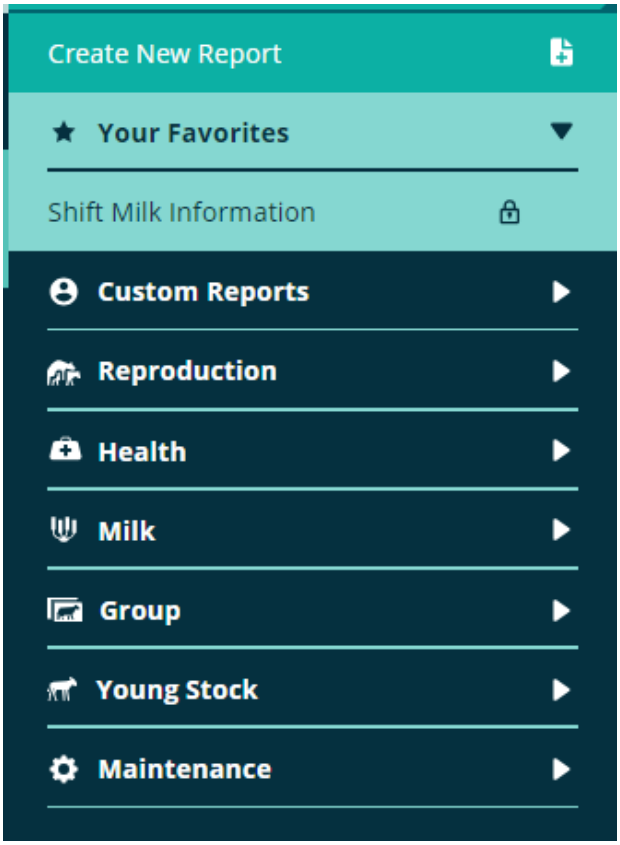
Alerts concerning the system and/or the connectivity of the system are displayed here.

System Alert	Description	Suggested Action
No Tag Data from any Tag	No data is received from any tag. In normal configuration, this appears after 1 hour of no data from assigned tags. In grazing configuration, this appears after 24 hours of no data from assigned tags.	Contact your dealer for technical support
RF Configuration Error	The antenna is not accepting its configuration	Contact your dealer for technical support
General Controller Error	The controller is generating a general error	Contact your dealer for technical support the affected device may require replacement
Antenna Disconnected	There is no response from an installed antenna	Check the network connectivity between the Controller and the Antenna
Device Overheated	The Controller is too hot	Contact your dealer for technical support
RF Module Error	One of the RF modules is not working correctly	Contact your dealer for technical support
Device Storage Error	Data is not being stored internally	Contact your dealer for technical support
Milk Controller Hardware Failure	The error appears with the Serial Number of the installed Milking Controller (sensor)	Contact your dealer for technical support
Entrance ID is Disconnected	One or both sides of the Entrance ID in the milking parlor is disconnected	Contact your dealer for technical support

System Alert	Description	Suggested Action
Milking Controller Overheat	One or more SenseHub Milk Sensor is overheated	Contact your dealer for technical support

Connectivity Alert	Description	Suggested Action
Cloud is Disconnected	There is no connectivity with the Cloud	Check local connectivity
No Herd Management Synchronization	It has been more than 25 hours since there was synchronization of your Herd Management system and SenseHub™	Synchronize your Herd Management System
Herd Management Synchronization Issues	This indicates one or more herd management issues; Duplicate Cow Cards, Duplicate Tags, too many cows culled	Check the data being sent by the Herd Management System
Local Backup Error	There is an issue preventing the creation of the local backup	Contact your dealer for technical support
Cloud Backup Error	There is an issue preventing the backup being copied to the cloud. This error will only show if the local internet connection is functioning.	Contact your dealer for technical support

3.3 SenseHub™ Reports



Click on the Reports Icon, the reports menu appears.

The Reports menu is divided into different sections:

- Favorites – This area contains all the reports that are marked as your favorite.
- Custom Reports – This area contains reports created on the farm. See for details.
- Reproduction – this area contains all the reports related to Reproduction:
    - Animals in Heat
    - Anestrus
    - Suspected for Abortion
- Health - this area contains all the reports related to Health:
    - Animals to Inspect
    - Health
    - Animal Distress
- Group – This area contains all the Group related reports.
    - Group Routine
    - Group Routine Heat Stress
- Young Stock – this area contains all the Young Stock related reports.
    - Young Stock Health.

Enter any report name, even a Custom Report, in the Search box to find that report.

NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

- Maintenance – This area contains all the Maintenance related reports.
    - Tag Maintenance.

  There are several different reports available in the SenseHub™ System. These reports should access on a daily, Weekly, or Monthly basis.

3.3.1 Adding a Report to Your Favorites

For easier access add a report to Your Favorites.

1. Click on the  Reports Icon, the reports menu appears.
2. Click on the White Star next to the report that you wish to add to Your Favorites.



3. The star changes color from white to green, signifying that the report is added to Your Favorites.
4. Custom Reports can also be added to favorites.

NOTE

Only 20 Custom Reports per user can be added to Favorites. Different users can have different reports in their list of favorites.

3.3.2 Removing a Report from your Favorites

Users may want to remove a report from Your Favorites.

1. Click on the  Reports Icon, the reports menu appears.

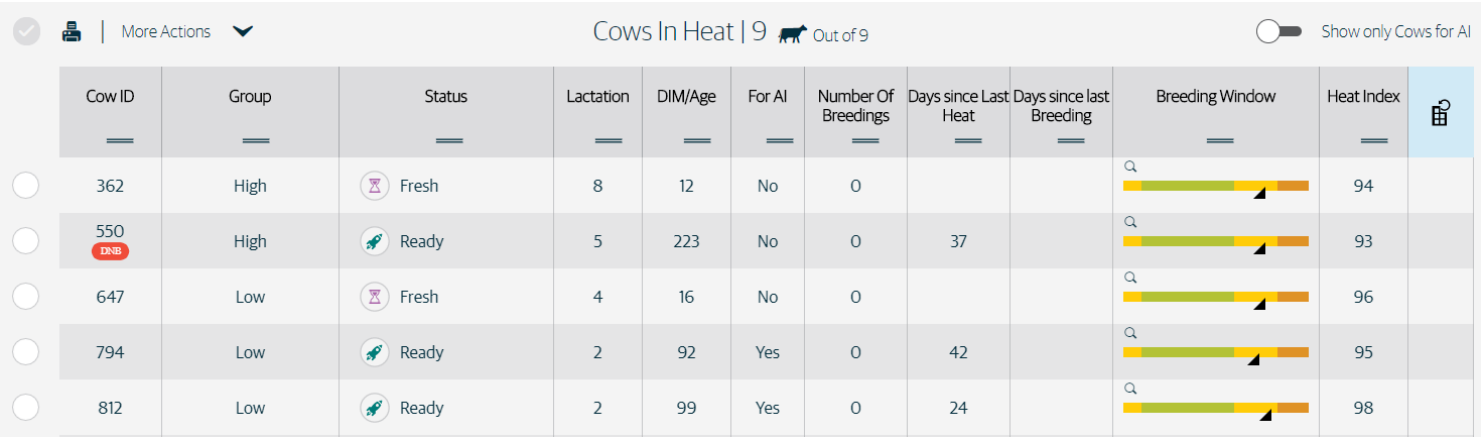
2. Click on the Green Star next to the report that you wish to remove from Your Favorites.



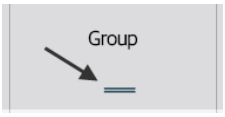
3. The star changes from Green to white, signifying that the report is removed from Your Favorites.

3.3.3 Sorting and Filtering Reports

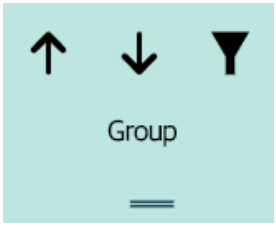
Reports in SenseHub can be Sorted and/or Filtered.



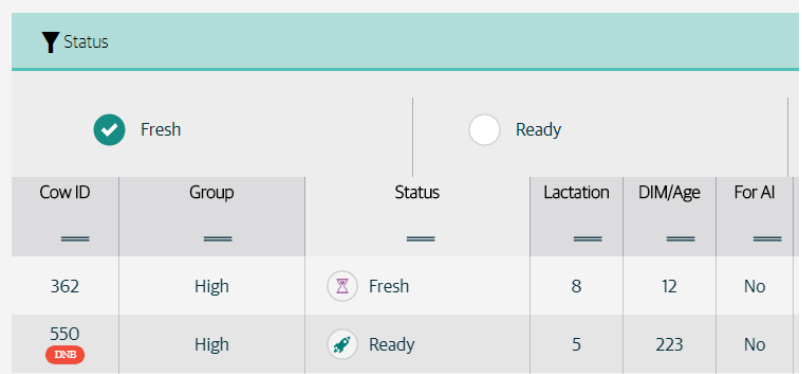
Cow ID	Group	Status	Lactation	DIM/Age	For AI	Number Of Breedings	Days since Last Heat	Days since last Breeding	Breeding Window	Heat Index
362	High	Fresh	8	12	No	0				94
550 DNB	High	Ready	5	223	No	0	37			93
647	Low	Fresh	4	16	No	0				96
794	Low	Ready	2	92	Yes	0	42			95
812	Low	Ready	2	99	Yes	0	24			98

1. Click 

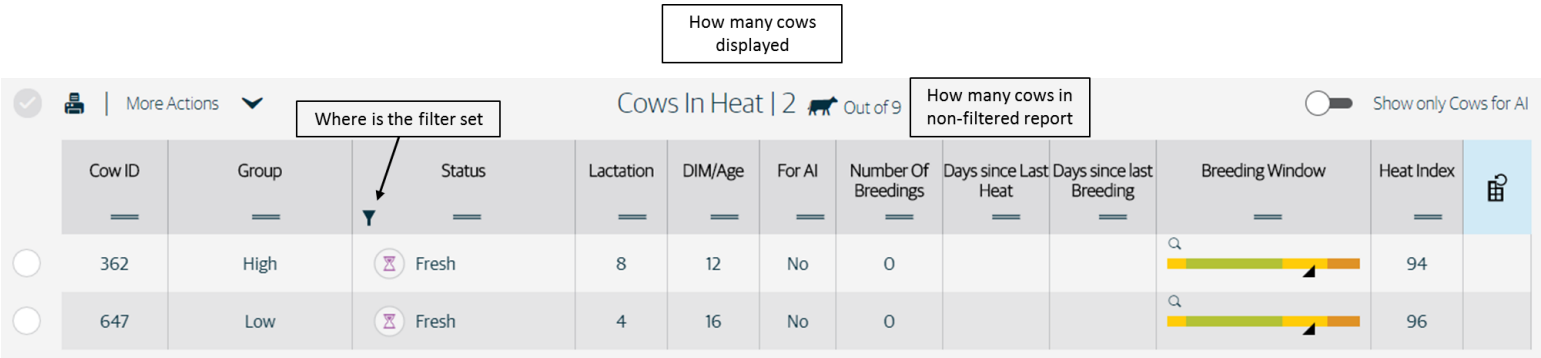
to open the Column Action Menu. The Column Action Menu appears.



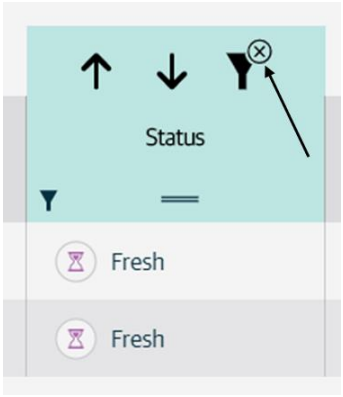
2. The Column Action Menu allows you to:
    a. Sort Ascending – Sort the report according to this column from lowest value to highest.
    b. Sort Descending – Sort the report according to this column from highest to lowest.
    c. Create a Filter – Create a filter from the items in this column that only displays the cows in the report according to the values chosen.



3. The report is now displayed according to the filter created.

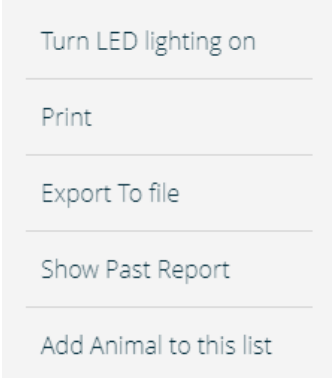


4. To cancel the filter, click on the Column Action Menu and click on the funnel with the X.



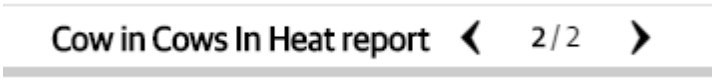
3.3.4 More Actions from Reports

There are several actions available from Reports. Click More Actions and the list of additional actions available for this report appears.


Turn LED lighting on
Print
Export To file
Show Past Report
Add Animal to this list

3.3.5 Navigating within Reports

Clicking on the Cow ID of any cow in any takes you to the related Graph of that cow in the cow card.



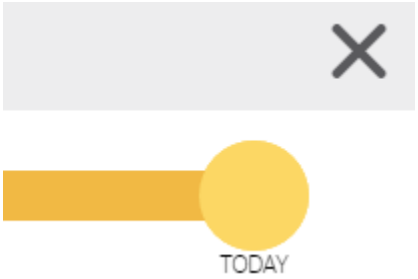
Once you have accessed the graphs related to the report you can browse through the graphs of only those cows that are in the report.

Press  refresh to refresh the cows in the report.

NOTE

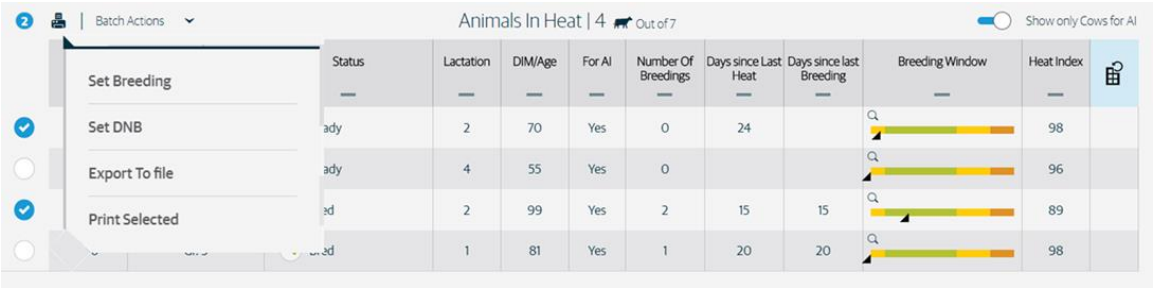
Once a report is opened in SenseHub™ it will not be refreshed automatically. Reports are only refreshed when the refresh button is pressed or when the report is opened.

Click on the  to Exit the graph view of this report and return to the report.



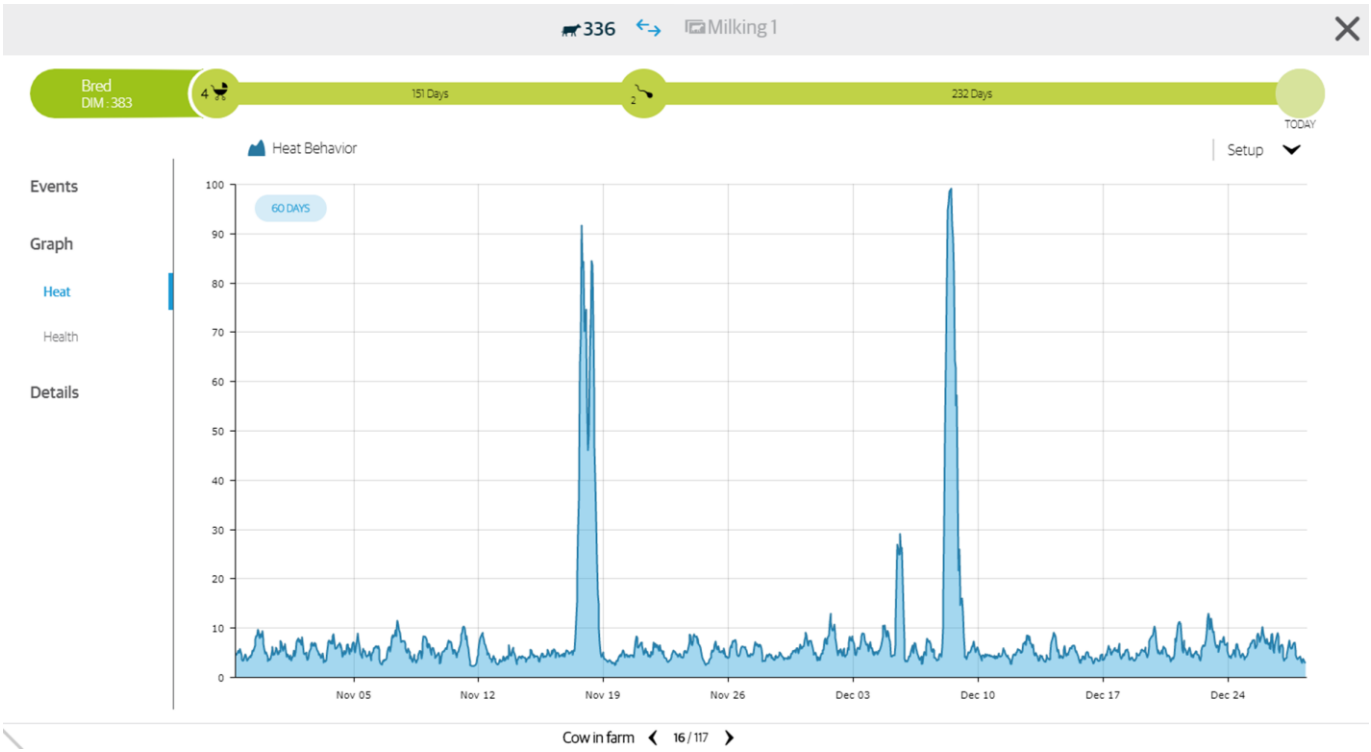
3.3.6 Batch Events from Reports

Batch events are available from reports. The event/s available depend on the report. For example, Breeding Events can be reported as a batch from the Animals in Heat Report.



3.4 SenseHub™ Graphs

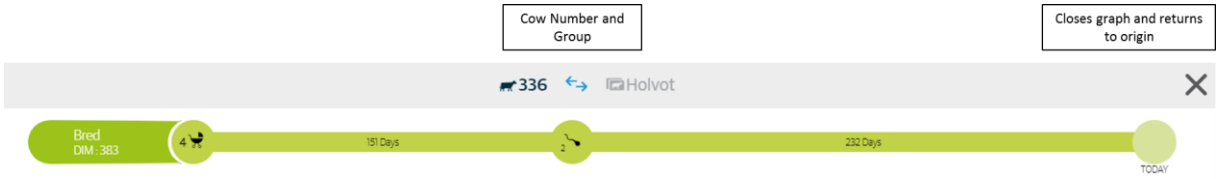
SenseHub™ Graphs display a great deal of information and have several available series and options.



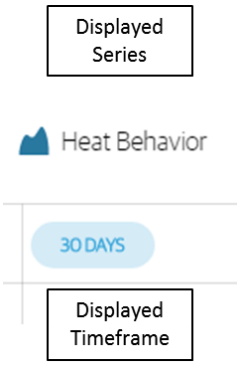
NOTE

The available series and options are determined by the Application Plan enabled for the farm: Starter, Advanced, Premium and Young Stock.

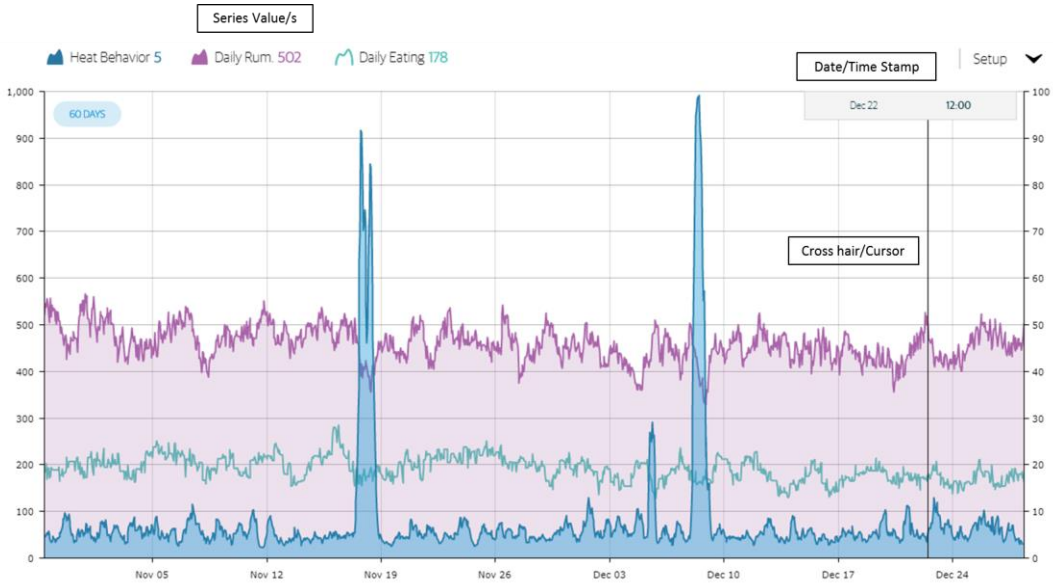
1. The top of the graph contains the current lactation timeline and other information about the cow



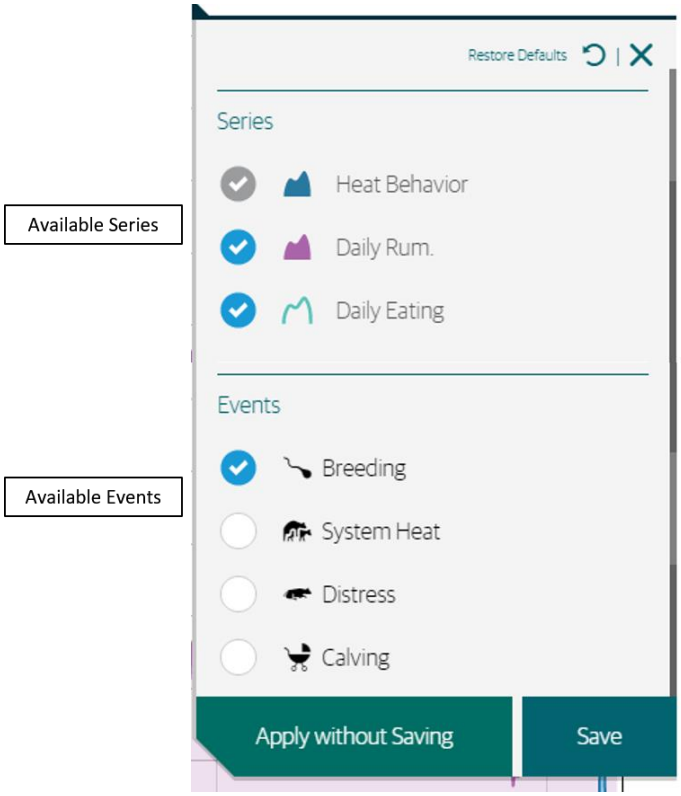
2. Displayed Series and the Timeframe. This portion of the graph informs usof the series that is displayed and the timeframe of the graph



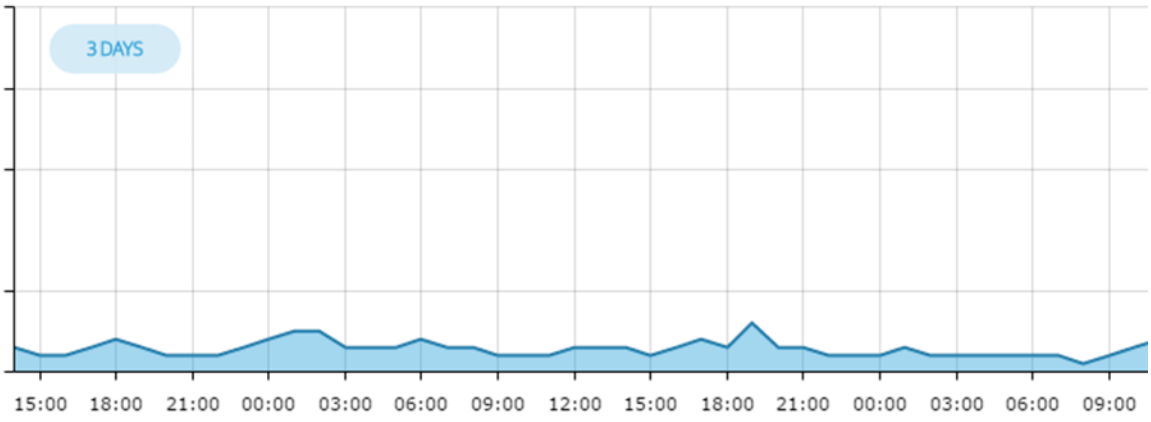
3. The cursor on graphs become a cross hair. Moving the cross hair displays the current Date/Time Stamp as well as the current value for the displayed series.



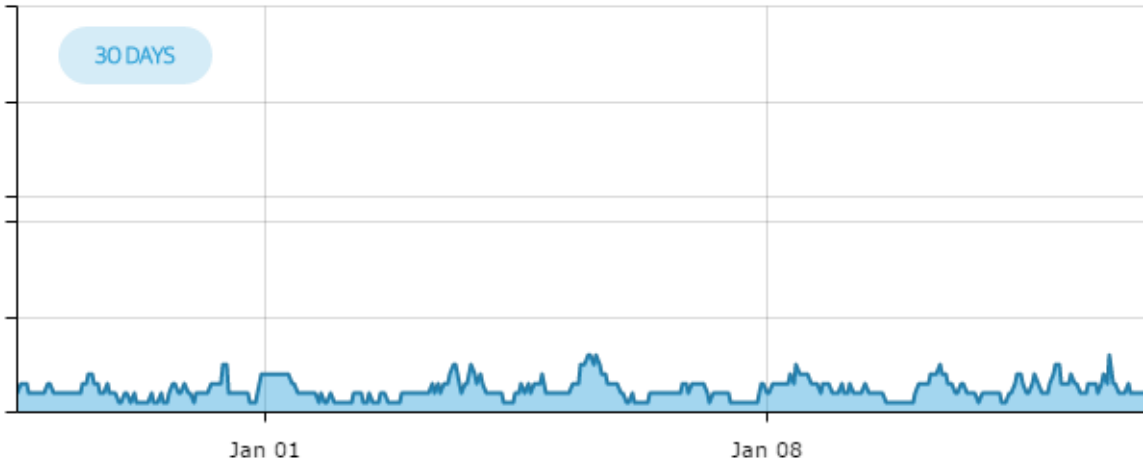
4. Clicking on Setup displays the options available for this graph.



5. Timeframe – The displayed ticks correspond always to the chosen Timeframe.



As the Timeframe increases so does the distance between each tick on the graph.



NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

3.5 Daily Tasks

Review these reports every day.

Report	Description
Animals in Heat	This report displays the cows that are in heat including the cows that are ready for AI.
Reading the Heat Masked by Group Activity	This report displays the cows that are in heat including the cows that are ready for AI. This report is effective at displaying cows in heat for groups of animals that graze or otherwise take a larger number of steps.
Reading the Health Report	This report displays the Animals that have possible health issues.
Health Report with Milking Enabled	This report displays the Animals that have possible health issues along with their production information.
Reading the Animal Distress Report	Identify Animals in distress that need immediate attention.
Reading Animals to Inspect Report	This is a collection of Animals from several different reports.
Understanding the SCC Dry-off Report	This is a list of cows from 1 day before their expected Dry-off thru 30 Days after their expected Dry-off.
Reading the Shift Milk Information Report	This report displays the milk and component yield for each cow from the previous shift.
Understanding the Herd Shift Summary	This report displays the amount of milk produced during each shift in relation to past performance.
Reading the Daily Activity/Rumination Routine Graph	This graph displays the daily average of Rumination or Activity compared to the previous 2-week average.
Reading the Heat Stress Routine Graph	This graph displays the effect of Heat Stress on the various groups in the herd.
Reading the Young Stock Health Report	This report displays Young Stock that have possible health issues.

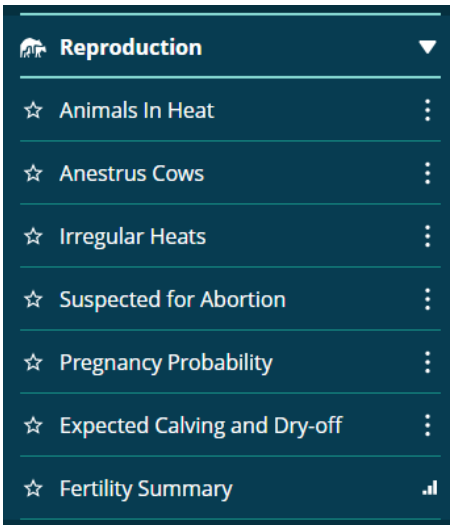
NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

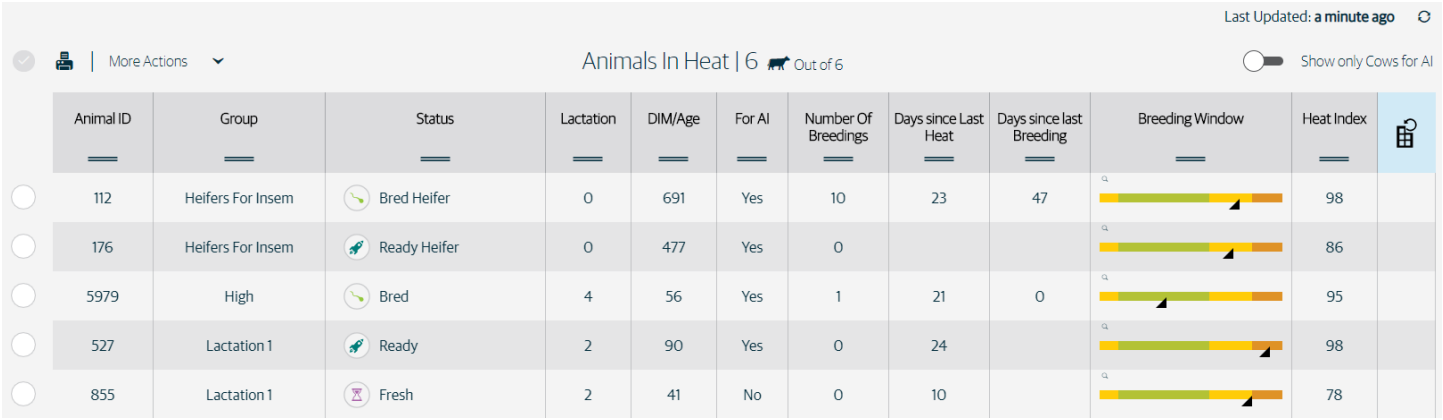
3.5.1 Reading the Animals in Heat Report

The Animals in Heat report displays all the cows in heat with a quick filter that shows just those cows that are ready to breed, the cows that have completed their voluntary waiting period.

1. Click on the Reports Menu Icon  and the Browse Report drawer appears.

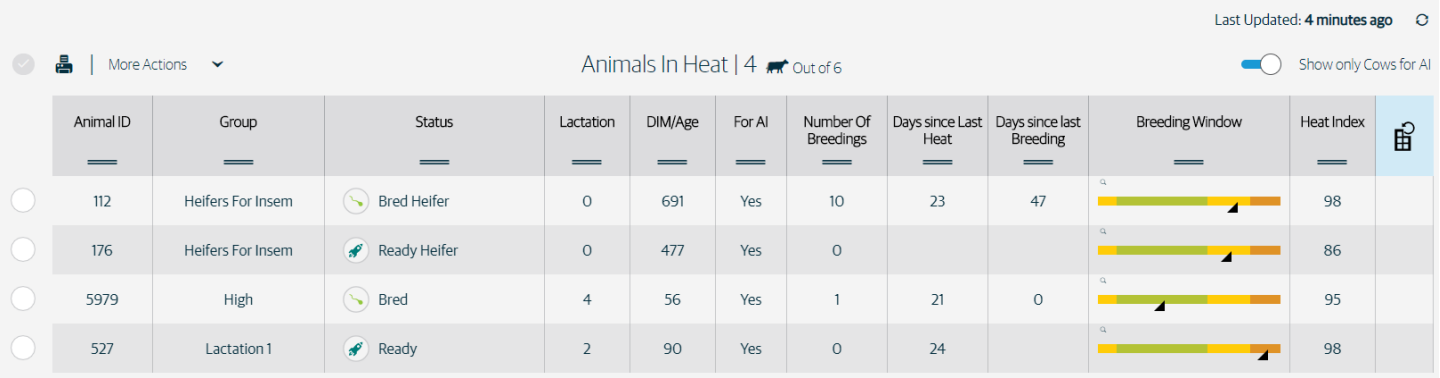


2. Click on Cows in Heat; the Cows in Heat Report appears.



Animal ID	Group	Status	Lactation	DIM/Age	For AI	Number Of Breedings	Days since Last Heat	Days since last Breeding	Breeding Window	Heat Index
112	Heifers For Insem	Bred Heifer	0	691	Yes	10	23	47		98
176	Heifers For Insem	Ready Heifer	0	477	Yes	0				86
5979	High	Bred	4	56	Yes	1	21	0		95
527	Lactation 1	Ready	2	90	Yes	0	24			98
855	Lactation 1	Fresh	2	41	No	0	10			78

3. Move the  Slider to the right and only the Cows that are Ready for AI are displayed. Cows Ready for AI are those cows that have completed the configured Voluntary Waiting Period, are not pregnant, and of course are not tagged as Do Not Breed, DNB. See page 192 for details.



Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
For AI	This cow is available for breeding. For example, cows that have not yet completed their Voluntary Waiting Period, described on page 192, will be designated here, No.
Number of Breedings	The number of times this cow has been bred during the current lactation
Days since Last Heat	The number of days since the last heat recorded for this cow in the current lactation
Days since Last Breeding	The number of days since the cow was last bred in the current lactation
Breeding Window	The Breeding Window, described on page 90, describes the optimum time for inseminating the cow.

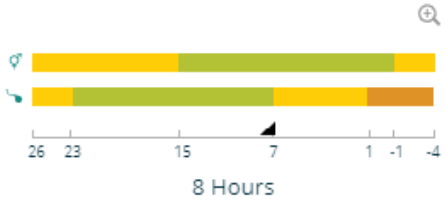
Field	Description
Heat Index	This is a score that combines all the outputs from the tags, and the cow's heat history. This results in a score, Heat Index, that is equal to the strength of the current heat.

3.5.1.1 Breeding Window Explained

The Breeding Window is a graphic representation of the optimal time for inseminating the cow and the current position of the cow on this timeline.



If the option to use Sexed Semen is enabled, see page 193 for details, then two Breeding Windows are shown.



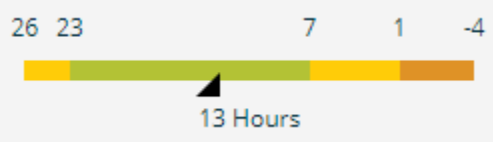
- The upper Breeding Window is for Sexed Semen.
- The lower Breeding Window is for regular semen.

This timeline is made up of 4 zones:

Breeding Window Zone	Description
First Yellow Zone	26-23 Hours. Breeding during this timeframe may result in lower conception rates.
Green Zone	23-7 Hours. This is optimum Breeding Window. Breeding during this time may result in the highest conception rates.
Second Yellow Zone	7-1 Hours. Breeding during this timeframe may result in lower conception rates.
Red Zone	1-(-4) Hours. Breeding during this timeframe may result in the lowest conception rates.

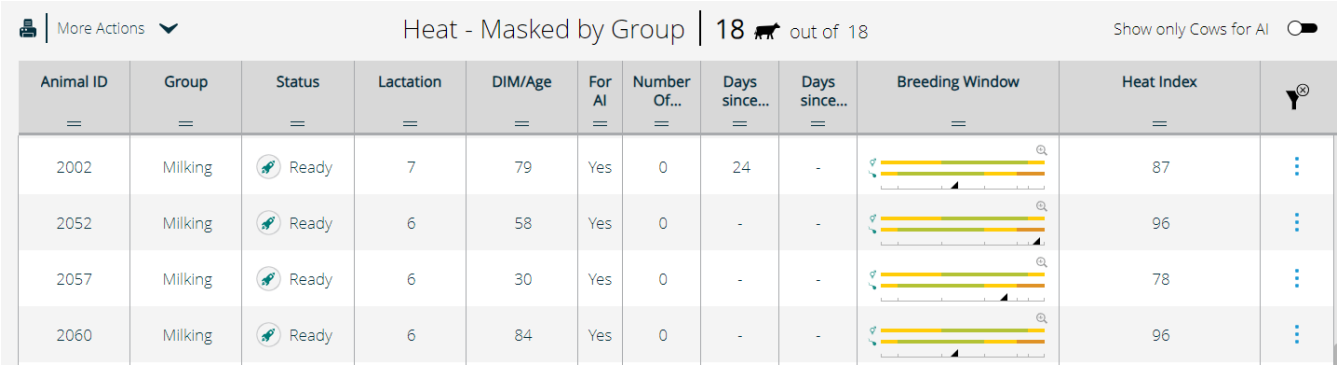


Occasionally you may see a cow in the Cows in Heat Report with a Breeding Window as above. This means that the Heat Index of the cow has not yet reached its highest value. Breeding cows like this may result in lower conception rates. Clicking on the magnifying glass explains the current position within the breeding window.



3.5.2 Reading the Heat Masked by Group Activity Report

This report displays the cows that are in heat including the cows that are ready for AI. This report is effective at displaying cows in heat for groups of animals that graze or otherwise take a larger number of steps. Animals in groups that escaped from their pen/string can also benefit from using this report for discovering heats after their escape.



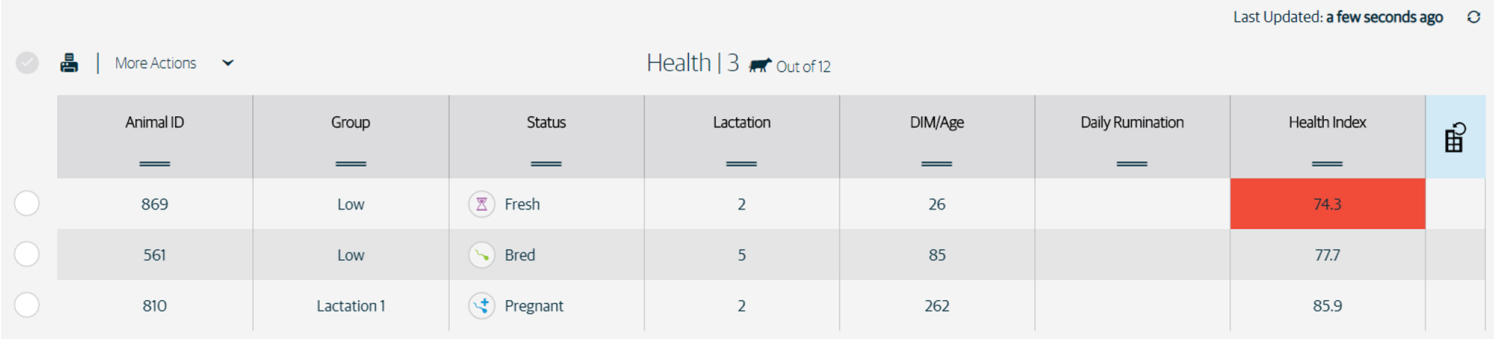
Animal ID	Group	Status	Lactation	DIM/Age	For AI	Number Of...	Days since...	Days since...	Breeding Window	Heat Index
2002	Milking	Ready	7	79	Yes	0	24	-		87
2052	Milking	Ready	6	58	Yes	0	-	-		96
2057	Milking	Ready	6	30	Yes	0	-	-		78
2060	Milking	Ready	6	84	Yes	0	-	-		96

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.

Field	Description
For AI	This cow is available for breeding. For example, cows that have not yet completed their Voluntary Waiting Period, described on page 192, will be designated here, No.
Number of Breedings	The number of times this cow has been bred during the current lactation
Days since Last Heat	The number of days since the last heat recorded for this cow in the current lactation
Days since Last Breeding	The number of days since the cow was last bred in the current lactation
Breeding Window	The Breeding Window, described on page 90, describes the optimum time for inseminating the cow.
Heat Index	This is a score that combines all the outputs from the tags, and the cow's heat history. This results in a score, Heat Index, that is equal to the strength of the current heat.

3.5.3 Reading the Health Report

Cows that have a drop in Rumination, Eating, and/or Activity will have a decrease in their Health Index and appear in the Health Report.



The Health Index value for entry into the Health Report is configured on page 192.

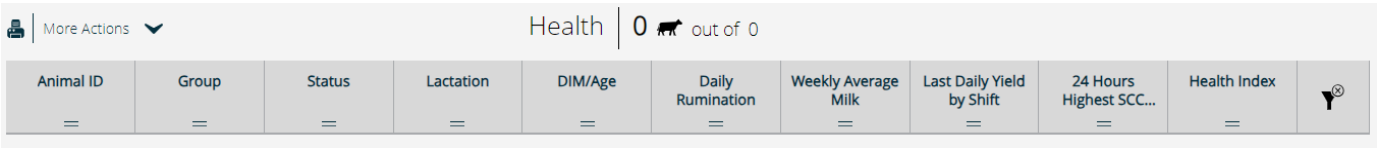
Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Daily Rumination	The rumination for this animal recorded in minutes over the past 24 hours
Health Index	The current Health Index for this cow. This filed is colored RED when the Health Index is below the value set for a Marked Health Issue as explained in section 7.3.1 on page 195.

NOTE

Identify and observe cows with a Red Colored Health Index immediately.

3.5.3.1 Health Report with Milking Enabled

When Milking is enabled with SenseHub, additional field are shown in the Health Report. The additional fields are detailed in the table below.



Field	Description
Weekly Average Milk	The weekly average milk for this cow
Last Daily Yield by Shift	Last daily yield for this cow in this shift
24 Hours highest SCC	The highest Somatic Cell Count for this cow in the last 24 hours.

NOTE

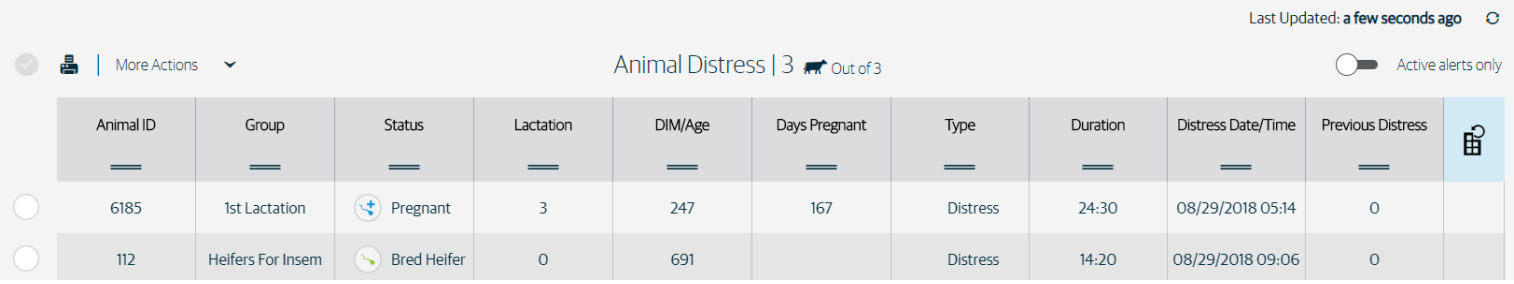
Identify and observe cows with a Red Colored Health Index immediately.

NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

3.5.4 Reading the Animal Distress Report

Cows appear in this report when they have not had enough rumination activity for an extended period, coupled with an absence of eating activity during that period. Cows around the time of calving that are in Pre and/or Post Calving Distress should be given special attention to help prevent metabolic and calving diseases.



By default, only those cows in active distress appear in the report. Slide the quick filter to the left to see all cows that were in distress during the previous 24 hours.

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Type	If the cow is detected to be in General Distress, Pre-calving Distress, or Post-Calving Distress This field is colored RED when the cow is in active Pre or Post calving distress. This filed is colored YELLOW when the cow is in active distress that is not associated with calving.
Duration	How long the cow was in Distress this time

Field	Description
Distress Date/Time	The time and date when the cow was labeled as in Distress
Previous Distress	How many times around this calving event was this cow in distress.

NOTE

All cows that were in distress in the previous 24 hours appear in this report.

3.5.5 Reading Animals to Inspect Report

The Animals to Inspect report is made up of animals that appear in other reports. The Health and Animal in Distress reports are included by default, other reports can be included as configured.



Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Days since last Heat	The number of days since the cow was last determined to be in heat.
Days Pregnant	When the cow has a recorded positive pregnancy check, the number of days since the effective breeding.

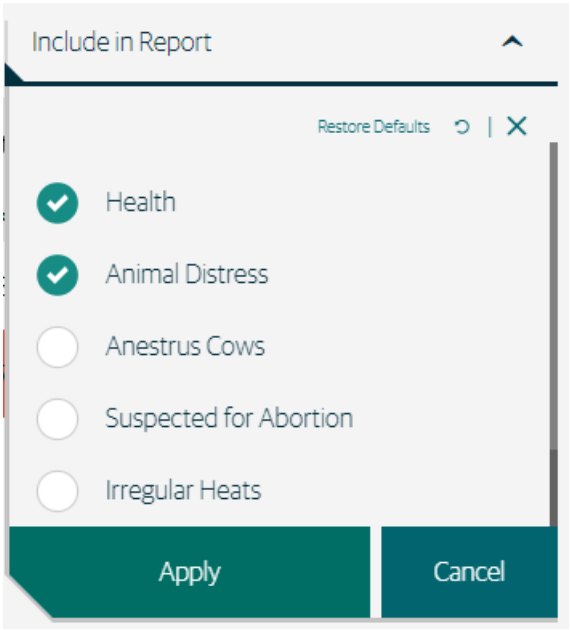
Field	Description
Health Index	The current Health Index of the cow
Reasons	The report/s where the cow is listed are the reason/s the cow appears in the Cows to Inspect Report.

3.5.5.1 Changing the Reports that appear in the Animals to Inspect Report

It is possible to see and edit the reports that are included in the Cows to Inspect Report; Click on Cows to Inspect in the Dashboard Widget and then Click on the  Report Icon, the Cows to Inspect Report Appears.



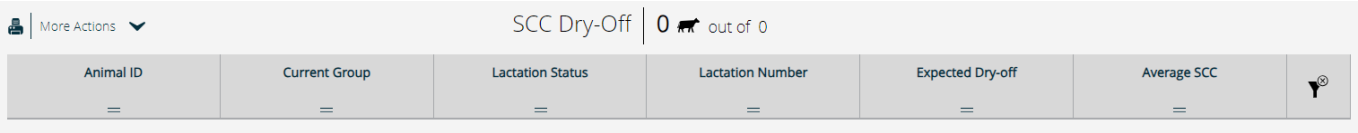
Click on the arrow next to Include in Report. The reports included in the Cows to Inspect Report are listed with a  check mark next to their name.



Check or Uncheck reports as desired and click apply to save the desired configuration.

3.5.6 Understanding the SCC Dry-off Report

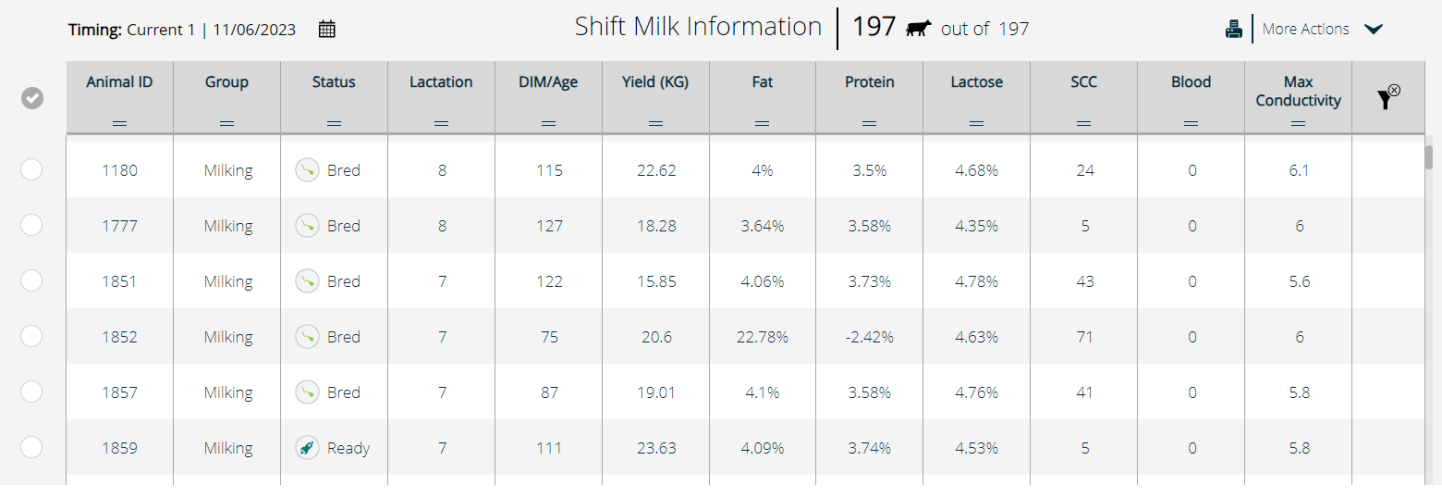
This is a list of cows from 1 day before their expected Dry-off thru 30 Days after their expected Dry-off. This report supplements the Understanding the Expected Calving Dry-off Graph and Report found on page 123.



Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Current Group	The group where the animal is assigned
Lactation Status	The status of the animal. Statuses are explained on page 39.
Lactation Number	The number of times the cow has given birth or calved.
Expected Dry-off	The date of the expected Dry-off of this cow.
Average SCC	The average SCC over the past 12 weeks when the average is less than 150K Somatic Cells. The SCC value for the shift is only included in the average calculation if it is greater than 0.

3.5.7 Reading the Shift Milk Information Report

This report displays the milk and component yields for each cow from the previous shift.



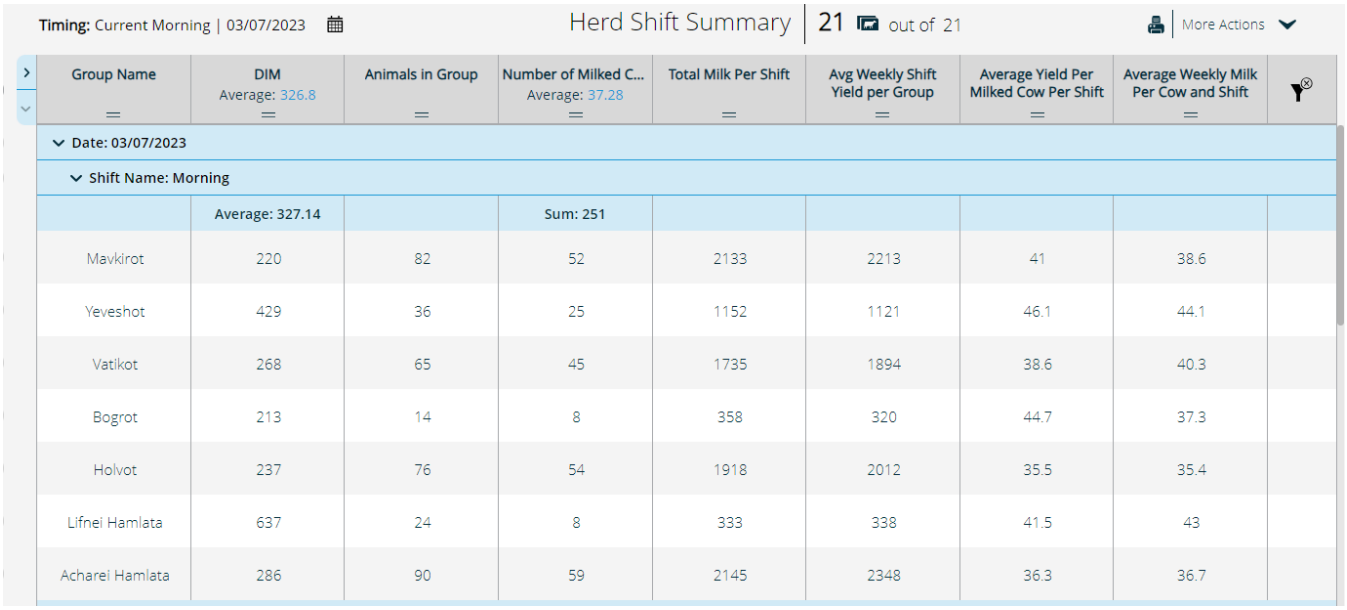
Animal ID	Group	Status	Lactation	DIM/Age	Yield (KG)	Fat	Protein	Lactose	SCC	Blood	Max Conductivity
1180	Milking	Bred	8	115	22.62	4%	3.5%	4.68%	24	0	6.1
1777	Milking	Bred	8	127	18.28	3.64%	3.58%	4.35%	5	0	6
1851	Milking	Bred	7	122	15.85	4.06%	3.73%	4.78%	43	0	5.6
1852	Milking	Bred	7	75	20.6	22.78%	-2.42%	4.63%	71	0	6
1857	Milking	Bred	7	87	19.01	4.1%	3.58%	4.76%	41	0	5.8
1859	Milking	Ready	7	111	23.63	4.09%	3.74%	4.53%	5	0	5.8

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Yield (Units)	Yield of milk per cow in the unit chosen for the farm.
Fat	Fat Percent of the milk
Protein	Protein Percent of the milk
Lactose	Lactose Percent of the milk
Somatic Cell Count SCC	Somatic Cell Count in thousands
Blood	Detection of Blood in the milk by the SCC Sensor.

Field	Description
Max Conductivity	Of the milk measured by the SCC Sensor

3.5.8 Understanding the Herd Shift Summary

The Herd Shift Summary report displays the milk production of each of the groups in the herd. Production data is displayed and compared to weekly averages so increases and or decreases in production can be identified.



Timing: Current Morning | 03/07/2023 — Herd Shift Summary — 21 out of 21 — More Actions

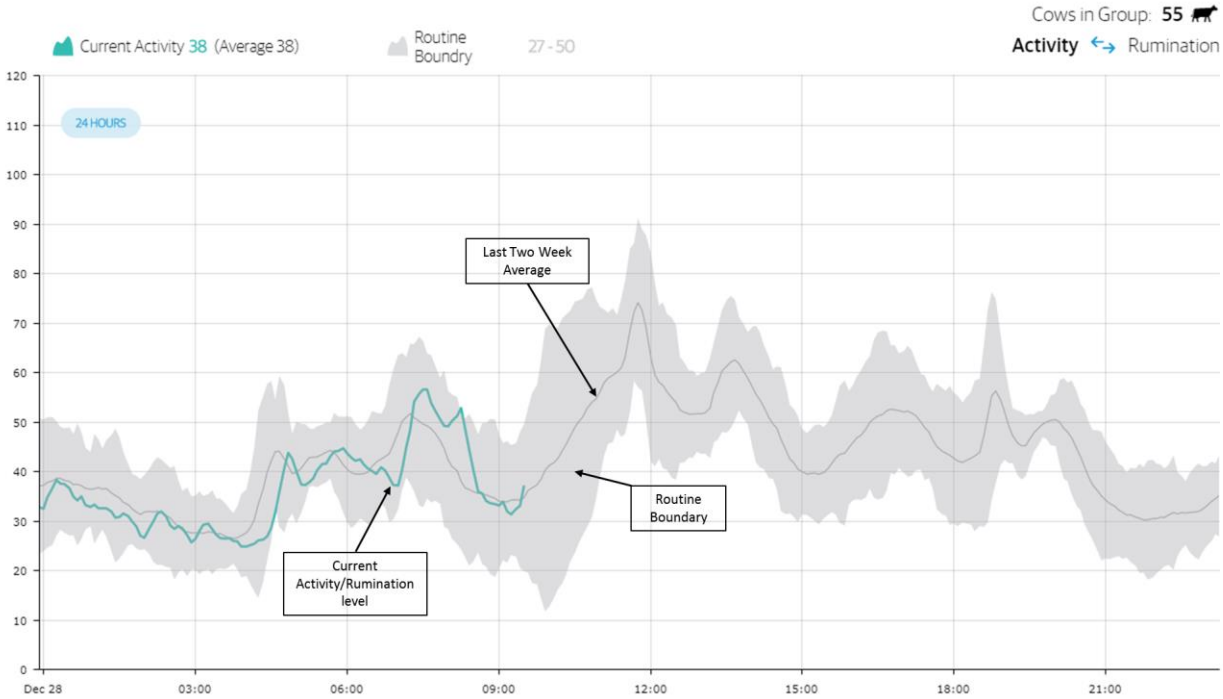
Group Name	DIM Average: 326.8	Animals in Group	Number of Milked C... Average: 37.28	Total Milk Per Shift	Avg Weekly Shift Yield per Group	Average Yield Per Milked Cow Per Shift	Average Weekly Milk Per Cow and Shift
Date: 03/07/2023							
Shift Name: Morning							
	Average: 327.14		Sum: 251				
Mavkirot	220	82	52	2133	2213	41	38.6
Yeveshot	429	36	25	1152	1121	46.1	44.1
Vatikot	268	65	45	1735	1894	38.6	40.3
Bogrot	213	14	8	358	320	44.7	37.3
Holvot	237	76	54	1918	2012	35.5	35.4
Lifnei Hamlata	637	24	8	333	338	41.5	43
Acharei Hamlata	286	90	59	2145	2348	36.3	36.7

Field	Description
Group Name	The name of the group
DIM (Days in Milk) Average of Days in Milk for the Herd	Average Days in Milk for the group
Animals in Group	The number of Animals in the Group during the shift
Number of Milked Cows Average number of Milked Cows in the groups	The number of Milked Cows in the group during the shift
Total Milk per Shift	Total milk produced by each group during the shift
Average Weekly Shift Yield per Group	Average yield for the group over the last week for this shift
Average Yield per Milked Cow per Shift	Average yield for each cow in the group during the shift

Field	Description
Average Weekly Milk per Cow and Shift	Average yield for each cow in the group over the last week

3.5.9 Reading the Daily Activity/Rumination Routine Graph

The Daily Activity/Rumination Routine graph displays the average activity or rumination from the past two weeks over the past 24 or 48 hours.

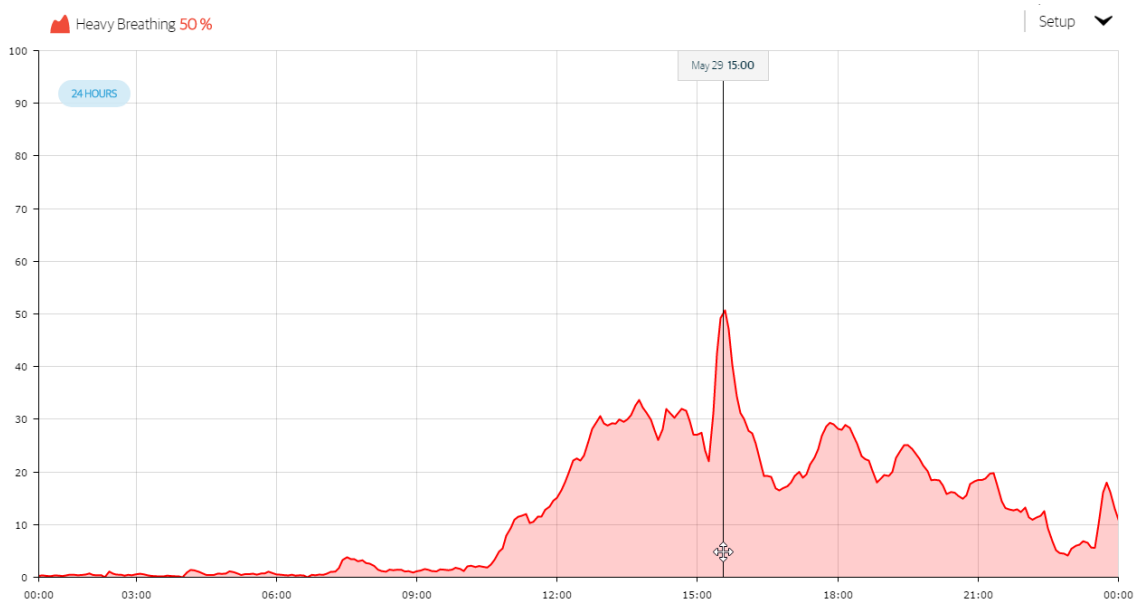


This graph clearly identifies when the current Activity or Rumination level ventures outside of the routine boundary.

This graph displays information only if there are at least 10 cows with tags in the group and these tags have been paired with the cows for at least 14 days. In addition to those two conditions, the farm must also be subscribed to the appropriate Application Plan.

3.5.10 Reading the Heat Stress Routine Graph

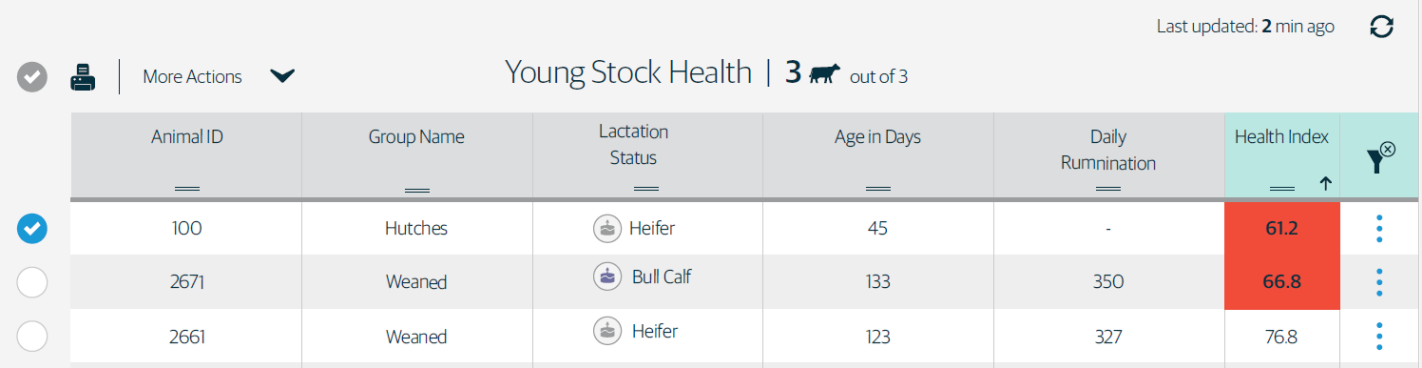
The Heat Stress Routine graph shows the amount of heavy breathing among the cows in the various groups in the herd. This graph helps to understand when the heavy breathing occurs during the daily farm routine and if the policies set down on the farm for cooling and feeding are being effective.



This graph displays information only if there are at least 10 cows with tags in the specific group, and these tags have been paired with the cows for at least 24 hours. In addition to the above the farm must also be subscribed to the appropriate Application Plan.

3.5.11 Reading the Young Stock Health Report

The Young Stock Health report can help you detect health issues in your young stock early before there are clinical signs and help to improve treatment decision making.



The Health Index value for entry into the Young Stock Health Report is configured on page 195.

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Age in Days	The Age of the calf in days
Daily Rumination	The rumination for this calf recorded in minutes over the past 24 hours
Health Index	The current Health Index for this calf. This filed is colored RED when the Health Index is below the value set for a Marked Health Issue as explained in section 7.3.1 on page 195.

NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

3.6 Weekly Tasks

These SenseHub™ reports/graphs should be reviewed at least once a week.

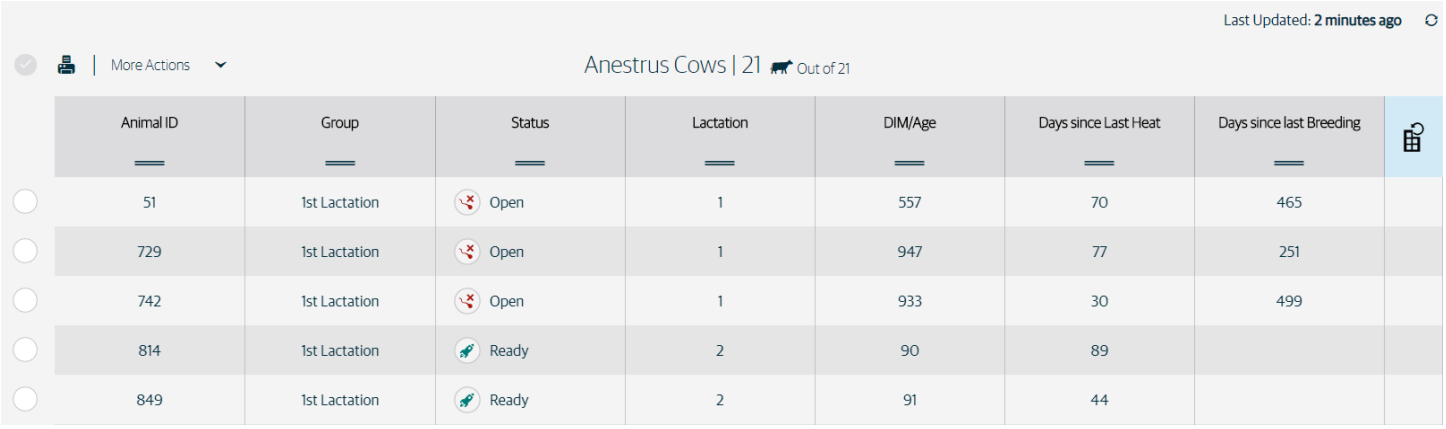
Report	Description
Reading the Anestrus Cows Report	Cows that have not displayed a heat during the last 30 days.
Reading the Irregular Heats Report	Cows with 3 or more heats during the last 30 days.
Reading the Pregnancy Probability Report	Cows that may have aborted or dropped their calf very early.
Reading the Suspected for Abortion Report	This graph displays the average daily rumination along with the total variability within the group. Higher variability might signal something that is stressing the group or the herd.
Understanding the Group Heat Stress Trend Graph	When the weather demands, this report should be accessed more often.
Reading the Parlor ID Effectiveness Report	Review identification trends in the milking parlor by shifts.
Reading the Inline Sensor Maintenance Report	Review the status of the various sensors in the milking parlor
Reading the Tag Maintenance Report	Check weekly to make sure there are no outstanding issues with the tags.

NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

3.6.1 Reading the Anestrus Cows Report

The Anestrus Cows Report displays any cow that has completed the configured Voluntary Waiting Period, VMP, and has not been detected in heat for the last 30 days; the cow must also have the tag for at least 30 days.

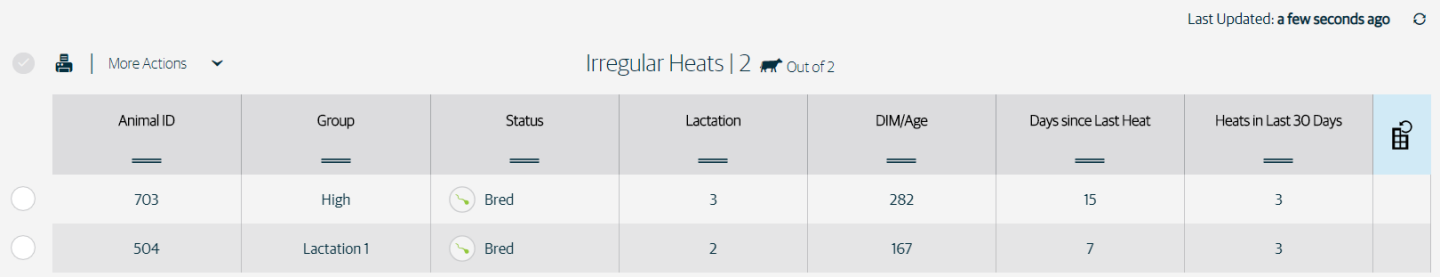


Animal ID	Group	Status	Lactation	DIM/Age	Days since Last Heat	Days since last Breeding
51	1st Lactation	Open	1	557	70	465
729	1st Lactation	Open	1	947	77	251
742	1st Lactation	Open	1	933	30	499
814	1st Lactation	Ready	2	90	89	
849	1st Lactation	Ready	2	91	44	

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Days since last Heat	The number of days since the cow was last determined to be in heat.
Days Since Last Breeding	The number of days since the cow was last inseminated.

3.6.2 Reading the Irregular Heats Report

The Cows with Irregular Heat Report displays any cows that have three or more heats in the past 30 days.



Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Days since last Heat	The number of days since the cow was last determined to be in heat.
Heats in Last 30 Days	The number of times the cow has been recorded in Heat during the past 30 days.

3.6.3 Reading the Pregnancy Probability Report

The Pregnancy Probability Report shows cows with their Pregnancy Probability Ranking. Cows appear in the report from 27 days after last breeding and until a pregnancy check result, positive or negative, is entered for them.



Animal ID	Group	Status	Lactation	DIM/Age	Days since Last Breeding	Pregnancy Probability
223	Gr. 3	Bred Heifer	0	755	262	Medium
507	Gr. 5	Bred Heifer	0	743	248	High
732	Gr. 3	Bred Heifer	0	731	245	High
366	Gr. 3	Bred	2	350	244	High
542	Gr. 5	Bred Heifer	0	694	223	High
729	Gr. 3	Bred Heifer	0	728	203	High
411	Gr. 3	Bred	2	96	37	Low
165	Gr. 3	Bred	3	141	37	Medium
386	Gr. 3	Bred	2	111	35	Medium
693	Gr. 2	Bred	1	89	34	Medium

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Days since Last Breeding	The number of days since the cow was last bred.
Pregnancy Probability	The probability the cow is pregnant measured in 4 ranks: NP – Not Pregnant, Low = Maybe Pregnant, Med – Probably Pregnant, High = High Probability of Pregnancy.

NOTE

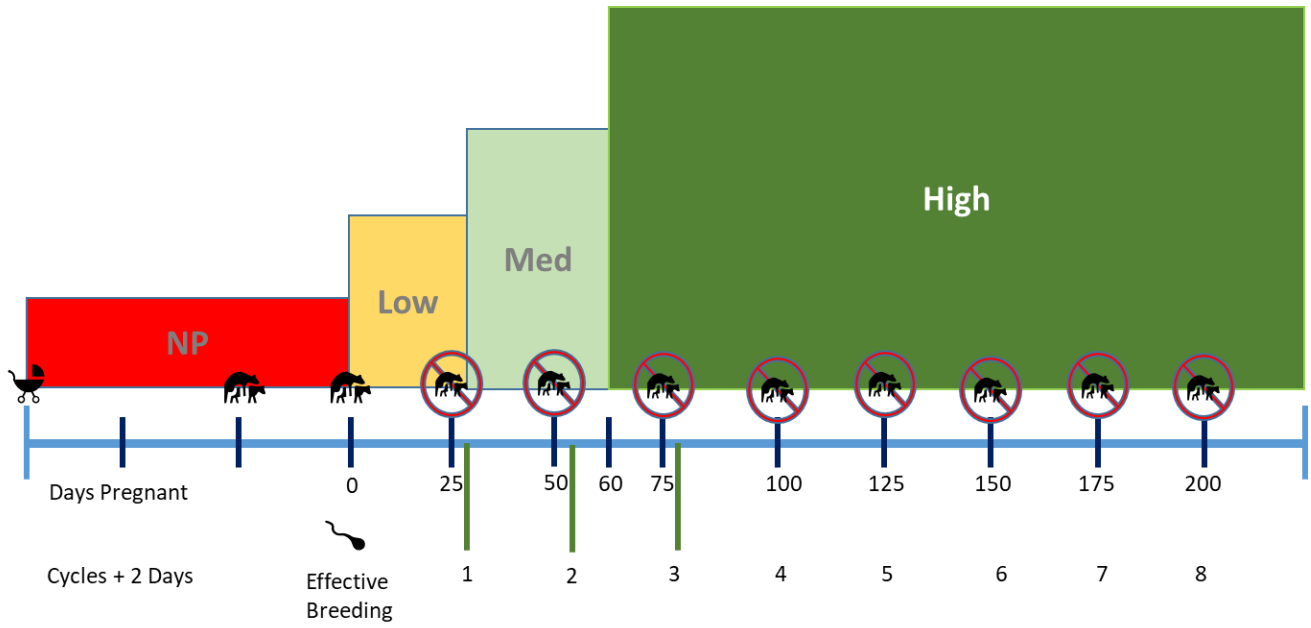
The Pregnancy Probability calculation and rankings are described on page 112.

3.6.3.1 Pregnancy Probability Explained

The Pregnancy Probability calculation used in the Pregnancy Probability Report allows farmers to better chose the cows for pregnancy testing. By focusing on the cows that need to be tested allows for better control of the open/empty days in the herd and reduces labor.

The Pregnancy Probability calculation gives the best results when all events occurring in the lactation are entered into the system correctly and in a timely manner. Data continuity is also important not just in terms of system coverage, but also in terms of keeping tags on the cows continuously, from calving to calving.

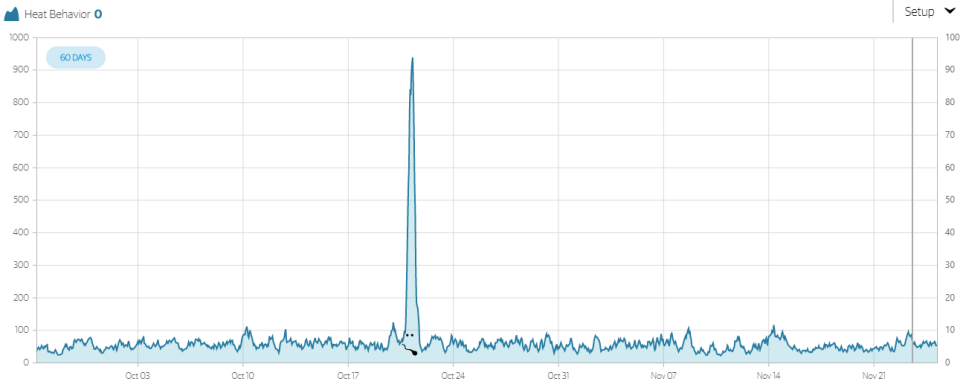
Pregnancy Probability Ranking	Explanation
NP-Not Pregnant	Cows are not pregnant after: Calving, No Insemination, Negative Pregnancy Check, Abortion, more than 300 days since last breeding. This Pregnancy Probability rank does not appear in the report.
Low-Maybe Pregnant	From Breeding until one missed 25 Days Cycle + 2 days. Normally this Pregnancy Probability rank does not appear in the report unless there are cows that are more than 27 days since last breeding and have experienced a system heat.
Medium – Probably Pregnant	From after the first missed cycle + 2 days until 60 days. Cows that are more than 60 days since breeding but have recently experienced a system heat will have this Pregnancy Probability rank.
High – High Probability of Pregnancy	From 60 days after last breeding.



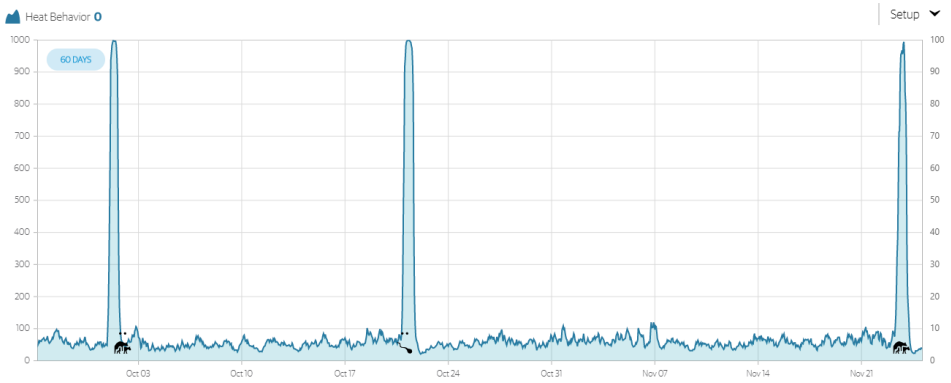


When we take a closer look at the report above there are two cows, 411 and 165, isolated above, with the same number of days since last breeding, but their Pregnancy Probability Ranks are different, one is Low and the other is Med, why?

Heat Graph for Cow 165



Heat Graph for Cow 411



Examining the Heat Graphs for each cow helps explain why these cows have a different Pregnancy Probability Ranking. Cow 165 is 37 days since the last breeding and has no signs of estrus or heat activity. According to the calculation she has a Medium Pregnancy Probability Rank.
Cow 411 recently experienced heat. According to the calculations this takes her Pregnancy Probability down one level to Low.

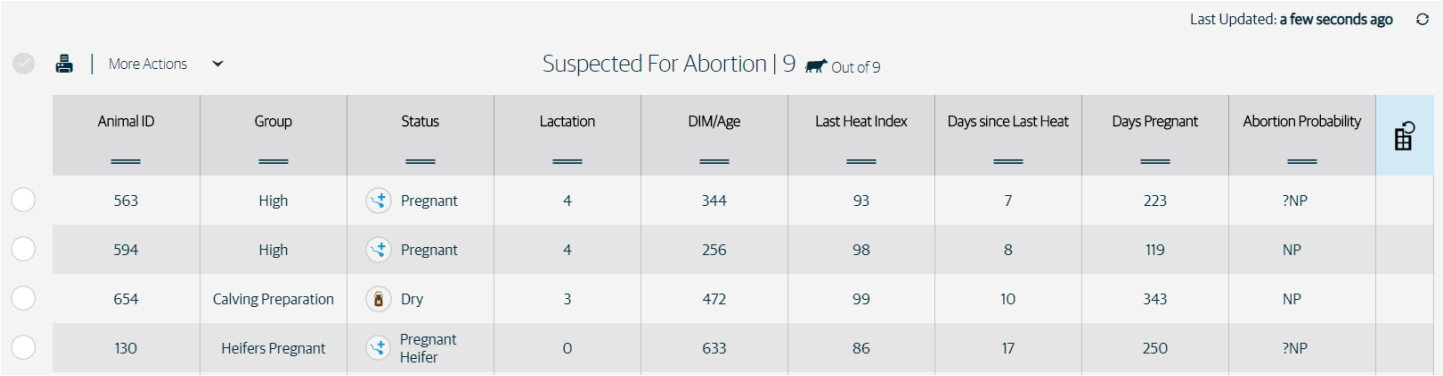
The day after the Pregnancy Probability report, when these cows were Pregnancy Checked and the results entered, Cow 165 was found to be pregnant, and Cow 411 was found to be not pregnant.

Date	Name	DIM/Age
11/26/2019 12:59 AM	Negative	96

Date	Name	DIM/Age
11/26/2019 12:59 AM	Positive	141

3.6.4 Reading the Suspected for Abortion Report

The suspect for Abortion Report displays cows that may have aborted. This report is dependent on entering breedings and Positive Pregnancy Checks in SenseHub™. Cows remain in this report for 30 days after the “Abortion” heat.

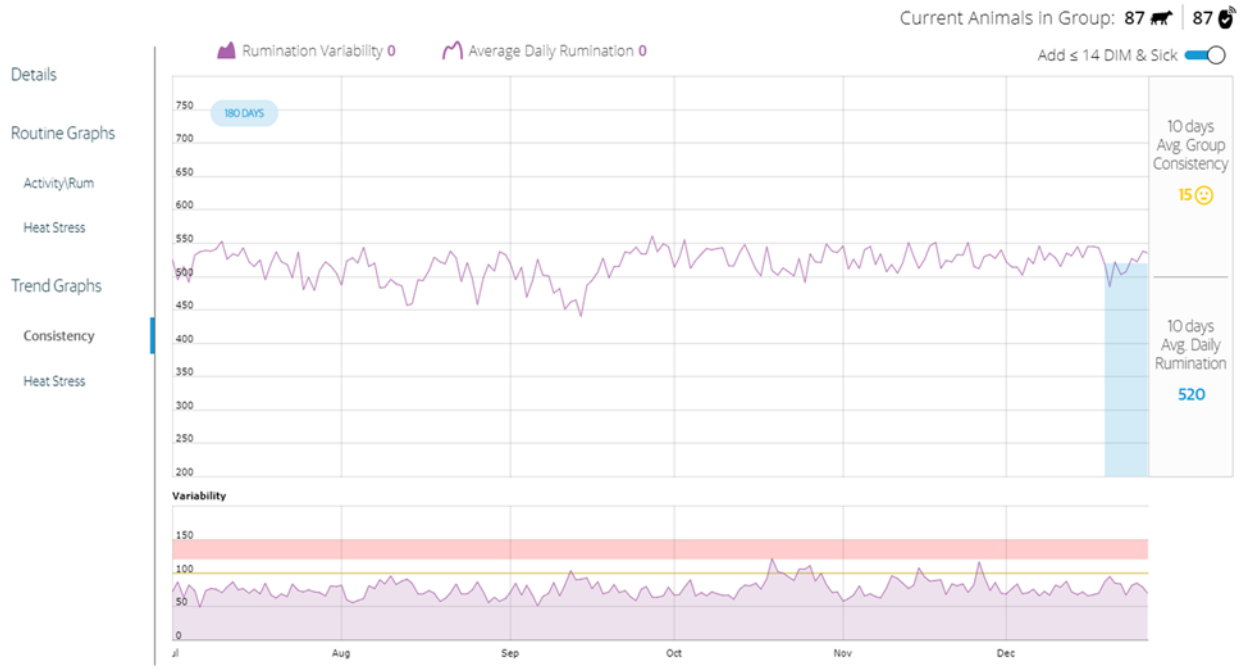


Animal ID	Group	Status	Lactation	DIM/Age	Last Heat Index	Days since Last Heat	Days Pregnant	Abortion Probability
563	High	Pregnant	4	344	93	7	223	?NP
594	High	Pregnant	4	256	98	8	119	NP
654	Calving Preparation	Dry	3	472	99	10	343	NP
130	Heifers Pregnant	Pregnant Heifer	0	633	86	17	250	?NP

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last given birth, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Last Heat Index	The last Heat Index for the most recent heat for this cow.
Days since last Heat	The number of days since the cow was last determined to be in heat.
Days Pregnant	When the cow has a recorded positive pregnancy check, the number of days since the effective breeding.
Pregnancy Probability	The probability that the cow is no longer pregnant. NP = Not Pregnant ?NP =Possibly Not Pregnant

3.6.5 Understanding the Group Consistency Trend Graph

This graph displays the average daily rumination for the group in minutes along with the total variability of that average within the group. Variability within the group might signal something that is stressing the group or the herd.

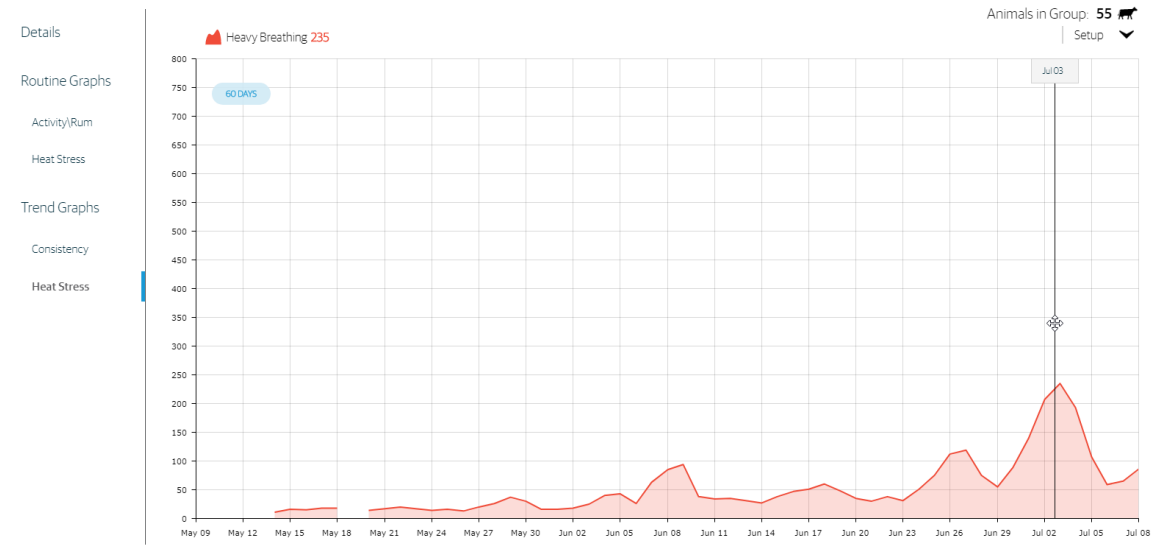


This graph displays information only if there are at least 10 cows with tags in the group and these tags have been paired with the cows for at least 7 days. In addition to the above the farm must also be subscribed to the appropriate Application Plan.

By default cows that are less than 14 days in milk and/or are sick are NOT included in this graph. They can be added by adjusting the slider.

3.6.6 Understanding the Group Heat Stress Trend Graph

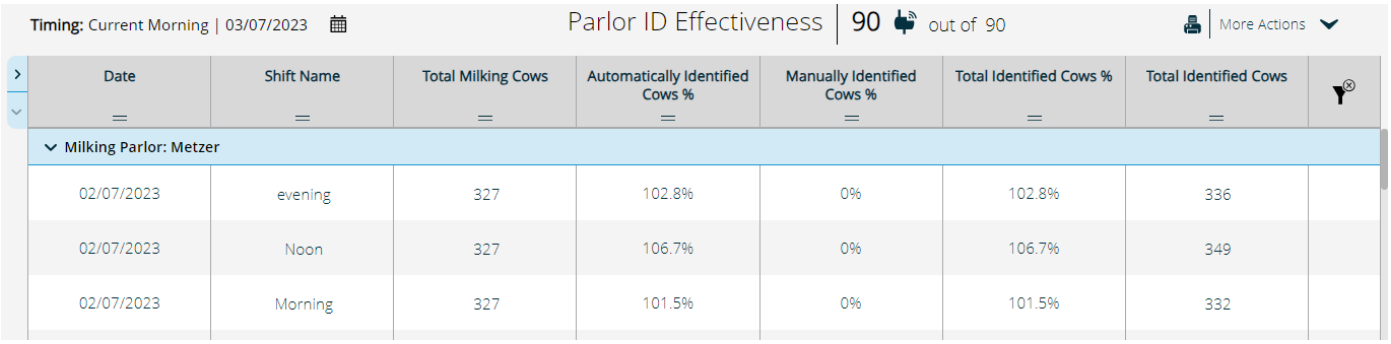
This graph shows the effect of Heat Stress on the herd over time. This graph shows the effect of heat stress over a much larger horizon than the Daily Heat Stress Routine graph.



This graph displays information only if there are at least 10 cows with tags in the group and these tags have been paired with the cows for at least 1 day. In addition to the above the farm must also be subscribed to the appropriate Application Plan.

3.6.7 Reading the Parlor ID Effectiveness Report

This report summarizes the identification trends in the milking parlor by shifts. Having a more than 100% Identification Rate is possible if cows that have just given birth are identified in the milking parlor before their birth is recorded in SenseHub.



Date	Shift Name	Total Milking Cows	Automatically Identified Cows %	Manually Identified Cows %	Total Identified Cows %	Total Identified Cows
Milking Parlor: Metzer						
02/07/2023	evening	327	102.8%	0%	102.8%	336
02/07/2023	Noon	327	106.7%	0%	106.7%	349
02/07/2023	Morning	327	101.5%	0%	101.5%	332

NOTE

This report is grouped by default by milking parlor

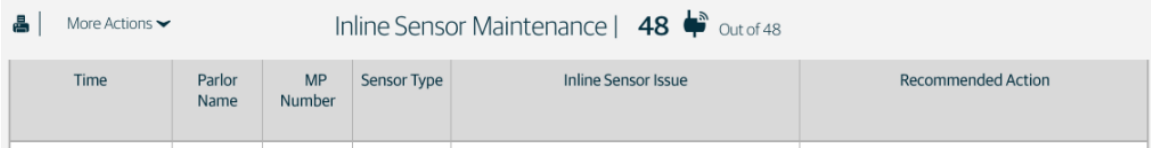
Field	Description
Date	Date of the shift
Shift Name	Name of the shift
Total Milking Cows	Total number of cows that should have been milked during this shift
Automatically Identified Cows%	The percent of cows automatically identified during this shift
Manually Identified Cows%	The percent of cows manually identified during this shift
Total Identified Cows %	The percent of cows identified automatically and manually during this shift
Total Identified Cows	Total number of identified cows automatically and manually during this shift

NOTE

It is possible for more cows that the total milking cows to be identified if births are not entered in a timely fashion into SenseHub.

3.6.8 Reading the Inline Sensor Maintenance Report

This reports details the errors and other issues for the components in the milking parlor in real time.

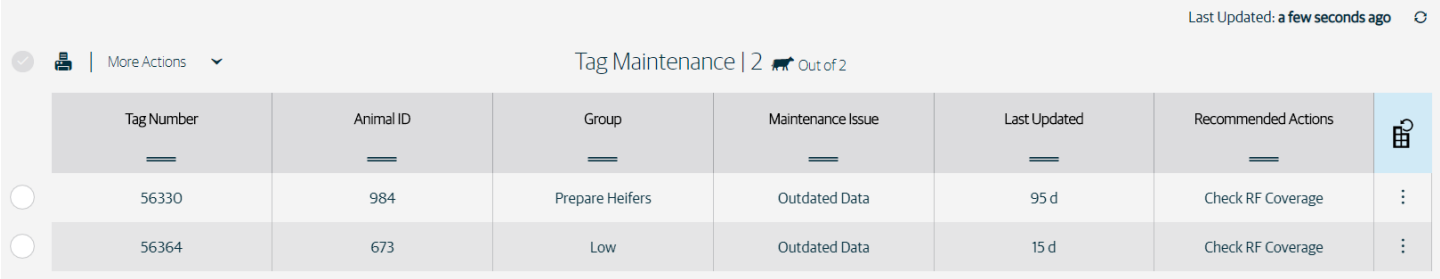


Field	Description
Time	The date and time the issue was recorded.
Parlor Name	The name of the parlor where the issue was recorded.
Milking Point (MP) Number	The milking point where the issue was recorded.
Sensor Type	The type of sensor. This could be Milk or SCC Sensors.
Inline Sensor Issue	The issue being reported. See table below
Recommended Action	The recommended action to take to clear the issue. This action may be to Call Technical Support.

Sensor Type	Issue	Recommended Action
Milk	High Flow Rate	Check air bleed hole on milking cluster

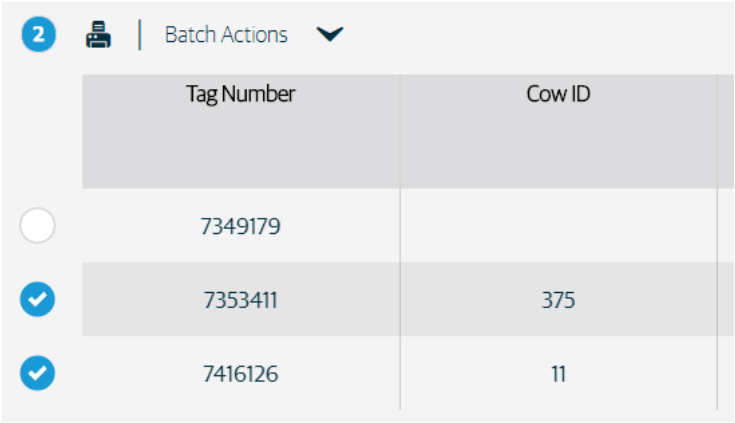
3.6.9 Reading the Tag Maintenance Report

This report contains all the identified Tag Issues and how to resolve these issues.



Field	Description
Tag Number	The number of the SCR Tag.
Animal ID	The Identification number assigned to the animal in SenseHub™.
Group	The group where the animal is assigned.
Maintenance Issue	The identified issue with the tag.
Last Updated	The last time the tag was seen by the system if there is such a record.
Recommended Actions	Perform this recommended action to resolve this issue.

Click the checkboxes on the left side to select records to create a printed list to take with to the barn or strings to find the cow and/or tag.



3.7 Monthly Tasks

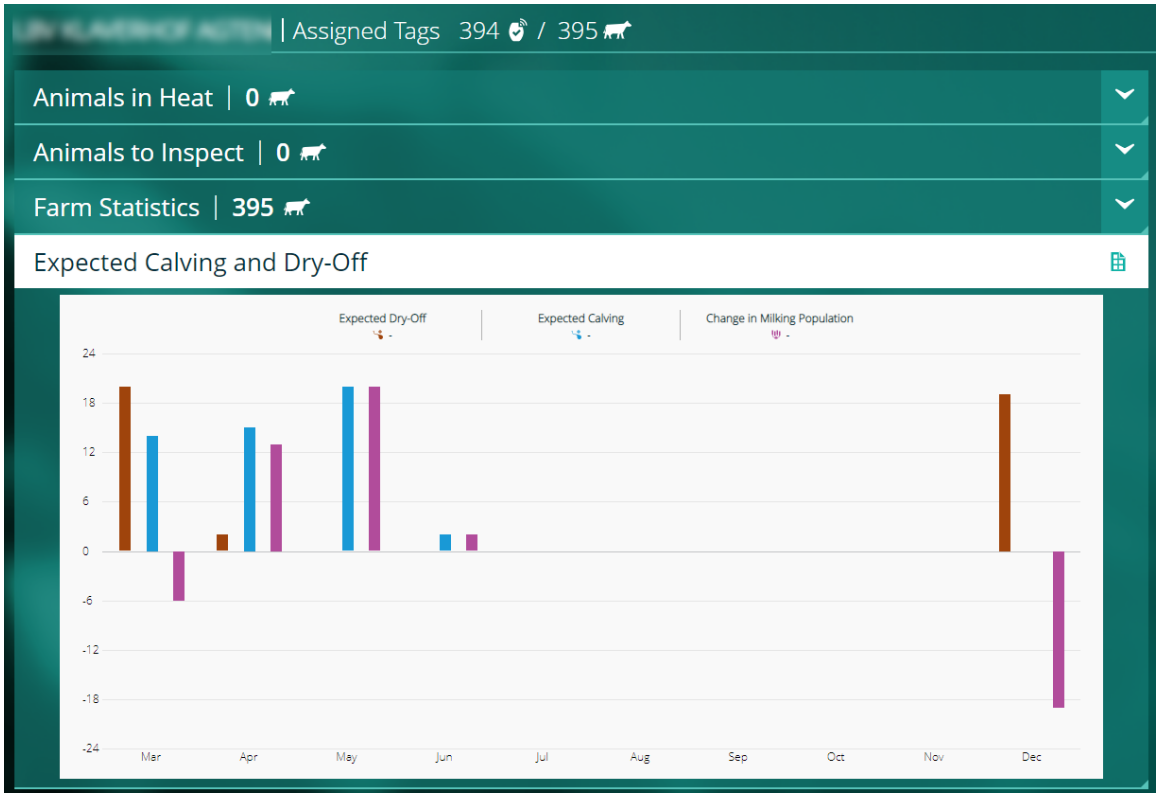
These SenseHub™ reports/graphs should be reviewed at least once a week.

Report	Description
Understanding the Expected Calving Graph and Report	Cows that are Checked Pregnant, (or Bred) appear in this Graph and Report.
Understanding the Farm Statistics	Review the relationships between the number of the different types and ages of cows on the farm.
Checking Group Membership	Review the cows to ensure that they are registered in the correct groups.

3.7.1 Understanding the Expected Calving Dry-off Graph and Report

The Expected Calving graph and report display the current month and 9 additional months of expected Calvings on the farm. These can help you plan for the number of Calvings and subsequent milk production and give you an idea of what is expected in terms of farm production for the coming months.

The graph can be configured as a widget and added to the dashboard. See Dashboard Configuration on page 66 for instructions on how to add this to the dashboard.



NOTE

By default Heifers and Cows with the status Bred are not included in this graph.

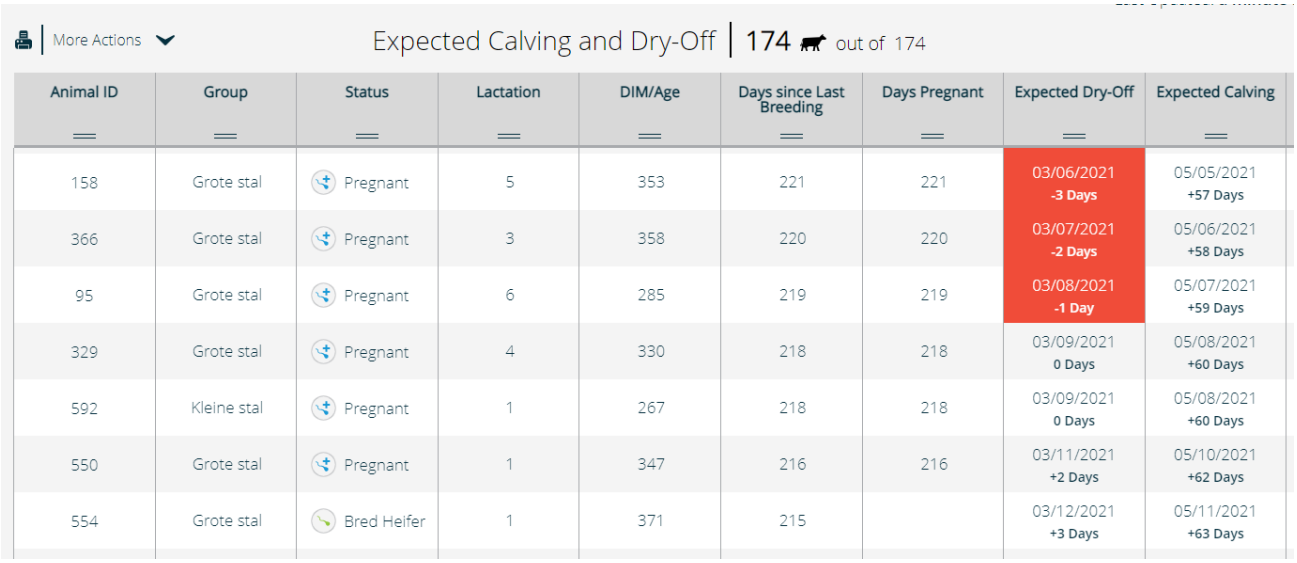
If desired Heifers and Cows with the Status Bred can be added.

This graph shows for each month:

- The number of animals expected to calf.
- The number of animals expected to be dried off.
- The different in the size of the milking population up or down.

3.7.1.1 Expected Calving and Dry-off Report

The Expected Calving Report provided more details for the Expected Calving Graph. The Expected Calving Date appears in Red when this day has passed. Cows that are more than 30 days past their expected calving date no longer appear in this report.



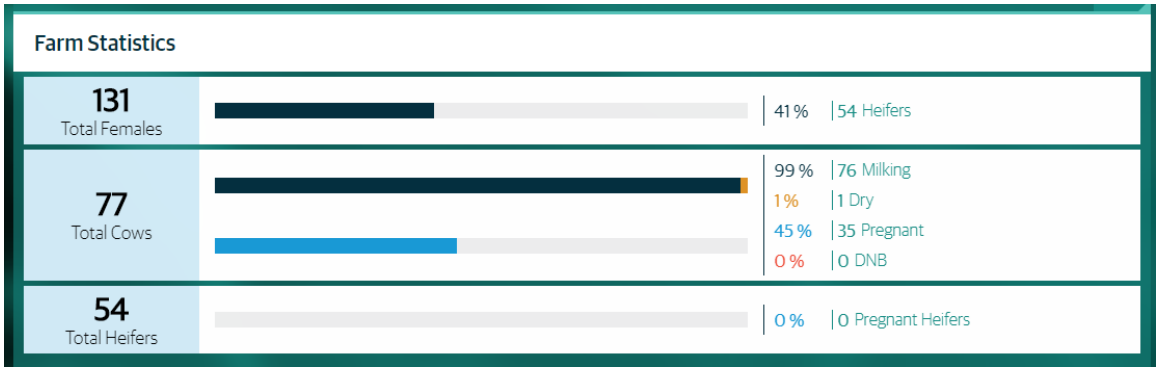
Animal ID	Group	Status	Lactation	DIM/Age	Days since Last Breeding	Days Pregnant	Expected Dry-Off	Expected Calving
158	Grote stal	Pregnant	5	353	221	221	03/06/2021 -3 Days	05/05/2021 +57 Days
366	Grote stal	Pregnant	3	358	220	220	03/07/2021 -2 Days	05/06/2021 +58 Days
95	Grote stal	Pregnant	6	285	219	219	03/08/2021 -1 Day	05/07/2021 +59 Days
329	Grote stal	Pregnant	4	330	218	218	03/09/2021 0 Days	05/08/2021 +60 Days
592	Kleine stal	Pregnant	1	267	218	218	03/09/2021 0 Days	05/08/2021 +60 Days
550	Grote stal	Pregnant	1	347	216	216	03/11/2021 +2 Days	05/10/2021 +62 Days
554	Grote stal	Bred Heifer	1	371	215		03/12/2021 +3 Days	05/11/2021 +63 Days

Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group	The group where the animal is assigned
Status	The status of the animal. Statuses are explained on page 39.
Lactation	The number of times the cow has given birth or calved
DIM/Age	The number of days since the cow has last calved, or if she is a Heifer/Calf, the number of days old the Heifer/Calf is.
Days Since Last Breeding	The number of days since the cow was last inseminated.
Days Pregnant	The number of days since the effective breeding. This only appears for animals that have been checked pregnant.

Field	Description
Expected Dry-off	The date since the last breeding + the Pregnancy Days to Dry-off configured for the farm/system.
Expected Calving	The date since the last breeding + the Pregnancy length configured for the farm/system.

3.7.2 Understanding the Farm Statistics

The Farm Statistics Widget on the SenseHub™ Dashboard gives at-a-glance essential information about the herd. It is important to check this each month, more often if required, to make sure that your herd is currently "configured" to meet its economic potential as well as your business needs.



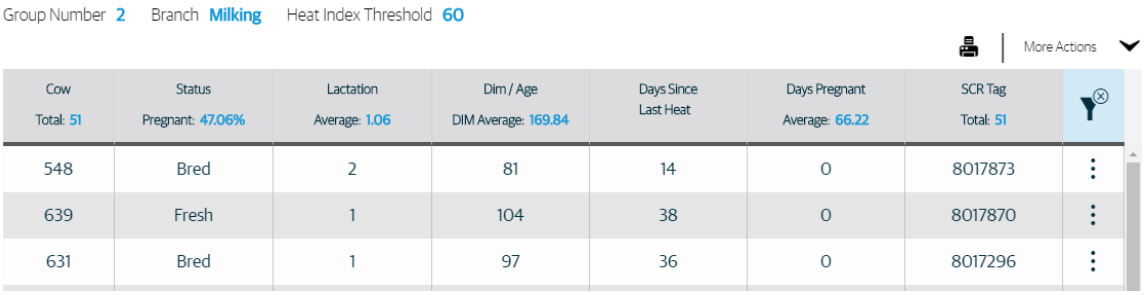
KPI	Units	Description	Goal/Range
Heifers	%	Total Heifers / Total Cows	75-90%
Milking	Number	Total Cows	
Dry (cows)	%	Total Dry cows / Total Cows	5-20%
Pregnant Cows	%	Pregnant Cows / Total Cows	40-60%
DNB (Do Not Breed)	%	DNB Cows / Total Cows	5-20%
Pregnant Heifers	%	Pregnant Heifers / Total Heifers	20-40%

- Cow = Cows in 1st or higher lactation.

- Heifer = Calves from suckling until beginning of 1st lactation.

3.7.3 Checking Group Membership

Review the list of cows in each of the groups. This will ensure that all the cows are registered where they are and will also allow to review other essential information about the herd.



Field	Description
Cow / Total	What is the total number of cows in this group.
Status / Pregnant	The status of the cows and what percentage of the cows are pregnant in the group.
Lactation / Average	Lactation and what is the average lactation for the group.
DIM/Age DIM Average	Days in Milk or Age and what is the average of the DIM for the cows in the group.
Days since Last Heat	The number of days since the cow was in heat.
Days Pregnant / Average	The number of days the cow is pregnant and the average number of days pregnant for the pregnant cows in the group.
SCR Tag / Total	The total number of SCR tags on the cows in the group.

3.8 Quarterly Tasks

The Fertility Summary is a comprehensive farm reproduction performance analysis that considers a broad range of reproduction KPIs, population segments and time spans.

3.8.1 Fertility Summary

Use this report to pinpoint reproduction issues in the herd or population level and to evaluate the reproduction strategies implemented on the farm compared to similar periods of time over the history of the farm.

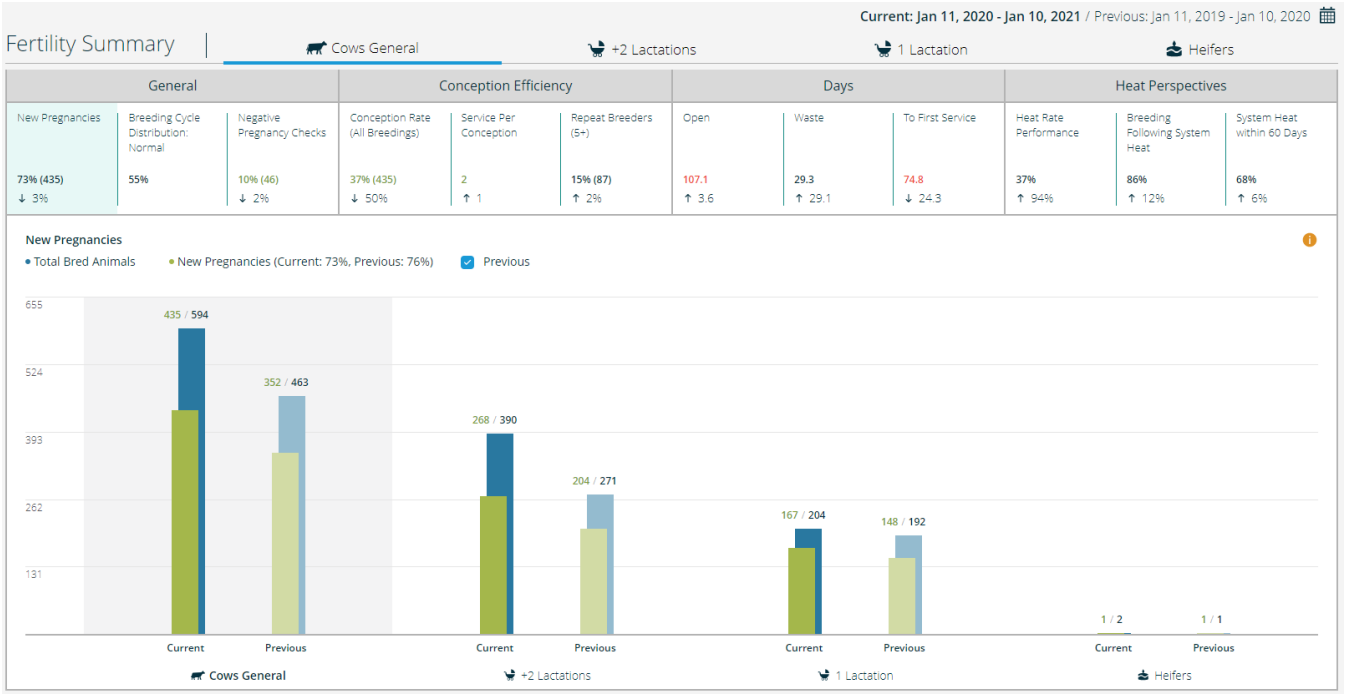
3.8.1.1 Fertility Summary at a Glance

By default, the Fertility Summary is displayed for the previous 12 months that ended 60 days ago, compared to the same period 2 years ago.

For example, the Fertility Summary below was generated on March 11, 2021, and displays the 365 days from 12 January 2020 – 11 January 2021, compared to January 2019 – January 2020.

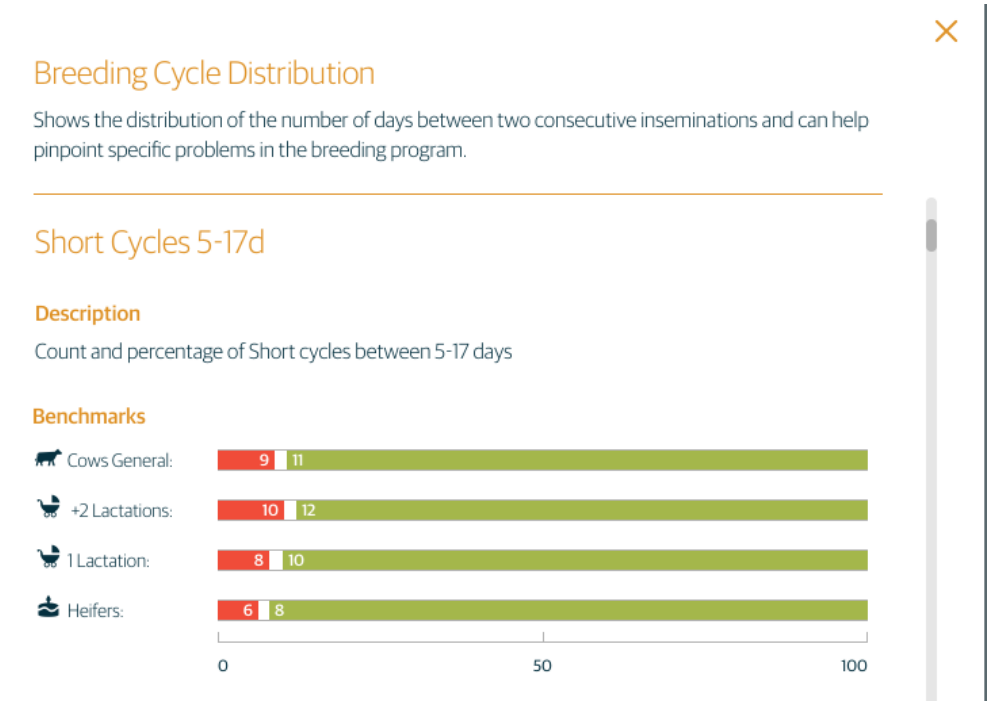
The Fertility Summary is divided into 4 sections of 3 KPIs each:

- General – New Pregnancies, Negative Pregnancy Checks, and Breeding Cycle Distribution.
- Conception Efficiency – Conception Rate, Service per Conception, and Repeat Breeders.
- Days – Open, Waste, and Days to First Service
- Heat Perspectives – Heat Rate Performance, Breeding following System Heat, System Heat within 60 days.



Each of these sections can be displayed for the Entire Herd, or Cows General, 2+ Lactation Cows, 1st Lactation Cows, and Heifers.

A deeper explanation is available by clicking on the More Information icon .



The expanded explanation describes the calculation and the benchmarks for each population.

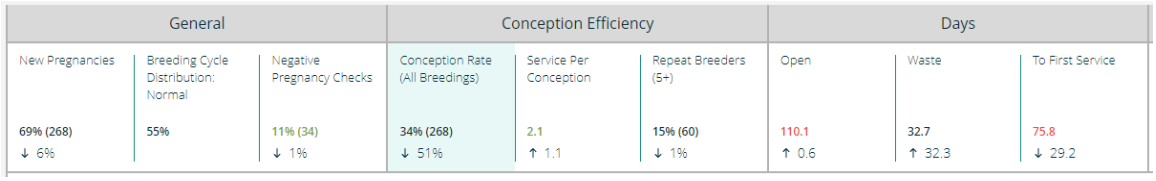
3.8.1.2 Fertility Summary Navigation

The Fertility Summary page is divided into three sections:

- Population Tabs: the chosen tab is underlined.



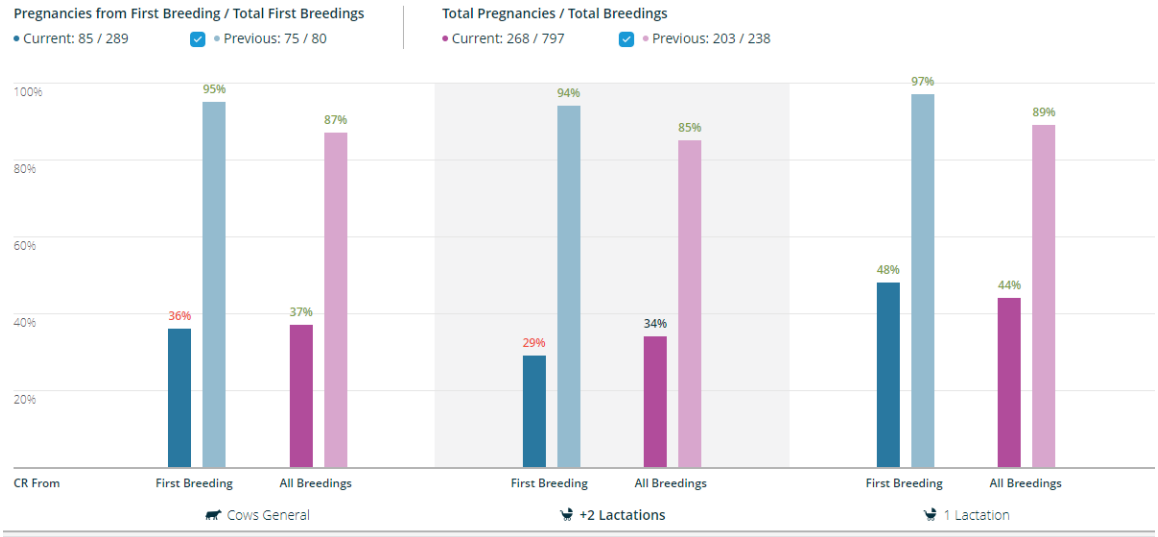
- Reproduction KPI; the chosen KPI is highlighted. The content in each KPI window changes according to the Population chosen above.



- The results here are colored and displayed with a trend arrow. They are colored according to standard performance of each KPI.

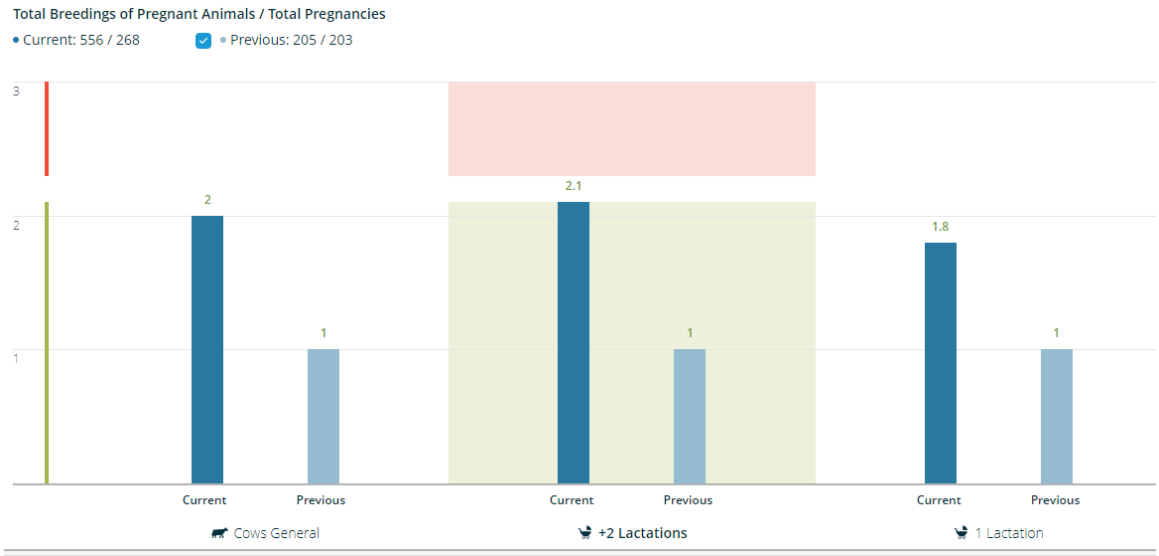
Graph of the chosen Reproduction KPI. These are also highlighted in one of two ways.

First to understand which graph is represented by the upper two choices, KPI and Population.



The previous periods numbers are represented here with a pale column, and the comparison of the current period to the previous period is displayed accented with color according to standard benchmarks for the KPI.

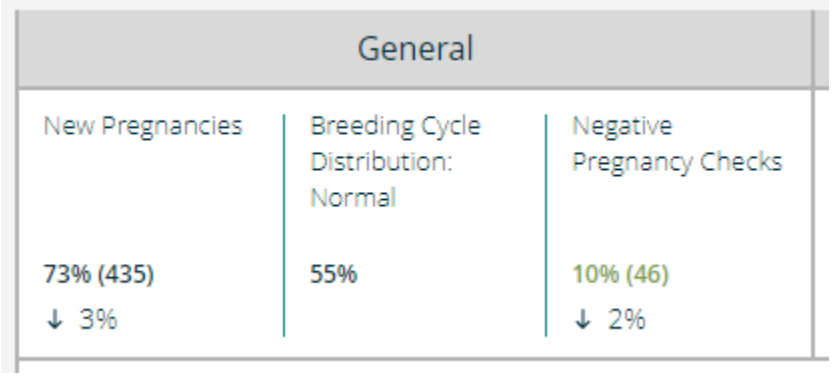
Second to understand which graph is represented by the upper two choices along with benchmarks for this KPI.



Green indicates a good result; red indicates a result that may require investigation and evaluation to improve it.

3.8.2 Fertility Summary – General

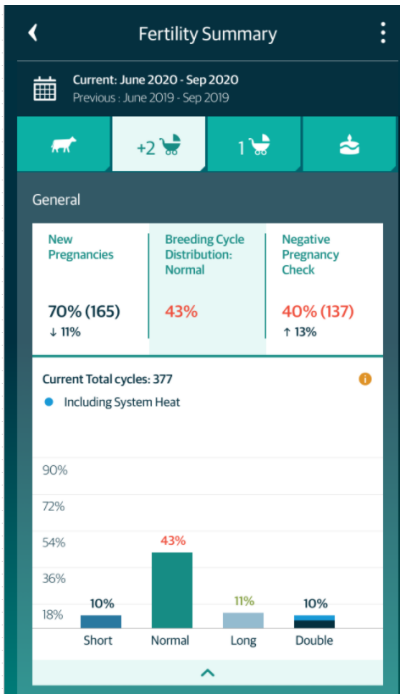
There are 3 KPIs in this section, New Pregnancies, Breeding Cycle Distribution, and Negative Pregnancy Checks.



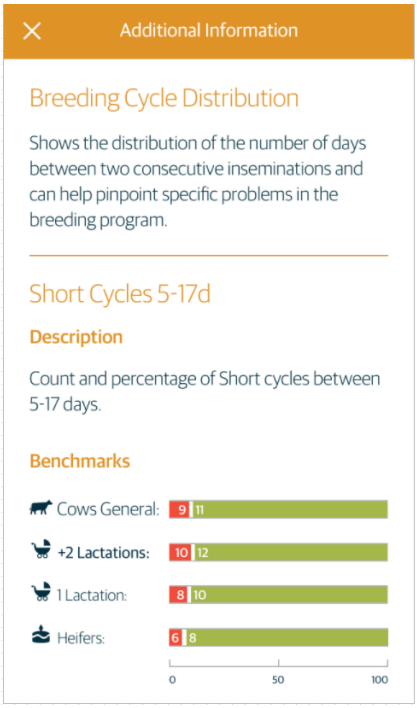
- New Pregnancies are all the positive pregnancy tests, PPTs, for all animals inseminated during the period. Each animal is counted only once per lactation.
    - Guidelines: The PPT can be after the end of the defined period. Animals that have an Abortion and a second pregnancy in the lactation are counted only once.
- Breeding Cycle Distribution: Cycle Types, Short between 5 and 17 Days, Normal between 18 and 25 Days, Long between 26 and 35 Days. Double Cycles between 36 and 60 days.
    - Guidelines: when counting cycles, the 2nd insemination MUST be in the sample period.
- Negative Pregnancy checks are the number of negative pregnancy checks, NPTs, over the total number of pregnancy checks during the sample period. The number is displayed as percent.

3.8.2.1 On the Mobile

The Fertility Summary is also available on the SenseHub Mobile app. The display on the mobile application is broken into the same sections, Population, KPI and Graph.

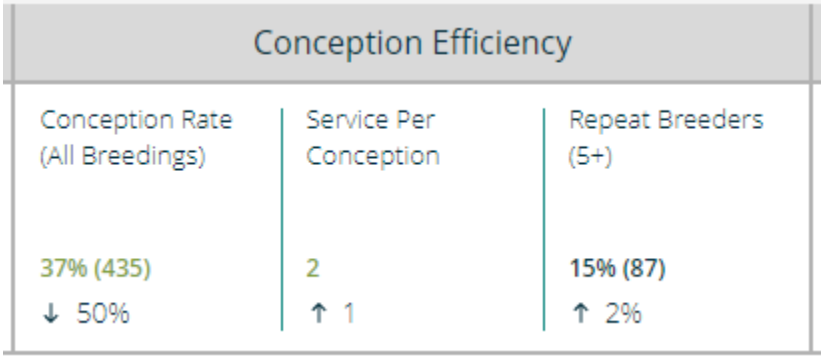


Tapping the More Information icon on the app or clicking it on the web interface, displays more information about this section being displayed.



3.8.3 Fertility - Conception Efficiency

There are 3 KPIs in this section; Conception Rate, Service per Conception, Repeat Breeders.

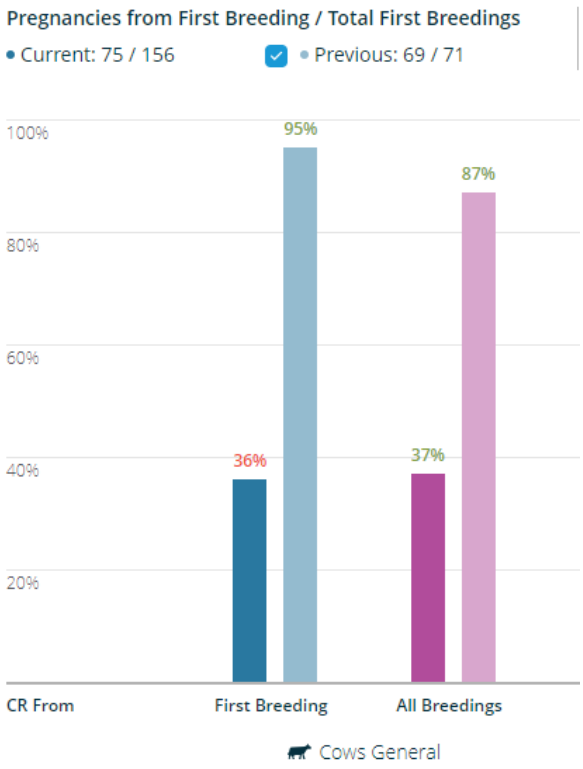


- Conception Rate (All Breedings) is all the PPTs over all the inseminations during the period with a result, positive or negative. A negative result is either a negative pregnancy check or an additional insemination/breeding.
    - Guidelines; the PPT can be after the end of the period.

NOTE

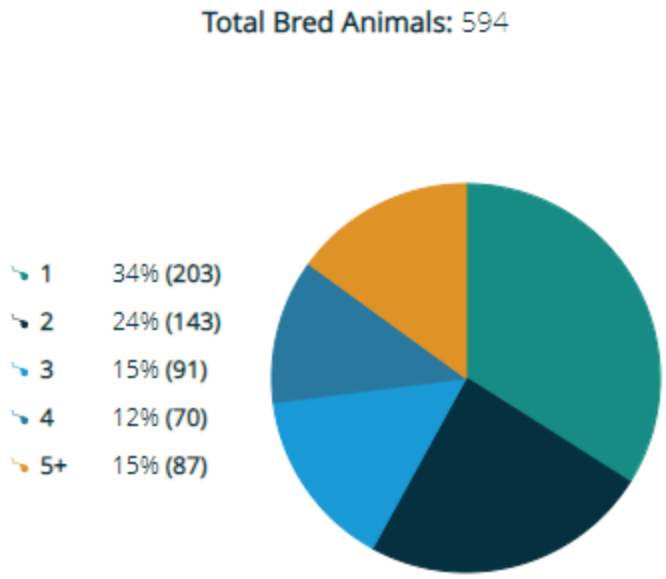
This is the reason the period ends 60 days before today.

The graph for this KPI displays the Conception Rate for First Breedings alongside the Conception Rate for All Breedings.



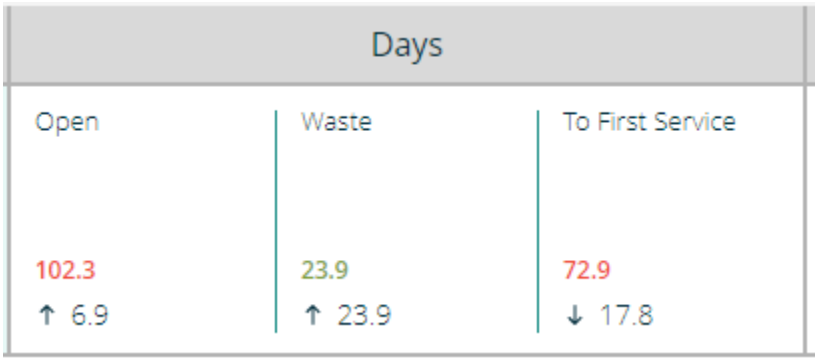
- Service per Conception is the number of effective inseminations over the total number of inseminations during the sample period. This calculates insemination efficiency from only the pregnant population.
    - Guidelines: some of the total inseminations can be before the sample period only if they are in the same lactation as the effective insemination. Cows that had an Abortion same Lactation have all their inseminations in the current lactation counted.
- Repeat Breeders are the number of animals with 5 or more inseminations.
    - Guidelines: double inseminations are counted as one insemination when calculating repeat breeders.

The graph in this section displays all the bred animals according to their number of breedings.


Total Bred Animals: 594
1 34% (203)
2 24% (143)
3 15% (91)
4 12% (70)
5+ 15% (87)

3.8.4 Fertility Summary – Days

This section displays 3 KPIs, Days Open, Waste Days, Days to First Service.



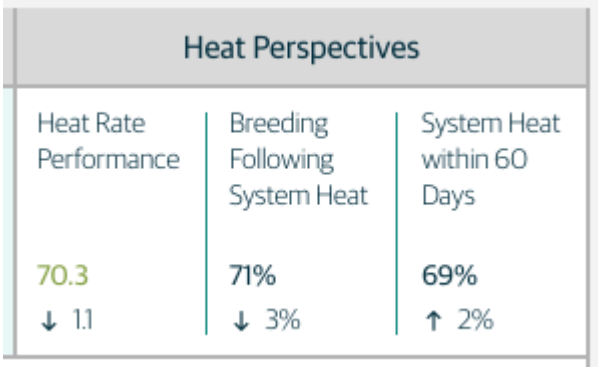
- Open Days is the number of days from Calving to Effective insemination for cows, and the number of days from birth to Effective Insemination for Heifers.
    - Guidelines: Cows with more than 300 open days and Heifers with more than 665 days are excluded from the calculation. Animals with more than one effective insemination, only count the days from birth/calving to the first effective insemination.
- Waste Days is the number of days from first insemination to effective insemination.
    - Animals with more than one effective insemination, only count the days from birth/calving to the first effective insemination.
    - Cows with more than 300 open days and Heifers with more than 665 days are excluded from the calculation. Animals with more than one effective insemination, only count the days from birth/calving to the first effective insemination.
- Days to First Service is the number of days from calving to the first insemination for cows, or the number of days from birth to first insemination for Heifers.
    - Guidelines: Cows with more than 200 open days and Heifers with more than 565 days to First Service are excluded from the calculation.



The example above tells us that in the current period the average open days for the 1st lactation cows is 102.3 with 23.9 Waste Days and 72.9 days till first service. The open days of 102.3 is above the benchmark as is the number of days to first service and they are therefore colored red.

3.8.5 Fertility Summary – Heat Perspectives

This section displays 3 KPIs, Heat Rate Performance, Breeding Following System Heat, System Heat within 60 Days.

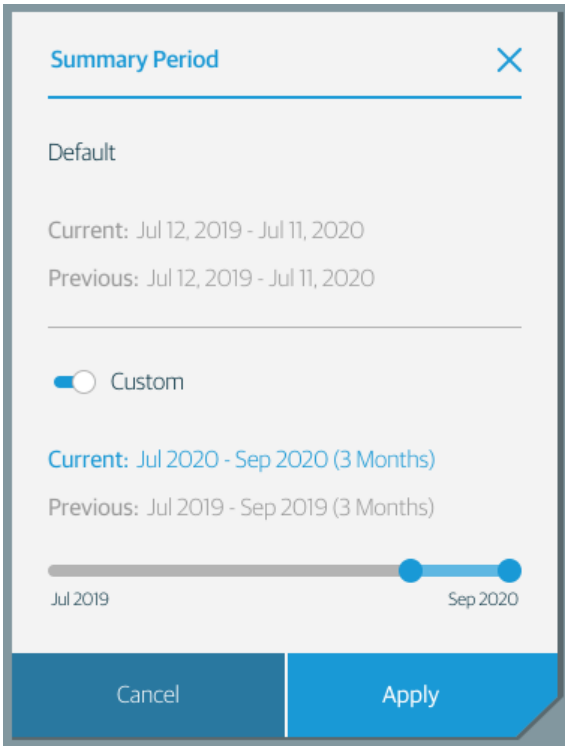


- Heat Rate Performance is 21 over the average system heat cycle length multiplied by 100 giving a percentage. This shows the rate of cycles between two consecutive system heats and can pinpoint specific problems in heat pattern or detection.
- Breeding following System Heat is the number of inseminations associated with a system heat over the total number of inseminations both with and without system heats multiplied by 100 giving a percentage. This shows the match between inseminations and system detected heats.
- System Heat within 60 Days is the number of cows with a system heat in the first 60 days of a lactation over all the cows in the first 60 days multiplied by 100 giving a percentage.

3.8.6 Setting a Custom Sample Period

Clicking the Calendar 

displays a custom period configuration area.



- When choosing a custom period only complete months can be selected.
- The minimum custom period is 2 months with a maximum of 12 months.
- The previous complete month can be selected.
- The previous period is displayed only if there is a previous period. Newer systems may not have a parallel period 12 months before the configured period.

NOTE

When configuring a custom period, the calculation is run after clicking apply.

3.8.7 Fertility Summary – FAQ

Adding the Fertility Summary to SenseHub Dairy causes some changes to the system.

1. When the Fertility Summary is active on SenseHub the Reproduction KPIs are no longer displayed. There are slight and very minor differences in how these calculations are made and how frequently they are made so for clarity these KPIs are hidden.
2. Farms with more than 700 cows with tags that are using SenseHub Controllers are too large to be able to run the Fertility Summary.
3. As described on page 193, the Fertility Summary is disabled by default when farmers are using an external herd management system.
4. When there are too few animals managed by SenseHub the KPIs may impacted by the larger impact of the small number of animals on the farm and managed by SenseHub.
5. The Fertility Summary cannot be displayed when the farm is working in minimal validation mode.
6. When new systems are installed a minimum of 180 days of data is required before the Fertility Summary can be displayed.

3.9 Recurring Tasks

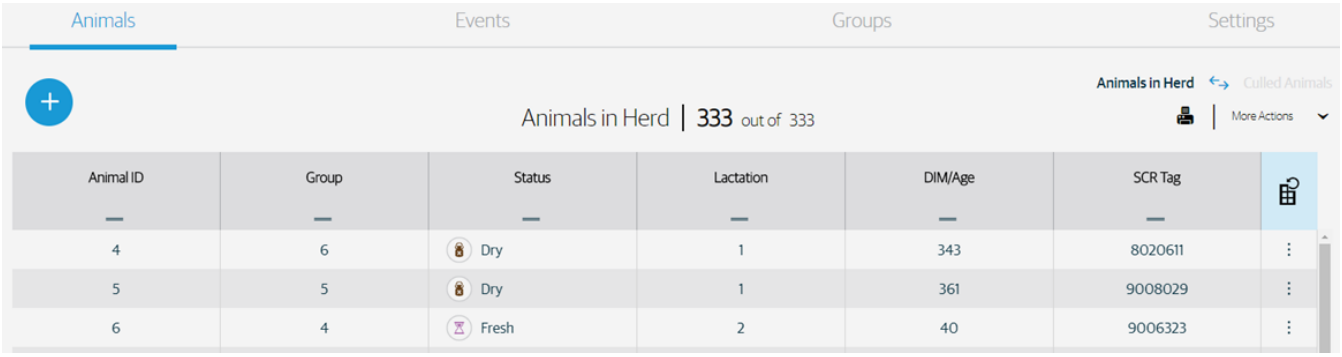
There are a few tasks associated with the SenseHub™ System that may happen at any time.

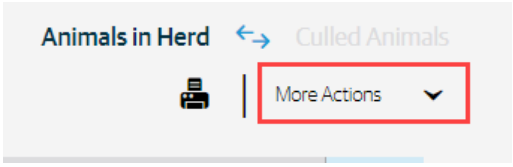
Task	Description
Adding Animals from File	Adding additional animals to SenseHub using a CSV File
Reading the Connectivity Issues Report	The Connectivity Issues Reports displays connectivity issues recorded for the previous 60 days
Unpairing Tags	How to unpair Monitoring Tags from the cow
Changing Tags	How to change the paired Monitoring tag
Adding Notes	Adding a notation about a significant or special event that happened on the farm

3.9.1 Adding Animals from File

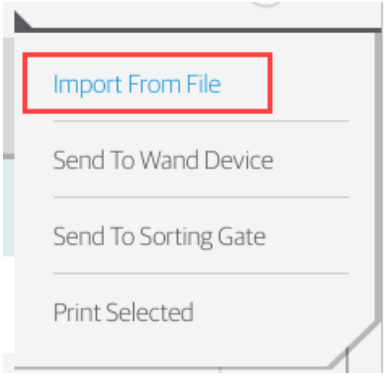
From time-to-time farmers add animals to their herd from the outside, new animals that were not born on the farm. Farmers can choose to add animals using the interface, a step-by-step explanation is found from page 31. Some users may find it easier to add new animals using a CSV File.

1. From the Dashboard go to Farm → Animals.

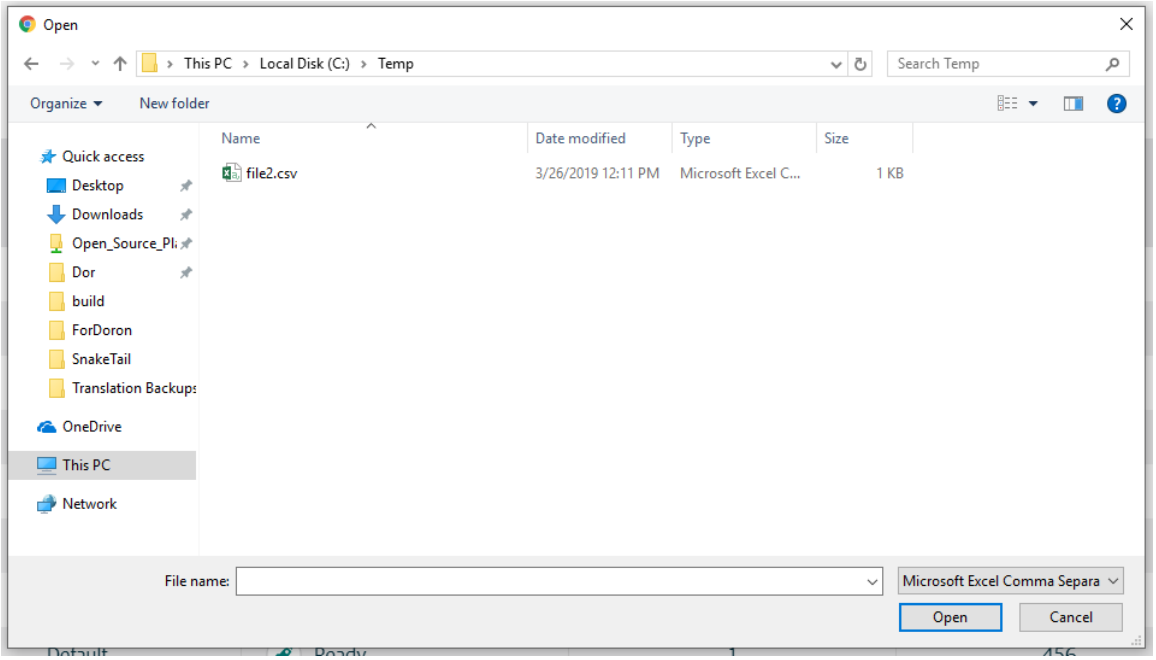


1. Click on More Actions; 

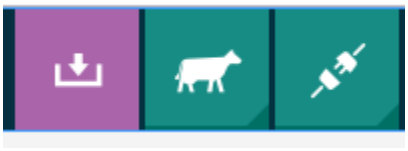
the More Actions menu appears.
2. Choose Import from File from the menu.



3. Browse to the location on your PC where you created and saved the CSV file with the new animals.



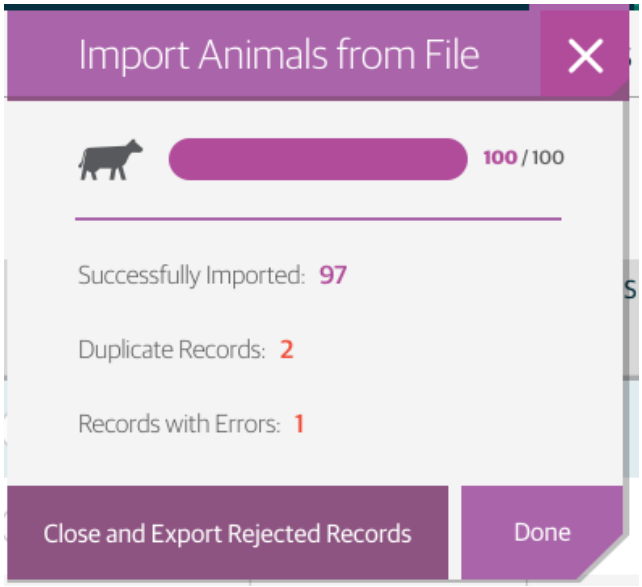
4. A New Icon appear on the top notification bar.



5. Click the purple icon to see the progress of the CSV file import.



6. When complete the Progress tag opens.



If there are no errors, Click Done. If there are errors, you can choose to export these rejected records for editing and loading again later.

3.9.1.1 CSV File Format

This CSV format is different that the format used when migrating animals from Heatime HR system to SenseHub.

Only three of these columns are required.

- Sex
- Animal ID
- Current Group Number.

The other columns are not required, but cows uploaded without a Birth Date and/or Calving Date may not be accepted by SenseHub.

Column	Name in CSV File	Value Type	Required
Sex	Sex	M/F (String)	Yes
Animal ID	ID	String	Yes
Current Lactation Number	Lactation Number	Number	
Current Group Number	Current Group	Number	Yes
Registration Number	Registration Number	String	
Birth Date	Birth Date	DD/MM/YYYY	
Last Calving Date	Calving Date	DD/MM/YYYY	
Last Insemination Date	Insemination Date	DD/MM/YYYY	
Last Insemination Number	Insemination Number	Number	
Last Pregnancy Check Date	Pregnancy Check Date	DD/MM/YYYY	
Last Pregnancy Check Result	Pregnancy Check Result	+/-/? (String)	
Last Dry-off Date	Dry-off Date	DD/MM/YYYY	
EID Tag Number	EID Tag Number	String	
SCR Tag Number	SCR Tag Number	Number	

The values from Name in CSV File must appear in the first line of the CSV file

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Sex	ID	Lactation Number	Current Group	Registration Number	Birth Date	Calving Date	Insemination Date	Insemination Number	Pregnancy Check Date	Pregnancy Check Result	Dry-off Date	EID Tag Number	SCR Tag Number

These items can appear in any order, in any CSV File, but must be consistent throughout the CSV File

Explanation:

- Number – Integer equal or greater than 0
- Date – always in DD/MM/YYYY Format
- Pregnancy Check Result – Only the characters, + - ? are accepted
- Columns headers must be written as in the above table, or they will not be processed into SenseHub, and each animal may be rejected.

3.9.2 Reading the Connectivity Issues Report

The Connectivity Issues Reports displays connectivity issues recorded for the previous 60 days.



Field	Description
Issue Time	The time of the Connectivity Issue
Device	The device where the issue occurred, System, Mobile, or Desktop.
Performed By	The Email of the User that performed the action that had the issue. If a – is displayed, then the action was performed by the system.
Issue Type	The different types of issues: System Actions, Failed User Actions from Web and/or Mobile, Run a Custom Report, Create a Custom Report, Copy or Edit a Custom Report, Create or Delete a Folder for Custom Reports, Rename a Custom Report, Delete a Custom Report, Move a Custom Report.

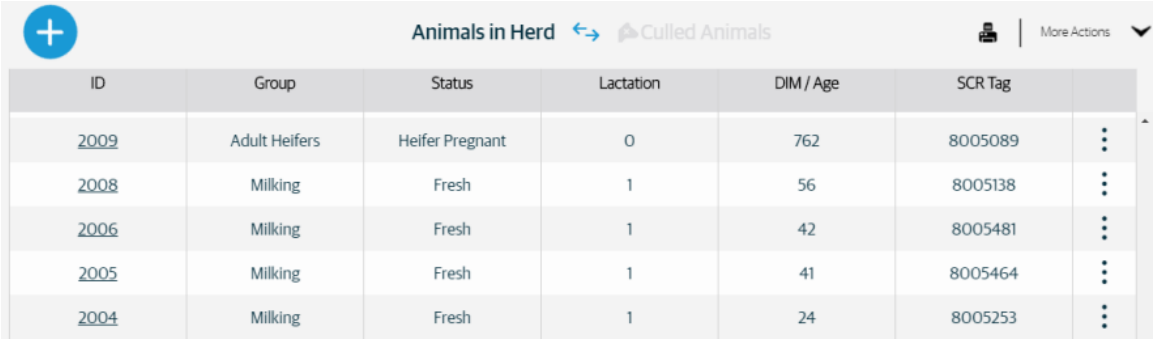
NOTE

The manual describes all possible reports and graphs. The reports and graphs available on the farm depend on the Application Plan enabled on the farm.

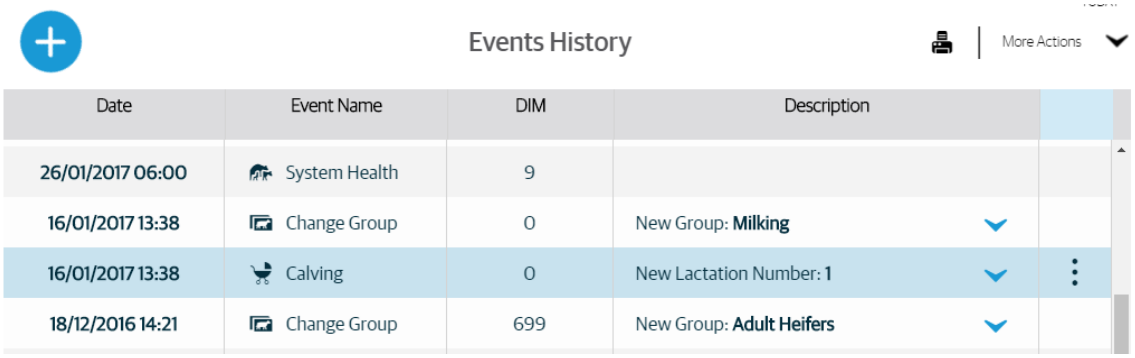
3.9.3 Unpairing Tags

Occasionally you may need to “unpair” or remove an SCR Tag from a cow. These instructions explain how to remove an SCR Tag from a cow.

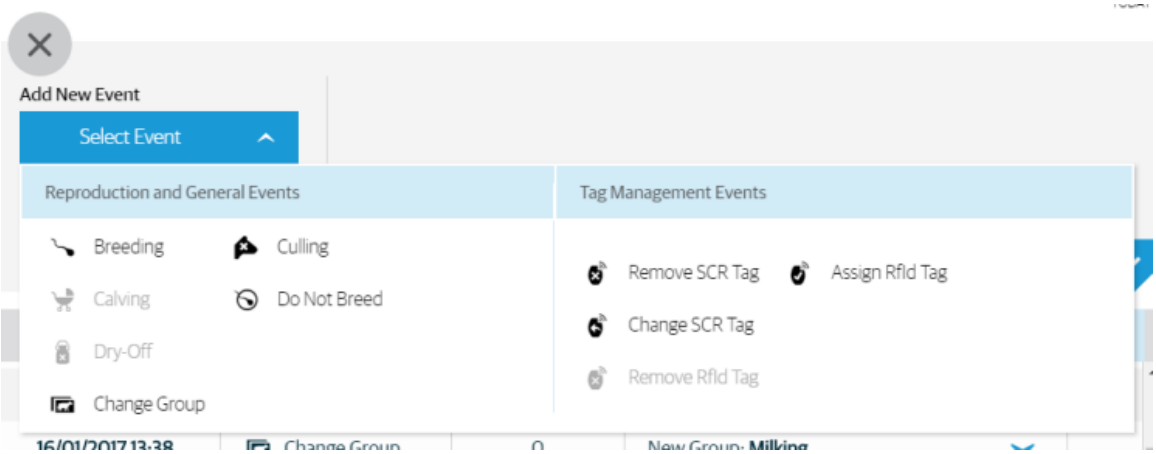
1. From the Dashboard click  Farm and then Animals, the Animals in Herd list appears.



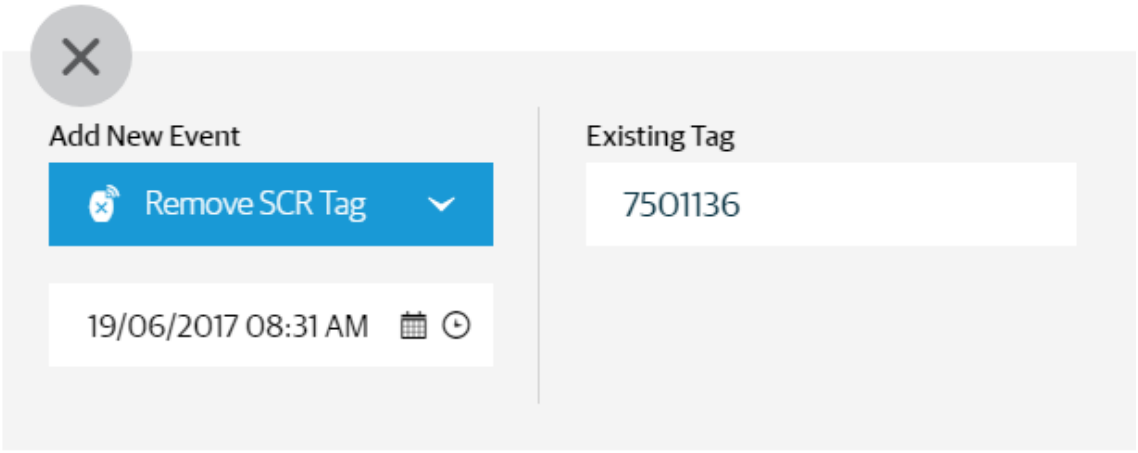
2. Click on the cow in question; the Events History on the Cow Card of this cow appears.



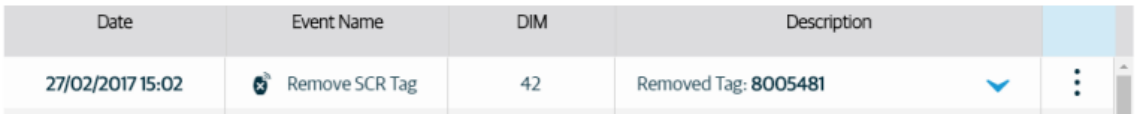
3. Click  Add New Event; the new event window appears.



4. Choose Remove SCR Tag from the available Tag Management Events.



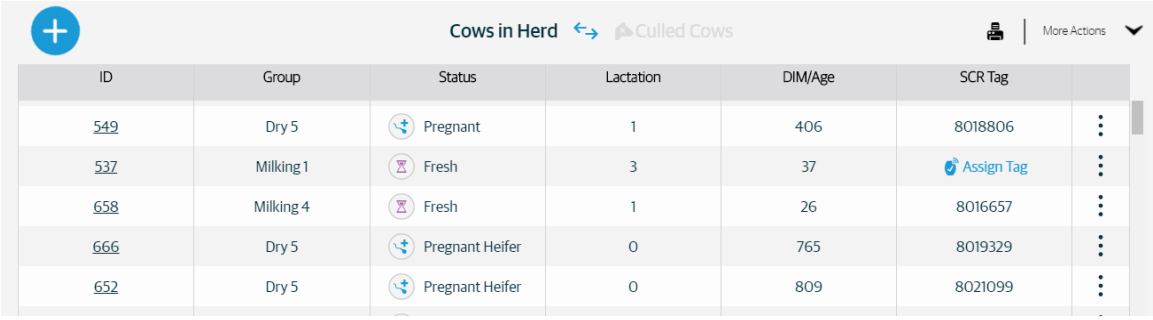
5. Review the details and click  Save Now to save the event.
6. The event now appears in the Event History for this cow.



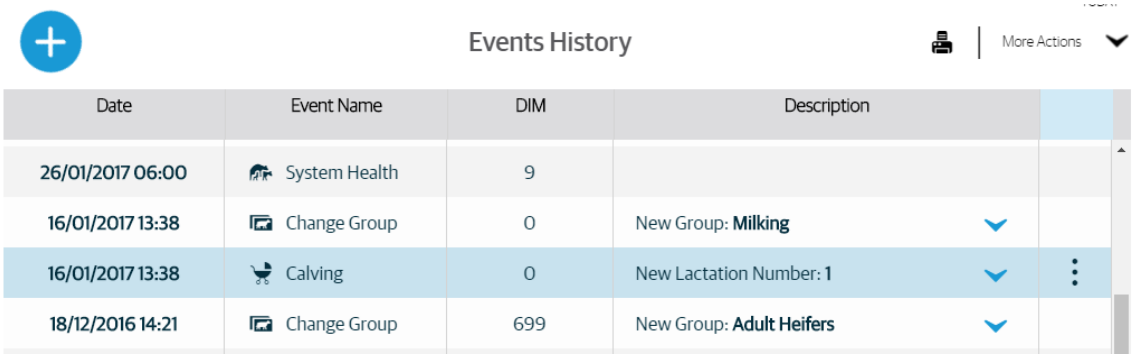
3.9.4 Changing Tags

When directed by the Tag Maintenance Report, follow these instructions when changing a tag paired with a cow in SenseHub™.

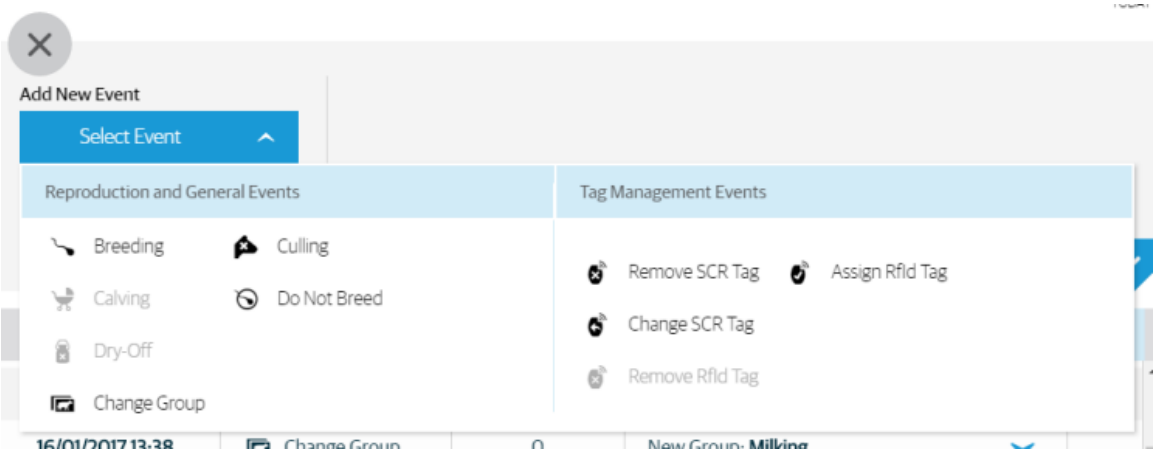
1. From the Dashboard click  Farm and then Cows, the Cows in Herd list appears.



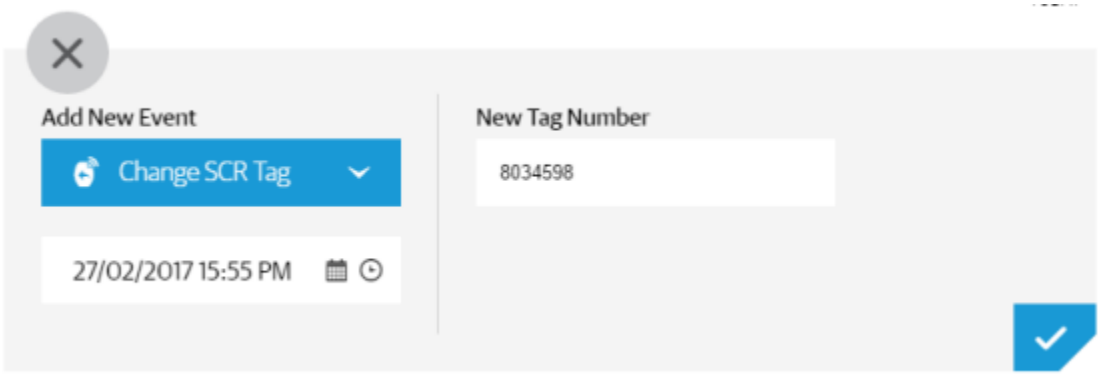
2. Click on the cow in question; the Events History on the Cow Card of this cow appears.



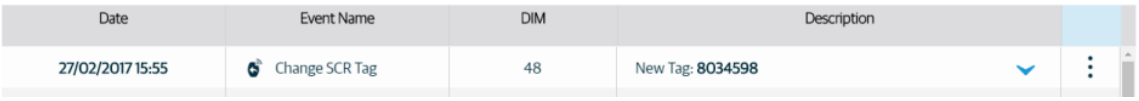
3. Click  Add New Event; the new event window appears.



4. Chose Change SCR Tag from the available Tag Management Events.



5. Review the details and click  Save Now to save the event.
6. The event now appears in the Event History for this cow.

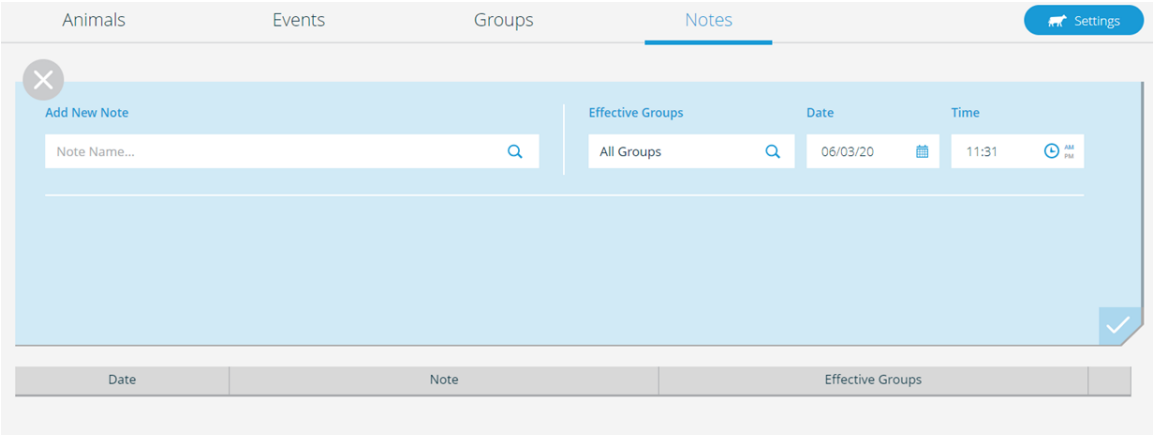


3.9.5 Adding Notes

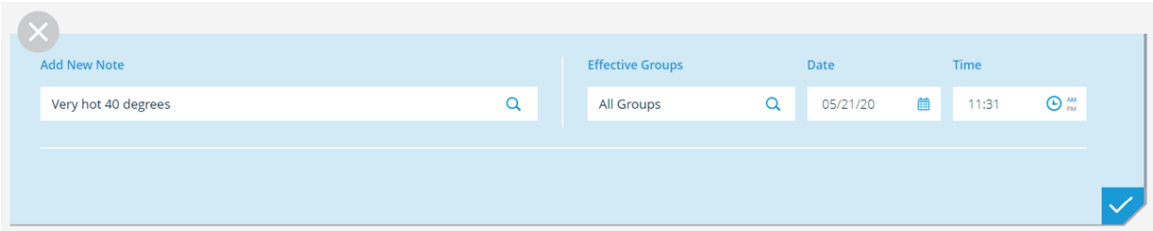
Sometimes it is important to add a note about special or significant things that happen on the farm.



1. Go to  Farm → Notes. If no notes exist, the new note wizard opens automatically.



2. Enter a brief description of what happened, the effective groups, the Date and Time of the event.



3. Click  to save the note.
4. This note now appears on the Group Graphs and can help explain what the group graphs recorded and are showing.

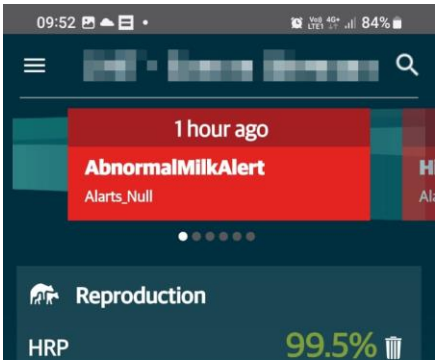
NOTE

Note only appear on Group Graphs for those farms that are subscribed to the Premium Application Plan.

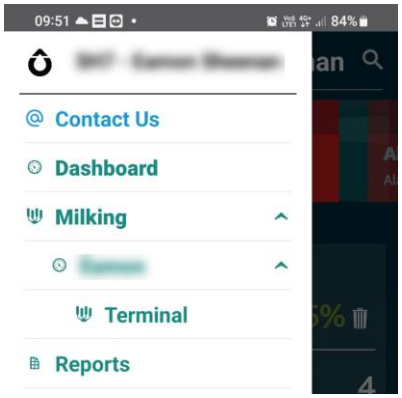
4 Terminal Functions – Mobile

When milkingplus and SCC sensors are installed alongside the SenseHub system, the SenseHub Mobile application monitors the milking operation as well as displaying reports about the status of the herd.

1. Tap the Hamburger  in the upper left corner on the main menu; the Main Menu appears.

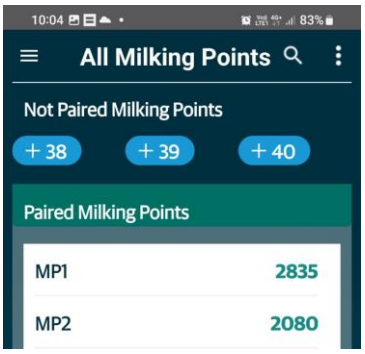


2. Tap Milking and then the Parlor Name to access the Terminal Section.

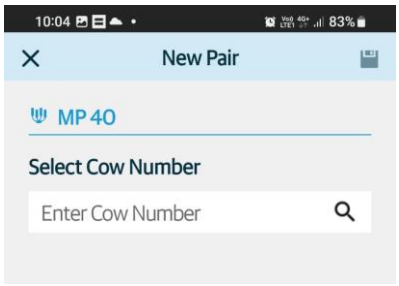


4.1 Working with the Terminal

1. This displays all the milking points in the parlor and their status, is there an identified cow paired at the milking point or not.

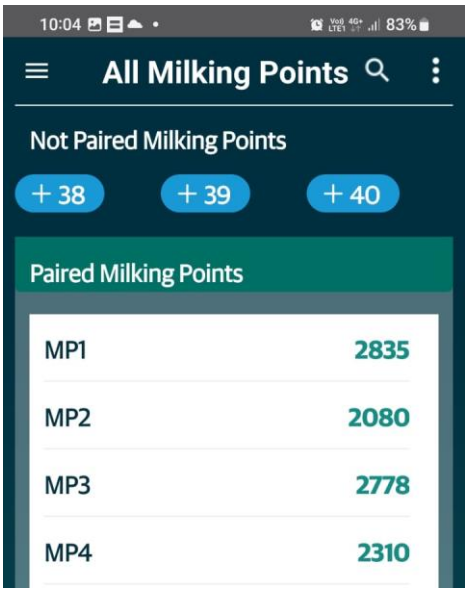


a. Tap one of the Not Paired Milking Points to enter the Number of the cow standing at the milking point and pair that cow with the Milking Point to identify and record her milk yield.



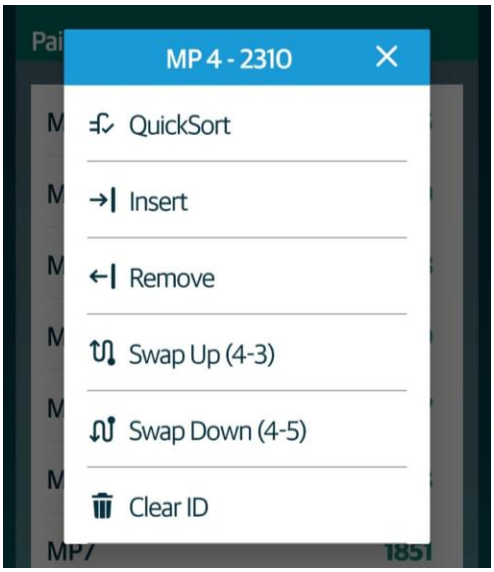
b. Tap Save in the upper right-hand corner when complete.

2. When there is an identified animal at the milking point, these appear in a list in milking point order.



One side is the milking point number, and the other is the Animal ID. Tap the Animal ID for more options.

3. These options help to manage milking and ensure the correct identification of the cows in the parlor, and the correct assignment of each cow to its own milk.



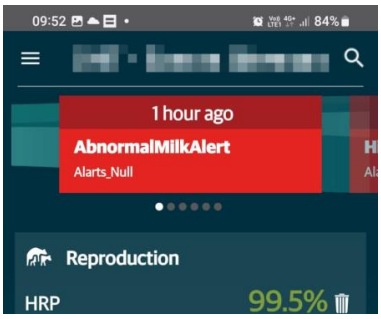
Field	Description
Title Bar	The chosen milking point and the cow currently paired with this milking point
QuickSort	Send this animal to the sorting gate to be sorted to the default sorting pen, if a Sorting gate is operating on the farm.
Insert	Insert a different cow at this milking point. Immediately Insert a different cow and repositions all cows from this milking point and on in the parlor down one milking point, and pairs them again with their new milking point.
Remove	Removes the animal currently paired at the milking point, and repositions all cows from this milking point, and pairs them again with their new milking point.
Swap Up	Swap this cow in milking point 4 (x) with the cow in milking point 3 (x-1)
Swap Down	Swap this cow in milking point 4 (x) with the cow in milking point 5 (x+1)

Field	Description
Clear ID	Clear the ID of the animal paired with this milking point.

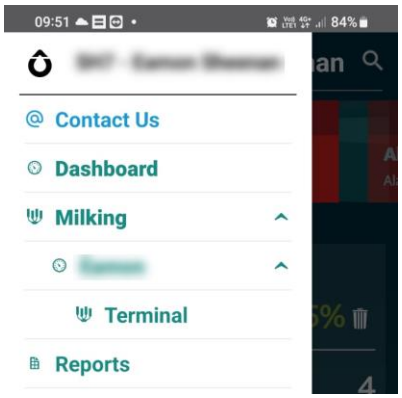
4.2 Enable/Disable SCC and Wash Mode

The Somatic Cell Counters, SCC, can be enabled, disabled, and set to wash mode from the terminal in the mobile app.

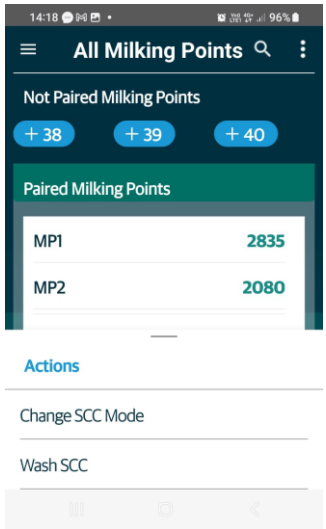
1. Tap the Hamburger in the upper left corner on the main menu; the Main Menu appears.



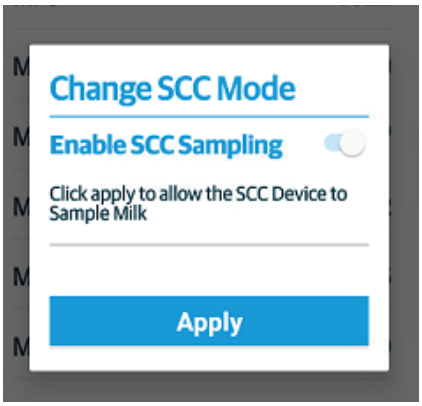
2. Tap Milking and then the Parlor Name to access the Terminal Section.



3. Tap the vertical ellipses the Actions drawer appears.



a. Change SCC Mode – taping here allows farmers to change the SCC Mode from not sampling to sampling, or from sampling to not sampling.



b. Wash SCC tells of the installed SCC to enter Wash Mode. This is helpful when the parlor wash is hot, telling the SCC they are in Wash Mode saves detergent. This is helpful when the parlor wash is cold, since now the SCC know they are in Wash Mode.

NOTE

Rotary Parlors can only be switched to SCC Wash Mode using the terminal display in the SenseHub Mobile Application.

5 Report Generator

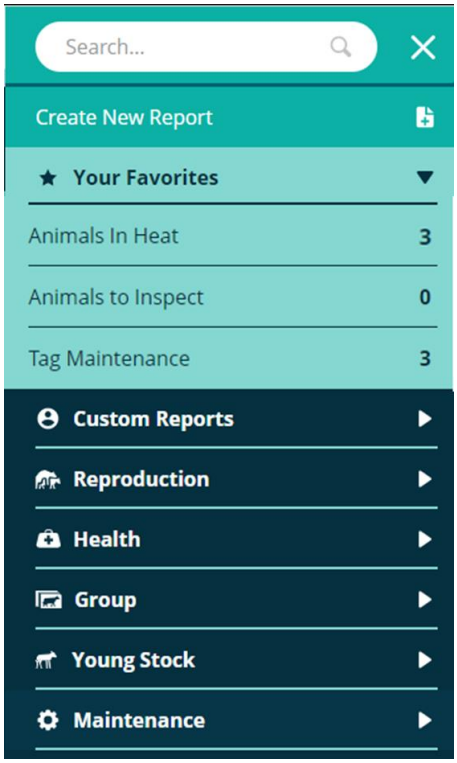
The report generator allows farmers using the Premium Application Plan to create their own custom reports. The queries, keys, other building blocks are the same that we use to create the powerful system reports. The Report Generator is available whenever the SenseHub controller is connected to the internet.

NOTE

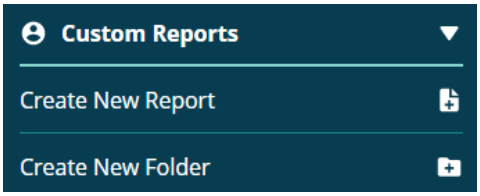
The Report Generator is available to SenseHub Farms subscribed to SenseHub Essential and Premium Application Plans.

5.1 Creating a Custom Report

Click on the  Reports Icon; the Report Menu appears.

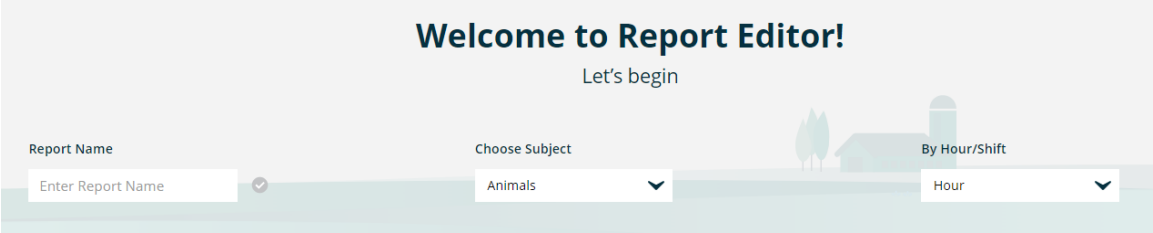


Click on Custom Reports to begin.

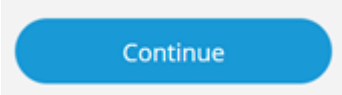


Report Generator

1. Click on Create New Report; the New Report Wizard appears.

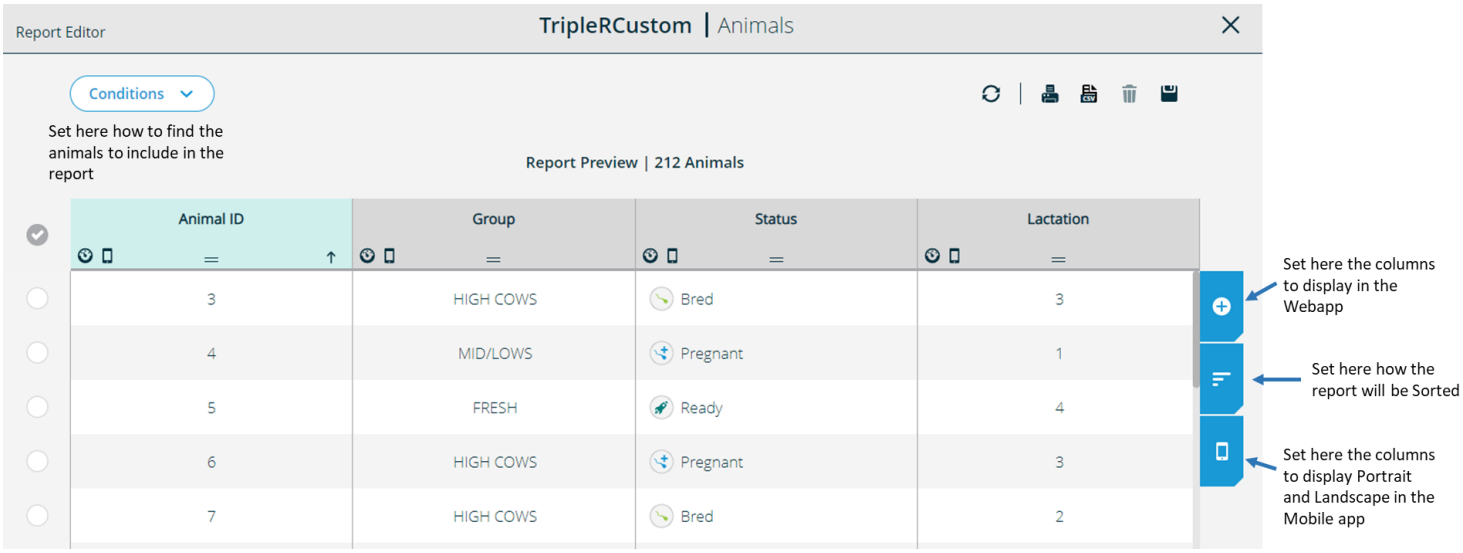


2. Enter the name of the report and choose the report subject as well as if this is an hourly or shift based report.

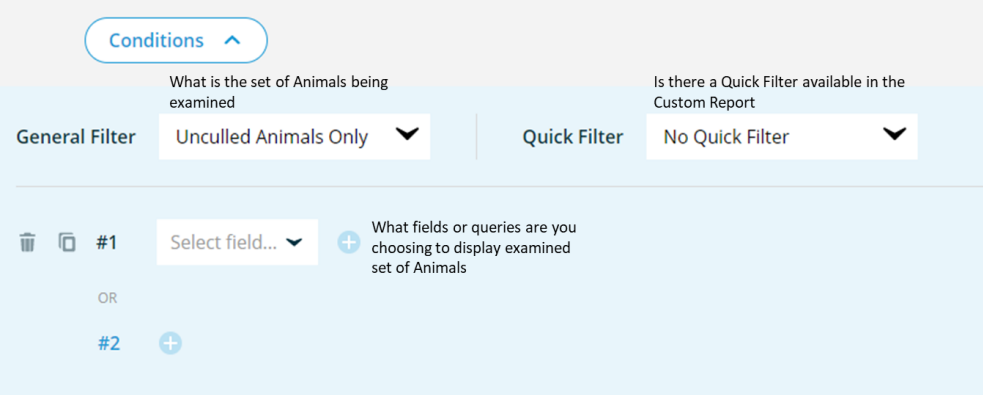
   Click 

   Continue.

3. The Report Preview Appears. It is here that the design of the report and its appearance are completed.



   a. In the Conditions Section define what data is examined and how it is displayed.

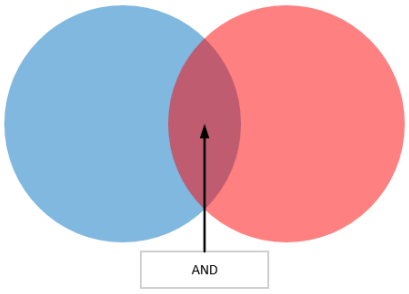


Section	Definition
General Filter	Define the set of Animals from the database to be examined.
Quick Filter	Is there a quick filter like Cows for AI, or DNB applied to the report?
Fields/Queries	What information, taken from the defined set of Animals, is displayed in the report.

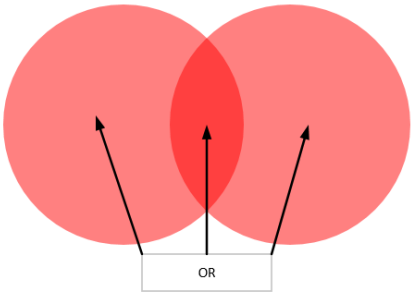
5.1.1 Understanding Conditions

Conditions describe the relationship between the field/queries used in creating the custom report.

- Conditions used together on the same line are AND conditions.

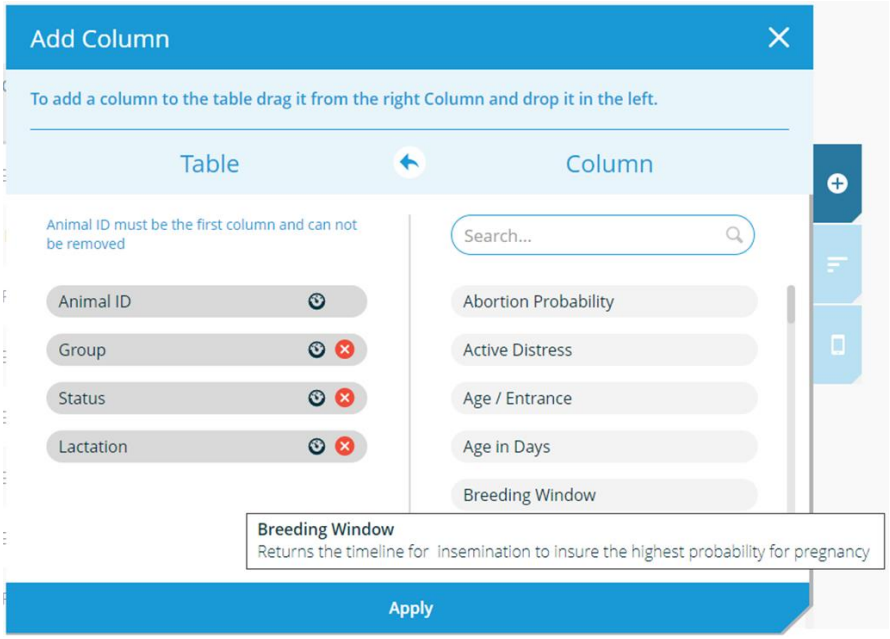


- Conditions used together on different lines are OR conditions.



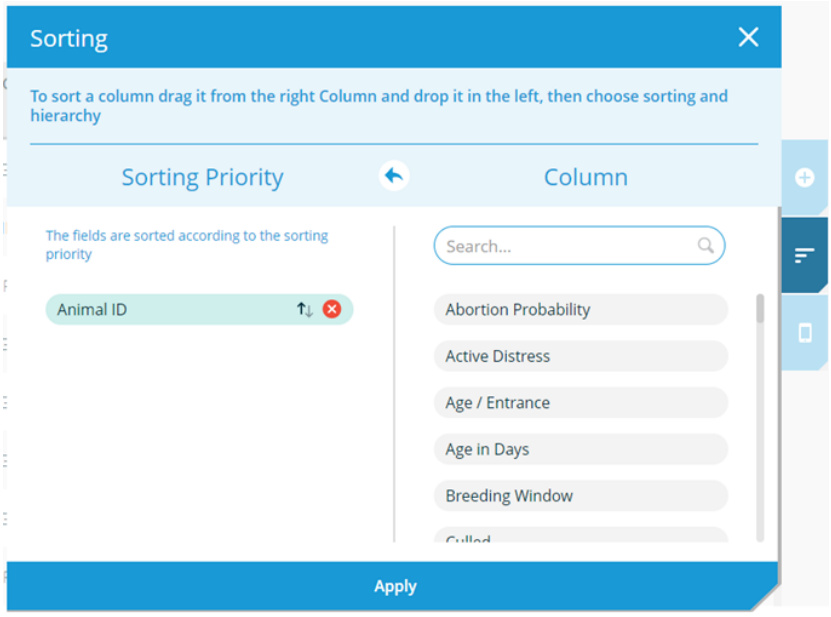
5.2 Creating a Custom Report - Continued

1. Next click  Display Columns to configure what columns to display for the report in the Webapp and in what order they should be displayed.



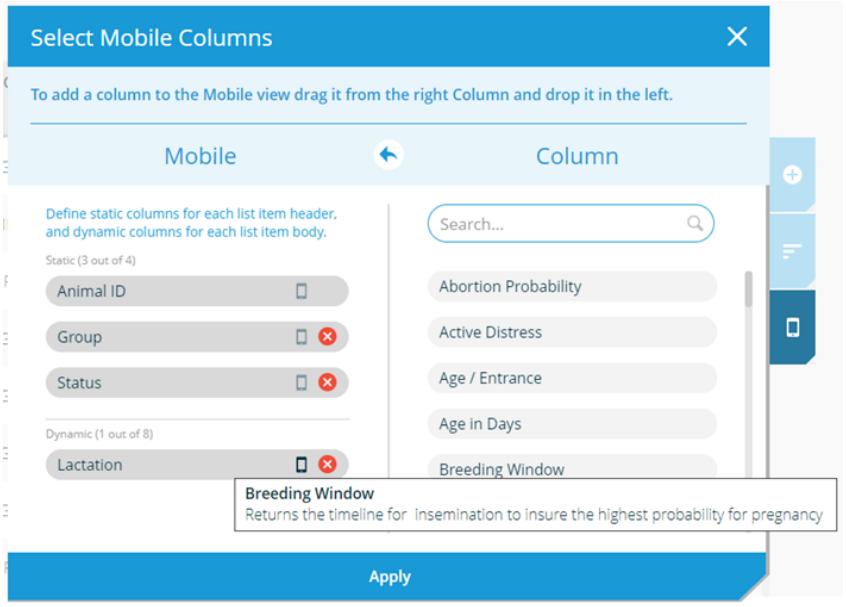
Hovering with the mouse over each Column name, displays a tool-tip that explains what is returned when using this. Click apply to continue.

2. Next Click on  Sorting Options to configure how the report should be sorted.



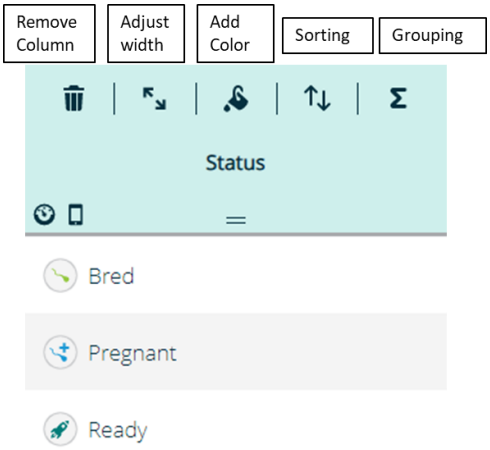
Click Apply to continue.

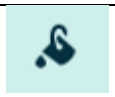
3. Next Click on  Cell Phone Display to configure how the report appears in Portrait and Landscape



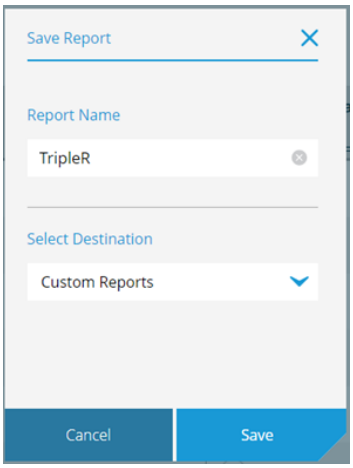
Hovering with the mouse over each Column name displays a tool-tip that explains what is returned when using this. Click apply to continue.

4. Click the top of column for these actions:

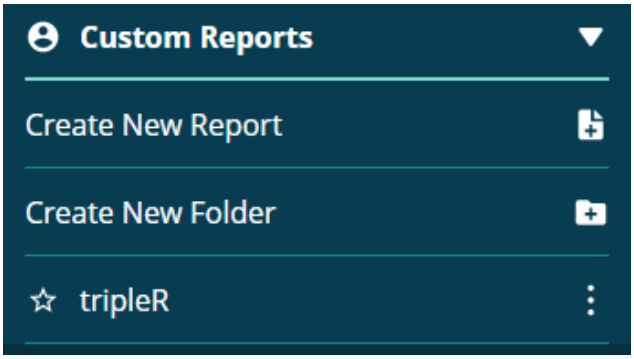


Action	Definition
	Delete this column
	Adjust the size of the column
	Highlights cells in this column according to values or conditions.
	Sort ascending or descending
	Group the results by one of the values in this column

5. The creation and configuration of the Report is now complete. Click  Save to save the report; the report is saved.



6. The report can now be found in the Reports Menu.

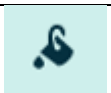


NOTE

Custom Reports can only be created, edited, or run when the SenseHub Controller has an active internet connection.

5.3 Icons Used in the Report Generator

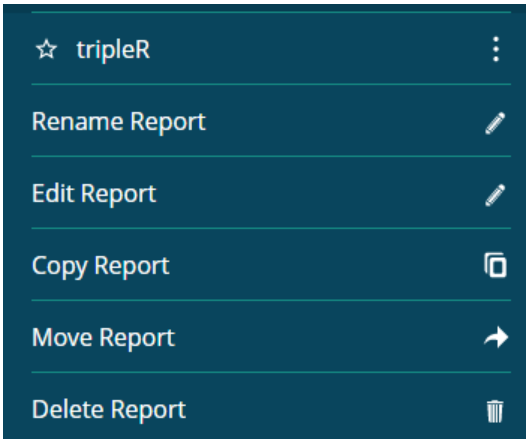
There are several Icons in the Report Generator. These Icons are explained here.

Icons	Definition
	The report is sorted by the column where this appears.
	When the report has primary and secondary sorting each sorted column is displayed with an arrow as well as a number
	This column is also shown in the mobile app rendition of the report
	This column is also shown in the widget version of the report
	Save the report
	Delete the report
	Save the report as a CSV file
	Send the output of the report to the printer
	Delete this column
	Adjust the size of the column
	Highlights cells in this column according to values or conditions.
	Sort ascending or descending
	Group the results by one of the values in this column
	Empty Custom Report Folder
	Custom Report Folder that contains one or more Reports

Report Generator

5.4 Actions on Reports

There are several available actions that can be performed on any farmer created report.



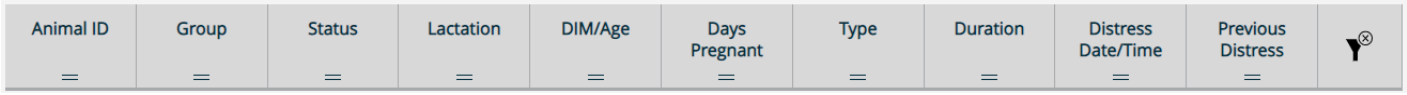
Actions	Definition
Rename Report	Change the name of the report
Edit Report	Edit any attribute of the report
Copy Report	Copy the report
Move Report	Move the report to a different folder
Delete Report	Delete the report

5.4.1 Actions on System Reports

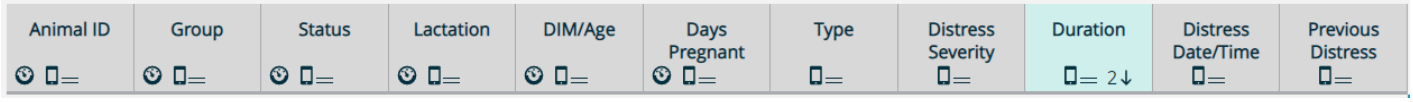
It is possible to take a system report, a report that is already part of SenseHub, and customize it further by copying this report and then editing it.



Please note that the column names in the system report and the copy of the report in custom reports, may not be the same.



System Report (Distress)



6 Which Wand and Which Device

The SenseHub Mobile app supports two Wand Devices:

- Allflex 420 NFC
- Agrident AWL Wands.

6.1 Using the Allflex 420 NFC Wand

The Allflex 420 NFC is a device that helps make work on the farm easier. The Wand works seamlessly with the Mobile Device where the SenseHub App is installed.

The minimum version required is the same as for the mobile app:

- 5.X for Android users.
- 10.X for iOS users.

6.2 Pair the Wand with your Smart Phone

Before the Allflex 420 NFC can be used it must first be paired with your Smart Phone. Turn on Bluetooth on your smart phone, usually by tapping the  Bluetooth Icon. Pair the Allflex 420 NFC Wand with your device. More detailed instructions are found below.

Android Phones will discover the Allflex 420 NFC and ask for a code. Enter the code that appears on the wand at Wand Settings → Bluetooth Settings → About Bluetooth. and the two devices will be paired.

iOS devices require different settings on the Wand. One the Wand long press to enter the menus → Bluetooth Settings → iPhone discoverable.

6.2.1 Pairing with an Android Smart Phone

Follow these steps when using an Android smart phone.

1. Go to Bluetooth Settings in the Settings app; Settings → Bluetooth & Device Connection.
    a. Make sure the Wand is Turned on.
2. Turn Bluetooth on.
3. Search for a New Device available for pairing and select the Allflex 420 NFC from the list.

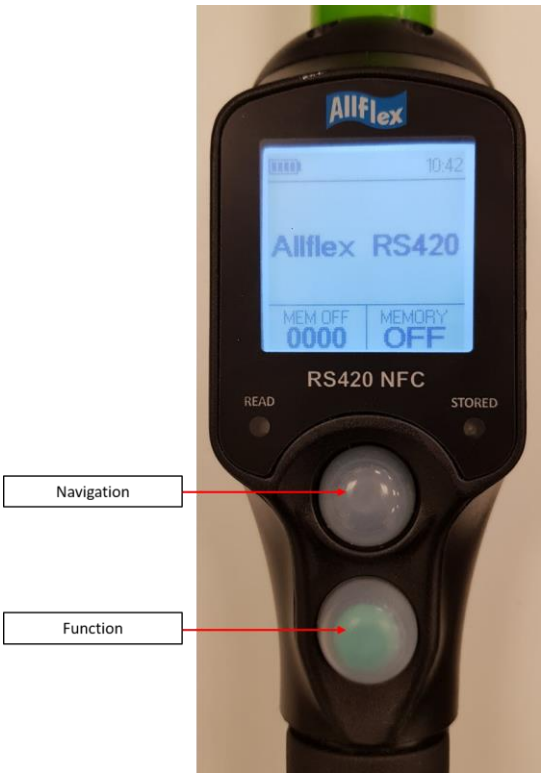
a. If a PIN Code is required in is available on the Wand at Wand Settings → Bluetooth Settings → About Bluetooth.

4. The Wand is now paired with this smart phone.

6.2.2 Pairing with an iPhone

Follow these steps when using an iPhone smart phone.

1. On the Wand go to Wand Settings → Bluetooth Settings → iPhone Discoverable. DO NOT touch Yes until you finish the connection process.
2. On the iPhone go to Bluetooth Settings on the settings app; Settings → Bluetooth and select the Wand.
3. Wait until the Device Status is Connected.
4. Touch Yes on the Wand Device.



6.2.3 Differences in Wand Operation

The Wand operates slightly different when connected to Android or iPhone Smart Phones.

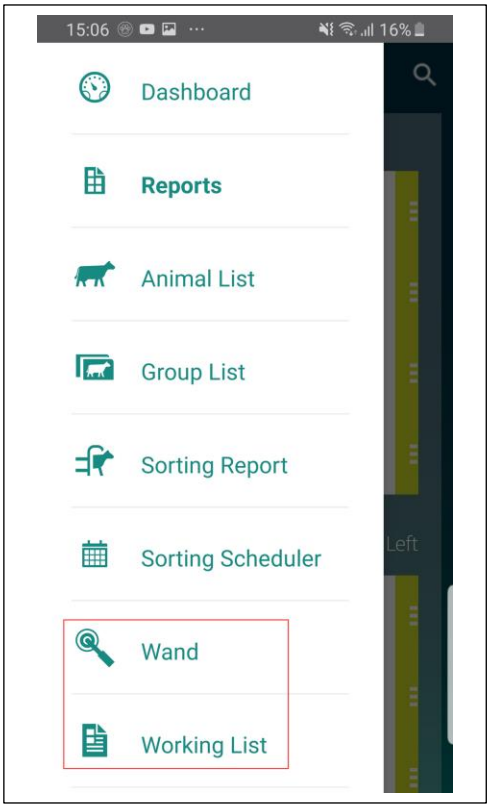
	Android	iPhone
Wand Response when Tag Found	When not connected there is no response from the Wand	The Wand always responds even when not connected
Wand Sleep Mode	When connected, never enters sleep	Sleep after 5 minutes

Select Wand in SenseHub Mobile App	The application lists all Wands ever connected	The application lists only the last connected Wand

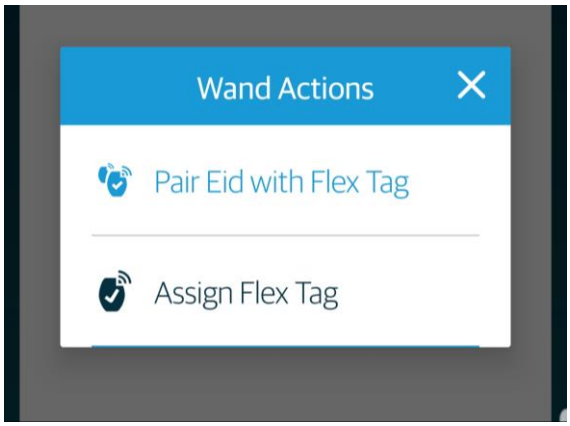
6.2.4 Assign and Pair Tags

Once the Wand is paired with your Smart Phone two new menu items appear in the SenseHub Application Menu:

- Wand
- Working List



Tap Wand and the Wand Actions Menu appears.



6.2.5 Pair EID tags with Flex Tags

Farms that use both EID and Flex Tags need to pair the tags, so they are both associated with the animal.

1. In the Mobile App go to the menu → Wand and then choose Pair EID with Flex Tag.
2. Press the green button to energize the wand. Move the wand first to the EID Tag on the cow. The wand will make a sound and vibrate.
3. Now move the wand to the Flex Tag on the cow. The wand will make a sound and vibrate.
4. The Flex tag is paired with the cow in the Animal Card in SenseHub.

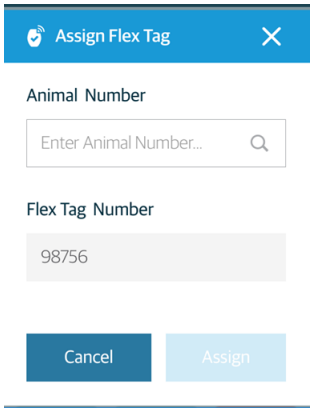
NOTE

The cow must already have a record and the EID Tag needs to already be associated with the Cow in SenseHub.

6.2.6 Assign Flex Tags

The Allflex 420 NFC is a useful tool for error free tag assignment/pairing with animals.

1. In the Mobile App go to the menu → Wand and then choose Assign Flex Tag.
2. Press the green button to energize the wand. Move the wand to the Flex tag on the cow. The wand will make a sound and vibrate
3. Enter an Animal number and tap Assign.
4. The Flex tax is now paired with the animal.



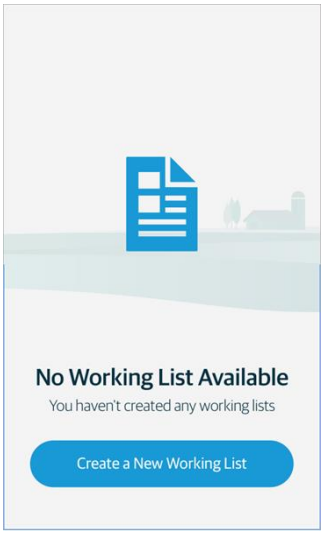
NOTE

The Assign button is available only after entering an Animal Number.

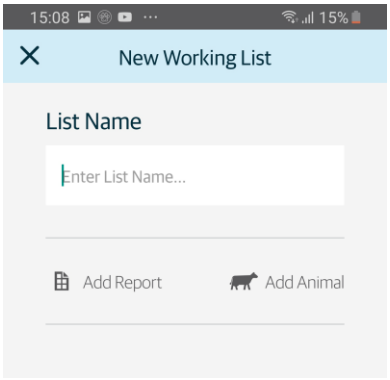
6.2.7 Creating Working Lists

Working Lists are a useful tool to help find and identify animals on the farm that require attention or treatment.

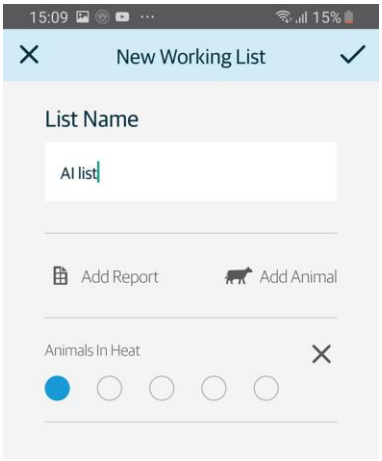
1. In the Mobile App go to the menu → Working List. Since there are no working lists this screen appears.



2. Tap Create a New Working List; the new working list wizard appears.

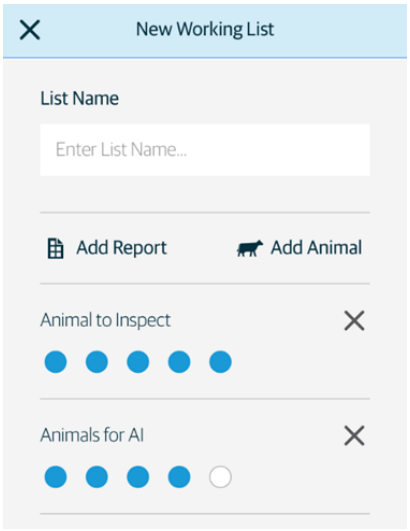


3. Give the List a name and then choose to add a Report or one or more animals.
4. Set the number of “beeps” or vibrations the Wand will use to signal that a cow from this specific report has been found.



   a. More than one report can be configured in a Working List. Each report is then assigned a different number of “beeps.”

Which Wand and Which Device



5. When complete, tap  to save the working list.

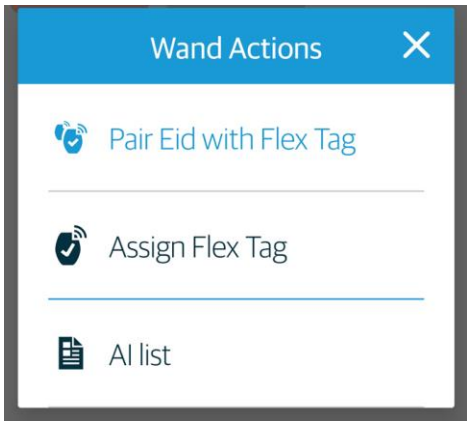
NOTE

Using reports means that the working list does not have to be recreated it is updated as the report updates.

6.2.8 Using Working Lists

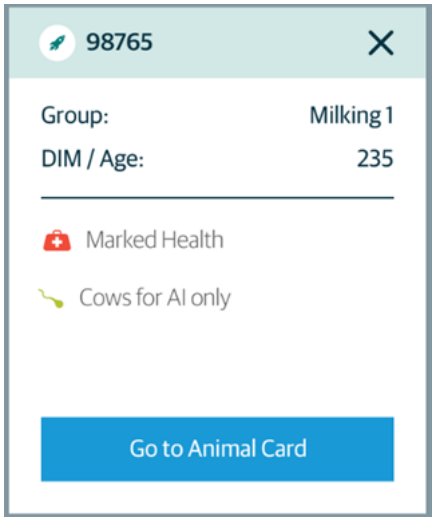
Once a Working List is created it can be reused.

1. To access a Working List on the Mobile App, go to the Menu → Working List, choose the working list to use.



   a. When returning to use the Wand after a break, a message appears asking if you wish to go back to the list that you were using.

2. Using the wand Identify an animal, the Wand will “beep” and vibrate and a screen appears on the mobile device identifying the animal, and the reason the Wand beeped.



   If desired access the Animal Card or continue and identify the next cow.

6.2.9 Common Wand Device Error Messages

During normal wand device operation these error message may appear. They are described here with their cause.

Error Message	Description
Unassigned Tag	The scanned tag is not assigned, paired, to any animal.
No Working List Available	There are no working lists available.
No Paired Wand	There is no wand paired with this mobile device.
Wand is not compatible	The ALLFLEX 420NFC wand is not compatible and requires a version update.
Connection to Wand Failed	This error will appear when: The Wand is off Bluetooth is off on the Mobile Device Bluetooth is off on the Wand Device Bluetooth is not configured correctly on the Wand Device
Unsupported Action	Appears when trying to activate an action that is not supported by the current Wand.

6.3 Using the Agrident Wand

The Agrident is a device that helps make work on the farm easier. The Wand works seamlessly with the Mobile Device where the SenseHub App is installed.

The minimum version required is the same as for the mobile app:

- 5.X for Android users.

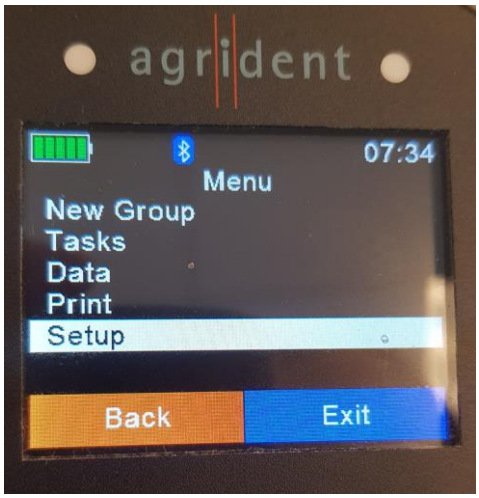
6.3.1 Pair the Wand with your Smart Phone

Before the Agrident Wand can be used it must first be paired with your Smart Phone. Turn on Bluetooth on your smart phone, usually by tapping the Bluetooth Icon. Pair the Agrident Wand with your device. More detailed instructions are found below.

6.3.2 Configure Agrident Wand for the SenseHub Mobile App

The Agrident Wand must first be configured correctly for use with the SenseHub Mobile App.

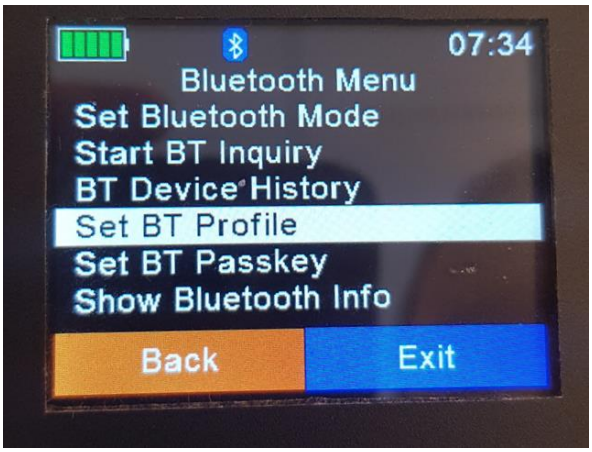
1. After the Bluetooth Icon turns blue, use the menu, and go to Setup → Interface →Bluetooth → Bluetooth Mode→.



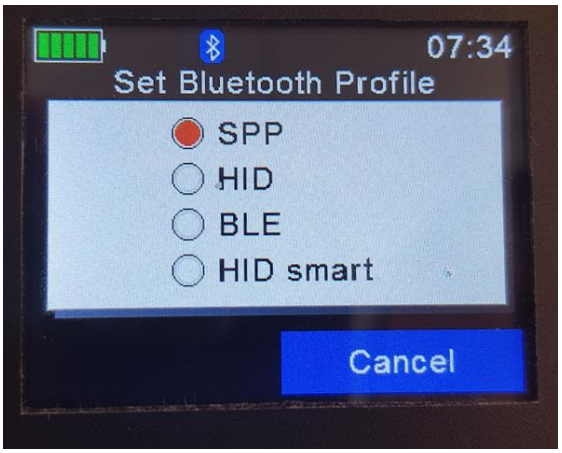


   a. Set the Bluetooth mode to Slave Mode.

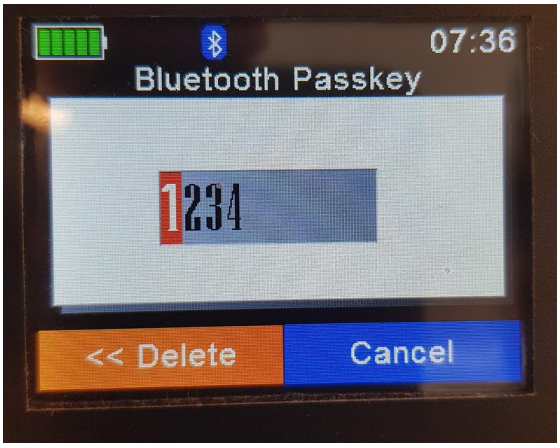
2. Back out from here and go back to the Bluetooth Menu and Choose Set BT Profile.



3. Choose SPP for the Bluetooth Profile.



   a. From here go back to the Bluetooth Menu and choose Set BT Passkey.

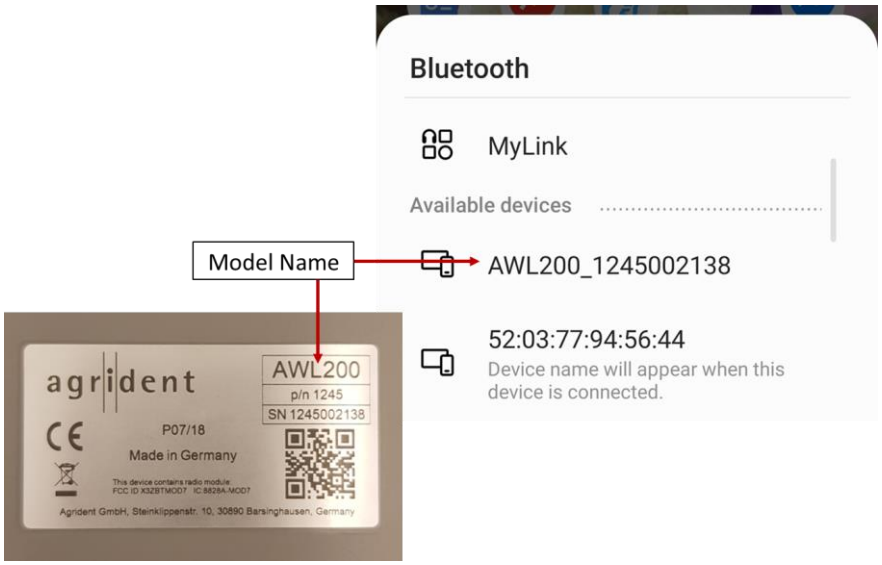


   b. Reset the passkey or use the default value when asked to enter it while pairing with your mobile device.

6.3.3 Pairing with an Android Smart Phone

Follow these steps when using an Android smart phone.

1. Go to Bluetooth Settings in the Settings app; Settings → Bluetooth & Device Connection.
    a. Make sure the Wand is Turned on.
2. Turn Bluetooth on.
3. Search for a New Device available for pairing and select the Agrident Wand from the list.

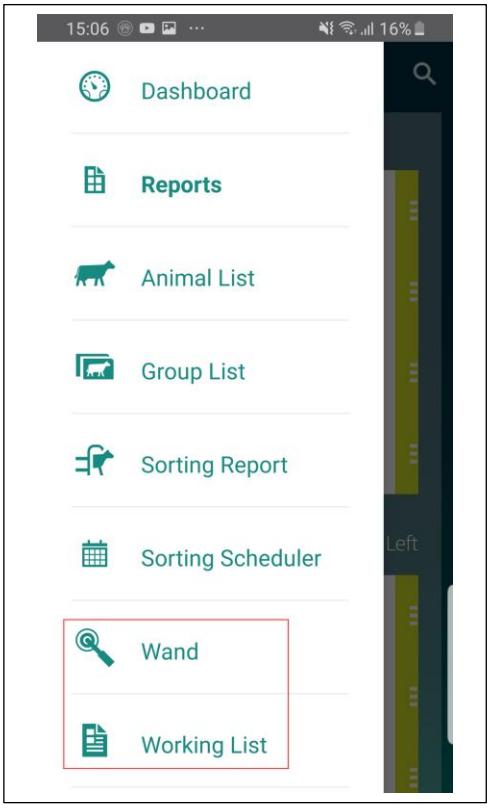


    a. See above for the location on the Agrident Wand of the required Passkey for first time pairing.
4. The Wand is now paired with this smart phone.

6.3.4 Working with the Agrident Wand

Once the Wand is paired with your Smart Phone new menu items appear in the SenseHub Application Menu:

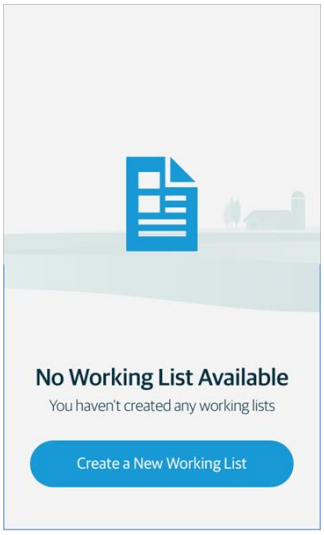
- Working List



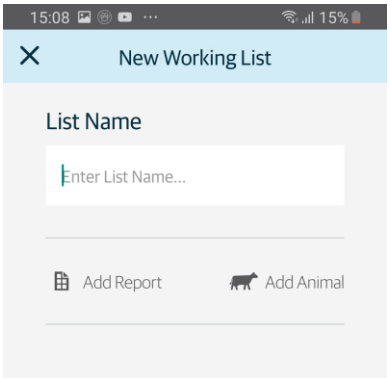
6.3.5 Creating Working Lists

Working Lists are a useful tool to help find and identify animals on the farm that require attention or treatment.

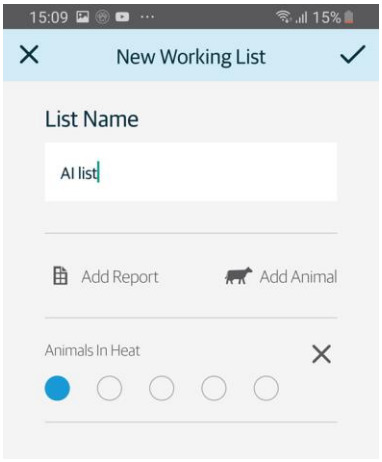
1. In the Mobile App go to the menu → Working List. Since there are no working lists this screen appears.



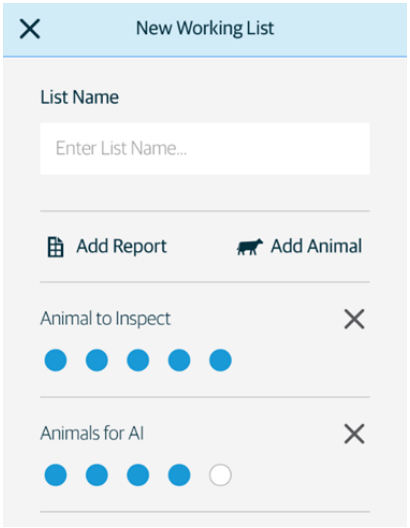
2. Tap Create a New Working List; the new working list wizard appears.



3. Give the List a name and then choose to add a Report or one or more animals.
4. Set the number of “beeps” or vibrations the Wand will use to signal that a cow from this specific report has been found.



a. More than one report can be configured in a Working List. Each report is then assigned a different number of “beeps.”



5. When complete, tap  to save the working list.

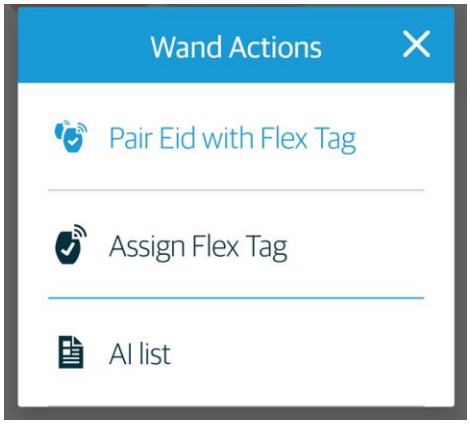
NOTE

Using reports means that the working list does not have to be recreated it is updated as the report updates.

6.3.6 Using Working Lists

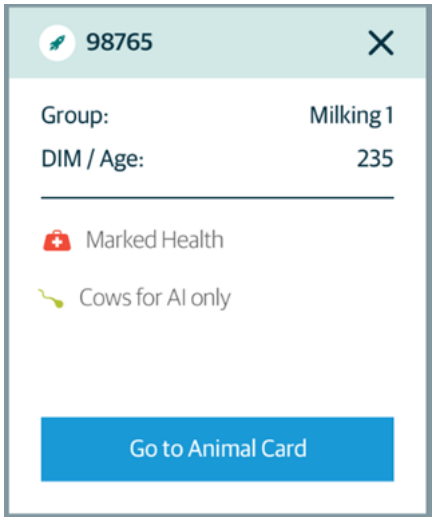
Once a Working List is created it can be reused.

1. To access a Working List on the Mobile App, go to the Menu → Working List, choose the working list to use.



a. When returning to use the Wand after a break, a message appears asking if you wish to go back to the list that you were using.

2. Using the wand Identify an animal, the Wand will “beep” and vibrate and a screen appears on the mobile device identifying the animal, and the reason the Wand beeped.



If desired access the Animal Card or continue and identify the next cow.

7 Farm Settings

This section describes how to configure SenseHub™ for the protocols and practices already in place on your farm.

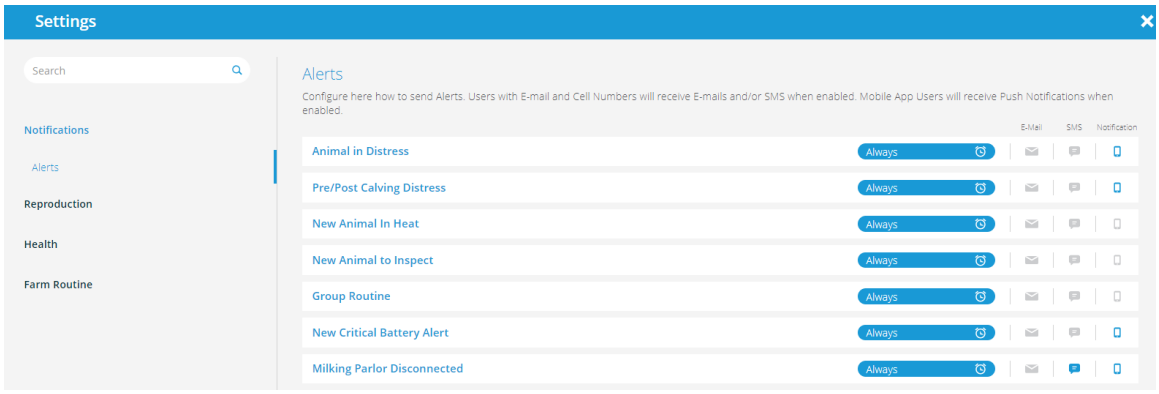
NOTE

The Farm Settings available in your SenseHub™ System reflect the Application Plan in place on the farm. Not all items described in this chapter are available in every SenseHub™ System.

Click on  Manage and then 

Settings; the Farm Settings landing page appears.

Farm Settings

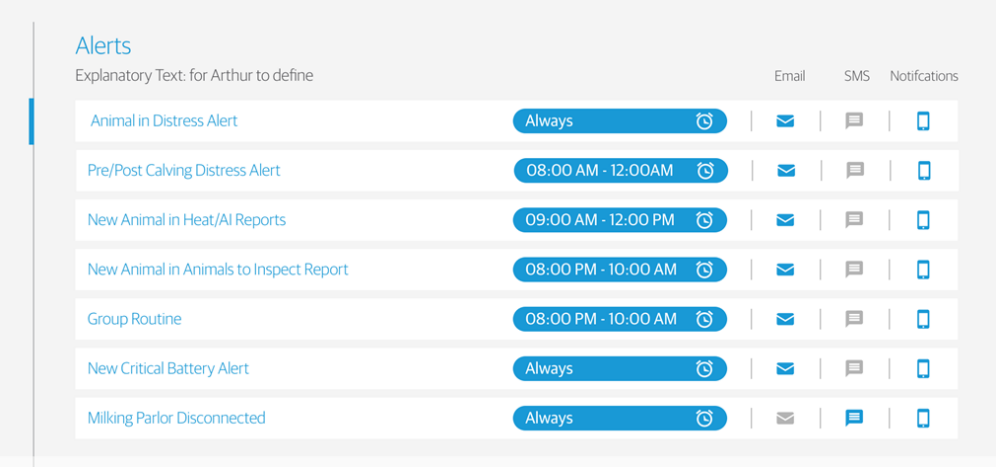


This section is divided into 4 parts:

- Notifications: Configuration of what Alerts each user receives.
- Health: Configuration of the various Health related reports, and graphs.
- Reproduction: Configuration of the various reproduction related protocols that are already in use on your farm.
- Farm Routine Configuration of the shifts used for Sorting Animals when an SCR Sorting Gate is installed. Configure also Recurring Events, the daily routine on the farm.

7.1 Alerts

The Alerts section configures which types of alerts are sent to what destinations, Email, SMS, or Push Notifications.



By Default, the only alert sent by SenseHub™ is the Pre/Post Calving Alert. This alert is sent to mobile application users only.

Click on to send this specific alert as an Email.

- SenseHub™ Users with a valid Email address will receive this alert in an Email.

Click on to send this specific alert as an SMS/Text Message.

- SenseHub™ Users with a valid E.164 Phone number will receive this alert in an SMS/Text Message.

NOTE

SMS/Text Messages for New Cow in Heat and New Cow in Cows to Inspect Report are aimed at farms that have less than 200 cows with assigned tags.

Click on to send this specific alert as Push Notification to the Mobile Application.

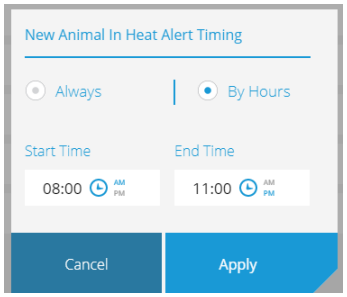
- Only registered Mobile Application users will receive these push notifications.

NOTE

Even if the Push Notification icon is selected, users that have not downloaded, installed, and logged in to the Mobile Application will not receive these push notifications.

Click on the Clock 

to configure the time of day that these notifications will be sent.



- Always for always (24/7).
- By hours to only receive alerts between the Start and End Times.

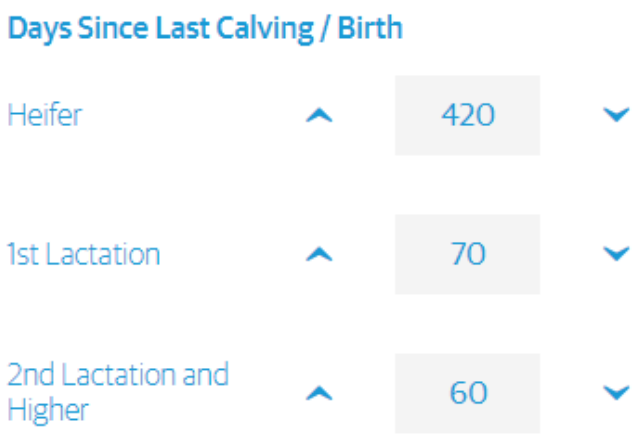
7.2 Reproduction

Configure here various reproduction and pregnancy related values.

7.2.1 Voluntary Waiting Period

In this section configure:

- Voluntary Waiting Period for each type of cow in the herd separately.
  - Heifer – Default 420 days of age
  - 1st Lactation Cow – Default 70 days after calving
  - 2nd and higher Lactation Cow – Default 60 days after calving.



Cows that are in heat but have not yet reached and/or exceeded the number of days above will not appear as cows for AI.

7.2.2 Pregnancy Length

Configure here the Average Pregnancy Length for your herd.

- Pregnancy Length – default = 278 Days.

- The average pregnancy length for the herd is 278 days from the last or effective insemination.



7.2.3 Pregnancy Days to Dry-off

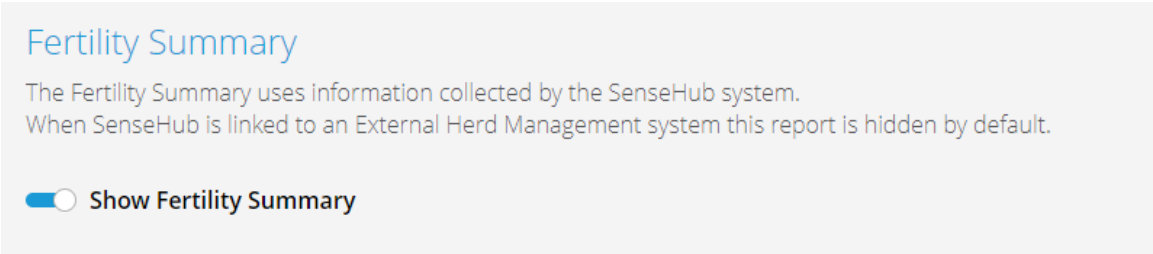
Configure here the number of days pregnant when you typically dry-off cows in your herd.

- Days Pregnant – default = 218 Days Pregnant.
  - Cows are dried off at 218 days or 60 days before their expected calving date.



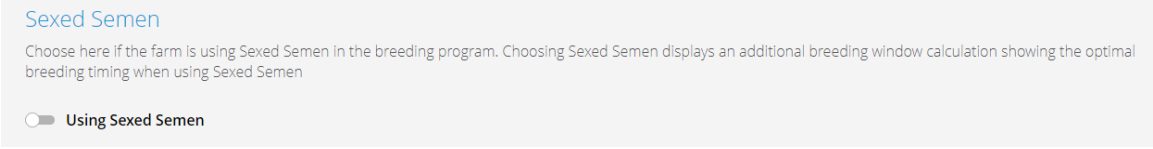
7.2.4 Fertility Summary

Configure here to display to Fertility Summary on SenseHub or not. Farmers connected to a herd management system will see the fertility summary hidden by default.



7.2.5 Sexed Semen

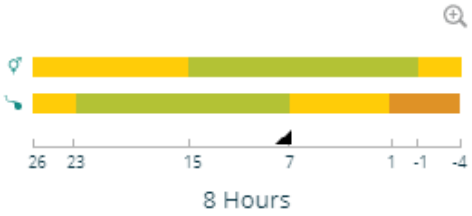
Some farms use Sexed Semen in their reproduction program. Choose here to activate this option in SenseHub.



Farm Settings

When this option is activated two Breeding Windows are displayed:

- One for AI with Sexed Semen
- One for Normal AI



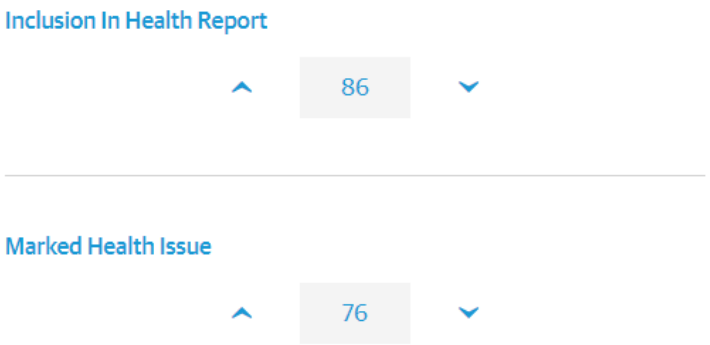
The Breeding Window for Sexed Semen appears on top.

7.3 Health

Configure here parameters for inclusion in the various health related reports.

7.3.1 Health Report

- Inclusion in Health Report – default Health Index = 86.
  - Cows with a Health Index of 86 or lower will appear in the Health Report.
- Marked, significant, Health Issue – default Health Index = 76.
  - Cows with a Health Index of 76 or lower are highlighted and should be more closely examined.



  - Cows with a Health Index of 76 or lower receive a System Health Event icon in their Health Graph.

NOTE

The Farm Settings available in your SenseHub™ System reflect the Application Plan enabled in place on the farm. Not all items described in this chapter are available in every SenseHub™ System.

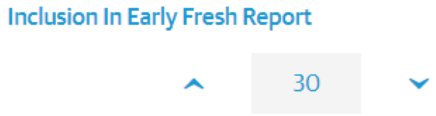
NOTE

These same values are used for the Young Stock Health Report for those farms that are subscribed to the Young Stock Application Plan.

7.3.2 Early Fresh Cows Report

Configure here the number of days after calving for cows to appear in the early fresh report.

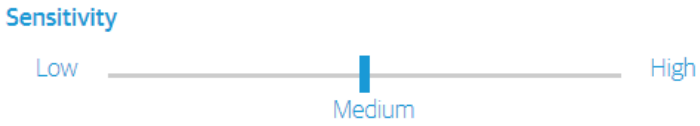
- Inclusion in Early Fresh Report – default 30 days.
    - Cows no matter their Health Index appear in the Early Fresh Cow report for this number of days.



7.3.3 Distress Sensitivity

Configure here the sensitivity level of the distress alerts.

- Sliding this to LOW decreases sensitivity and may result in missed distress.
- Sliding this to HIGH increases sensitivity and may result in more alerts, some of which may not actually be distress.

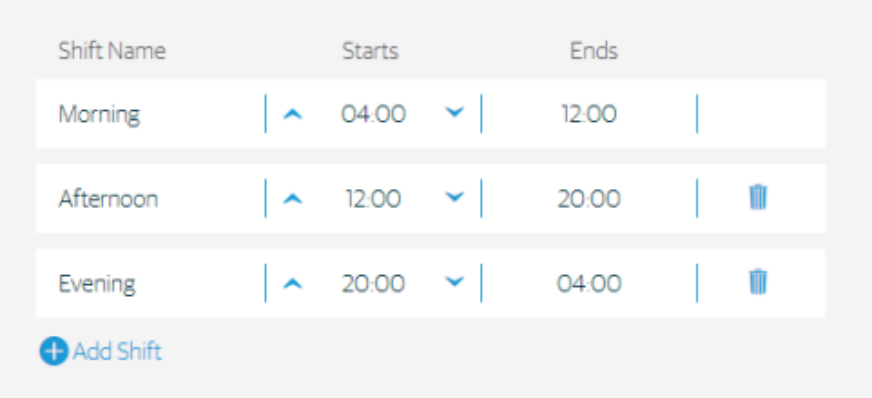


7.4 Farm Routine

Many things make up the routine on farms. Feeding, milking, and cooling all make up the daily routine on the farm.

7.4.1 Shifts

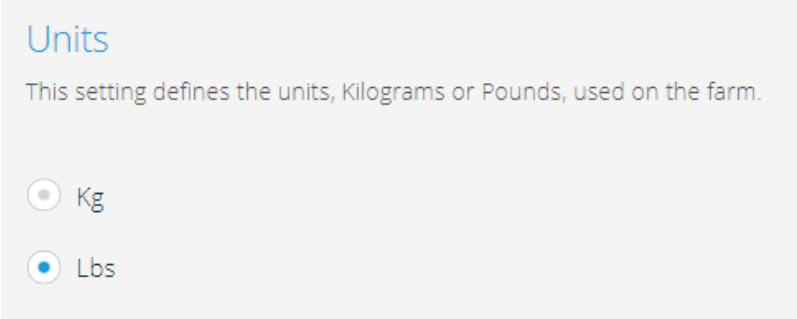
Configure here the shifts used for sorting animals. Dairy farms most often configure the shifts at the same time as milking shifts.



Up to 6 shifts can be configured. The total of all shifts during a day must equal 24 hours.

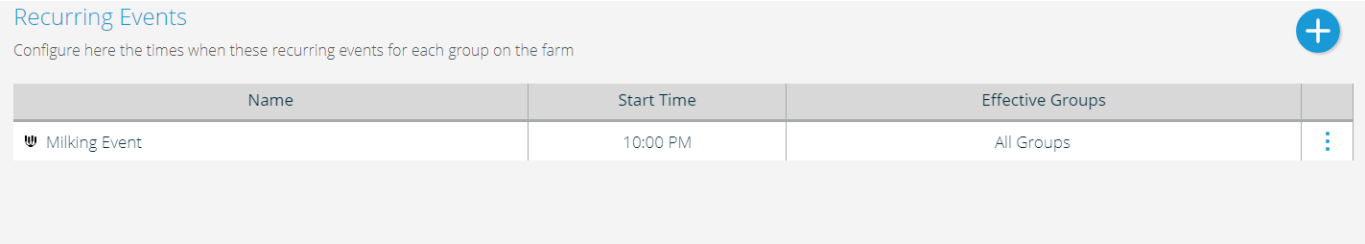
7.4.2 Units

Choose the units of measurement used on the farm, Kilograms or Pounds.



7.4.3 Recurring Events

Recurring Events are all the things that make up the day on a working Dairy Farm, Milking, Cooling, Out to and Back from Pasture, as well as others make up the day-to-day routine on the farm. Creating these events at the correct times during the day can help to measure and grade the routine on the farm.



1. Click  to add a new Recurring Event.
2. Choose the event you want to configure and the time. Also choose the effective groups.

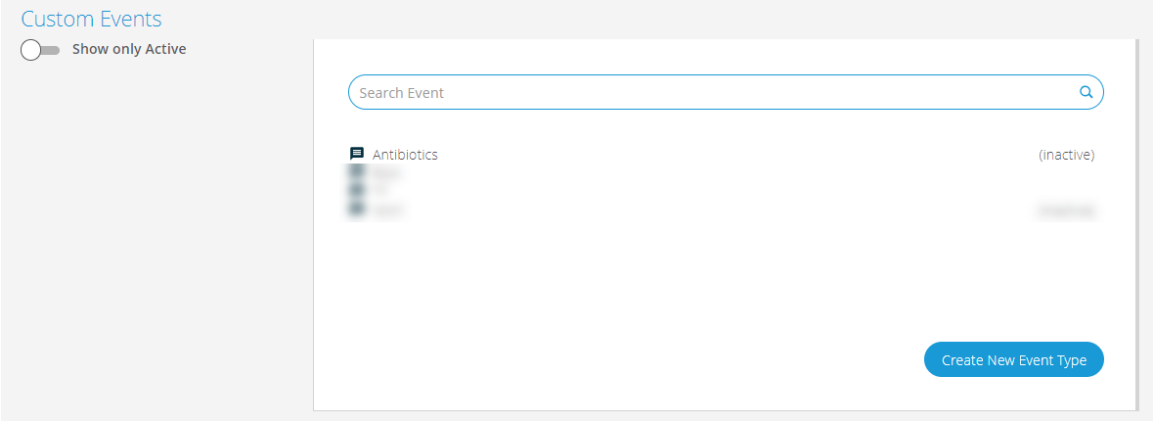


Choosing the effective groups means that the times for the recurring events can be configured correctly and individually for each group. This will allow the better track of the effectiveness of things like Cooling on the group.

3. When complete click  to save the Recurring Event.

7.4.4 Custom Events

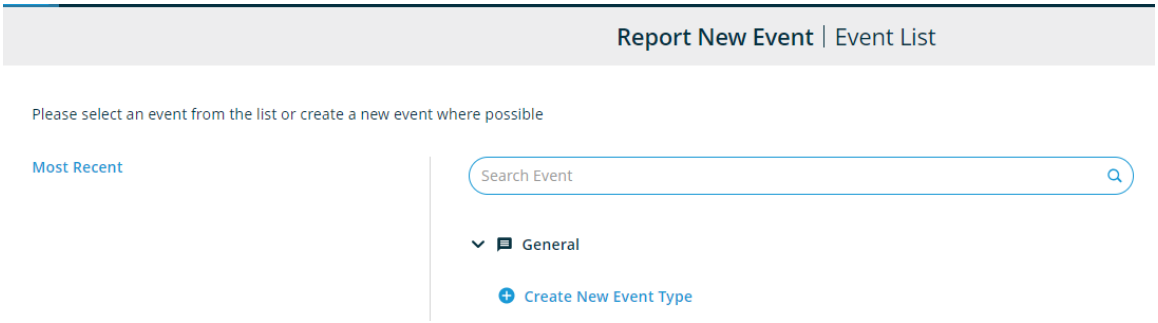
Custom Events created by farmers can be located from here.



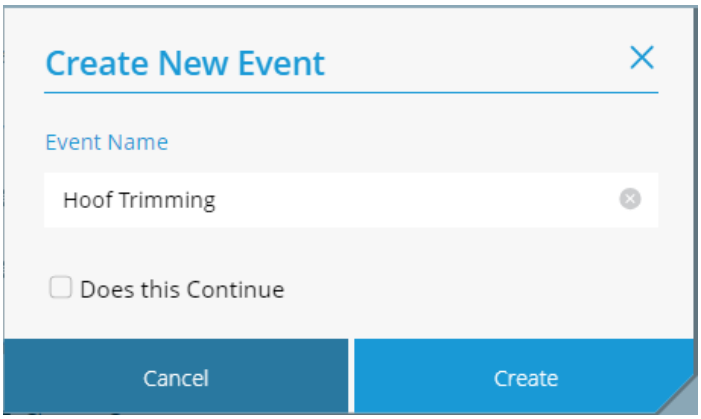
Activate the Show only Active filter and see only active Custom Events.

1. Click on 

and then choose General Event to add a General Event.



2. Enter the Event Name and if this event continues, exists for more than just today.



3. When complete, click Create to save the event.

8 Pinpointing Animals using SenseHub

SenseHub can help you pinpoint the animals on the farm that require attention or service:

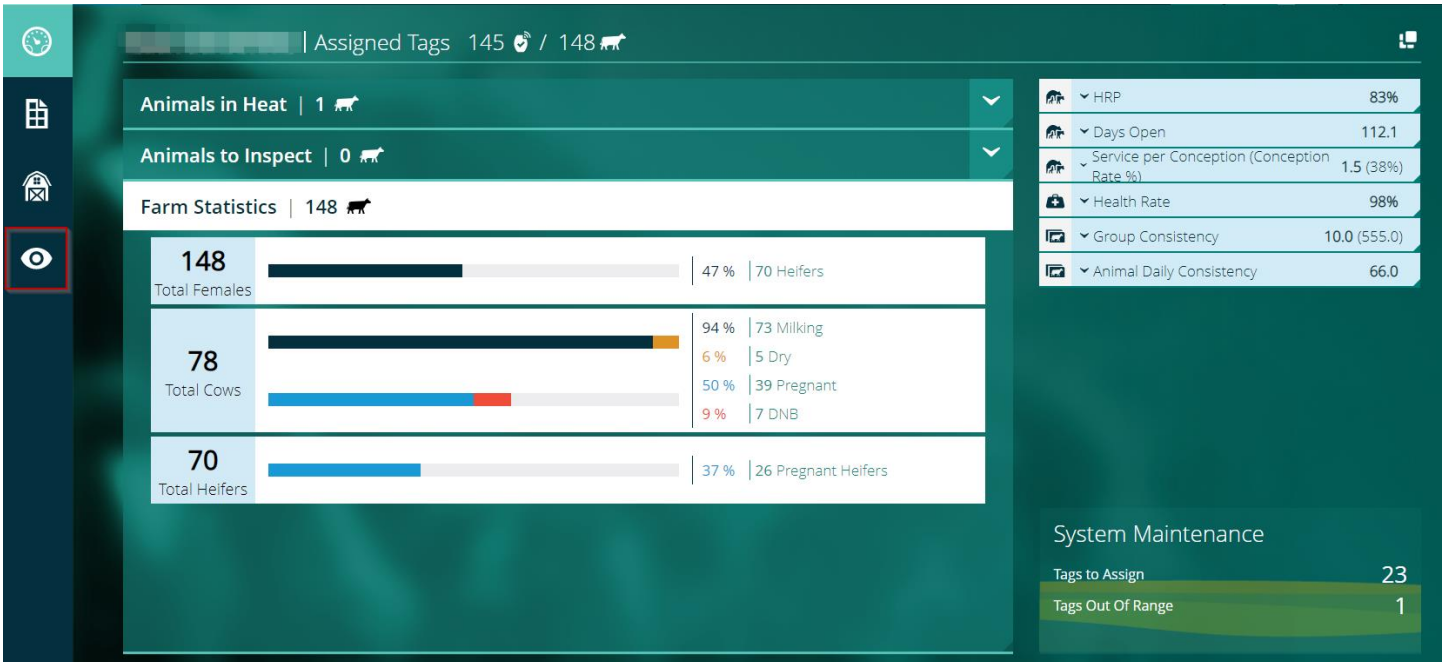
- Monitoring EarV2 LED page 200, enables farmers to find and identify animals from reports or as individuals.
- Allflex Sorting Gate, page **Error! Bookmark not defined.**, enables the separation of animals that require treatment or that need to be returned to their correct groups.

8.1 Configuring and Using the Monitoring EarV2 LED

The LED on the Monitoring EarV2 tag allows farmers to quickly find animals requiring a certain type of attention, according to the configured task, from within their group or as part of a pen of animals sorted using the Allflex Sorting Gate.

This feature is best experienced when using both the Web and Mobile interfaces.

Once there are Monitoring EarV2 tags paired with one or more animals on the farm the  LED Option Menu appears.



NOTE

The lighting of the LED feature supports up to 1000 tags to be lit at the same time.

Pinpointing Animals using SenseHub

8.2 Creating LED Tasks from Reports

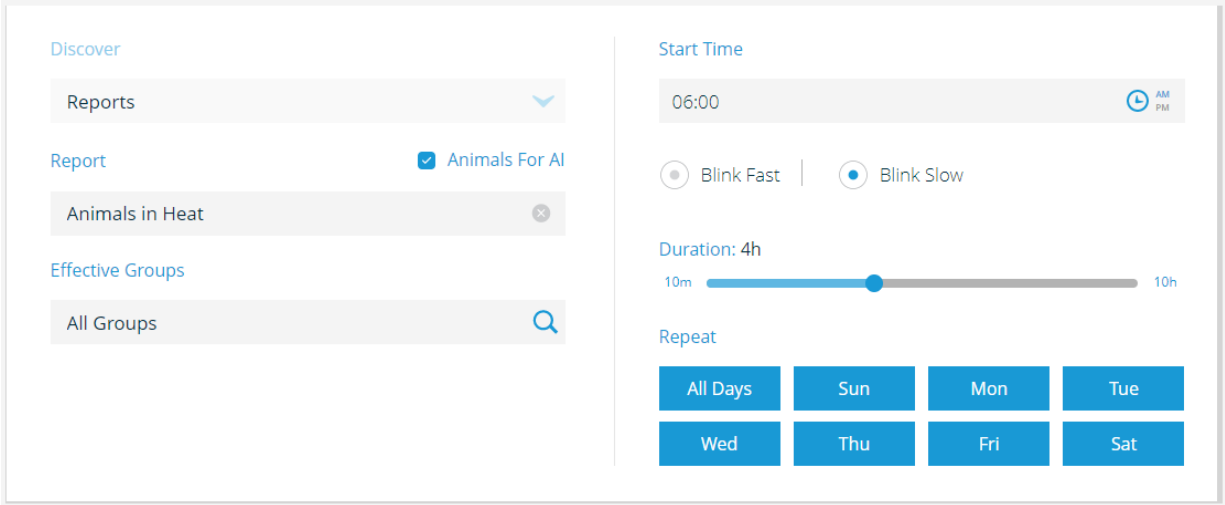
Accessing the LED Tasks table displays one or more sample or default tasks. Farms with the Starter Application plan will see one task, Animals for AI, Farms with Advanced or Premium application plans will see also the Marked Health Task.

There is no limit to the number of LED Tasks that can be created.



1. Click ⋮ next to the Animals for AI task and choose Edit; the LED Task configuration screen appears.

    a. Farmers could also click on the  Create New LED Task button and choose to discover the animals from Reports and continue as below.



2. Chose the report that contains the animals that are required. The available reports are Health, Animals in Distress, and Animals in Heat. The configuration of the LED tasks includes any quick filters available in the report. Custom Reports can also be used for LED Tasks.

3. Configure the Effective Groups. These are the groups where the animals are located. Only animals that appear in the report AND are in the cited groups will have their LEDs lit.
4. Configure the start time, the time the LEDs will be lit.
5. Configure the Blinking Rate of the LED, Slow, default, or Fast. This is useful in lighting the LEDS for 2 different reasons.

NOTE

Fast Mode uses 3 times the battery life of Slow Mode.
1 Hour of Fast mode equals 3 hours of Slow Mode.

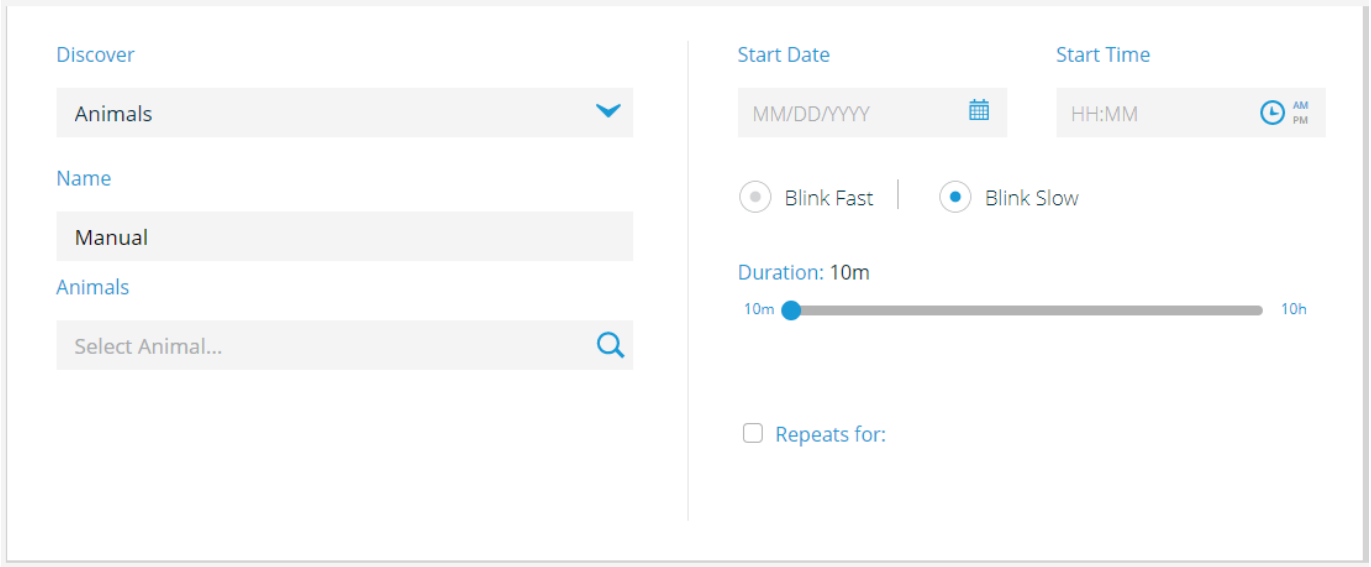
6. Configure the duration, the length of time the LEDs will operate. The default and minimum length is 10 minutes.
7. Set the days of the week when this LED task will operate.
8. Click  save to save the task.

NOTE

Only animals fitted and paired with Monitoring EarV2 Tags will have their LED activated.

8.3 Creating LED Tasks for Individual Animals.

1. Click on the  Create New LED Task button and choose to discover Animals.



2. Give the task a significant name, Hoof Trimming, External Exam, etc.

3. Enter the Animal IDs of the animals required.
4. Configure the Start Date and Time of this task.
5. Configure the Blinking Rate of the LED, Slow, default, or Fast. This is useful in lighting the LEDS for 2 different reasons.

NOTE

Fast Mode uses 3 times the battery life of Slow Mode.
1 Hour of Fast mode equals 3 hours of Slow Mode.

6. Configure the number of days to repeat the task. Tasks can repeat for up to 365 days.
7. Click  save to save the task.

NOTE

Only animals fitted and paired with Monitoring EarV2 Tags will have their LED activated.

8.4 Working with the LED Task List

1. One can Suspend, Edit, or Delete LED Tasks that are in the Task List.

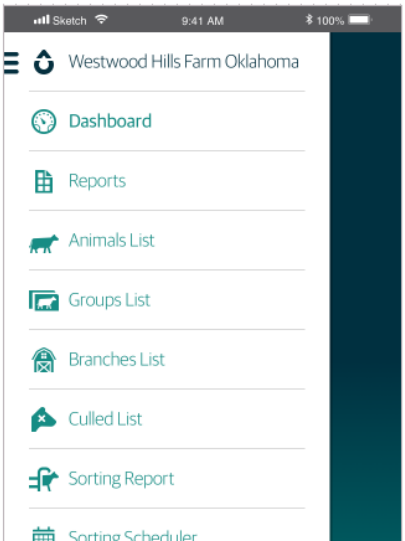


2. Suspend pauses tasks but does not delete their configuration. This is useful for seasonal farms or when one or more tasks is currently not needs but will be needed again in the future.
3. Edit allows for the editing of the configuration of a task.
4. Delete removes a task from the system.

8.5 LED Lighting Report

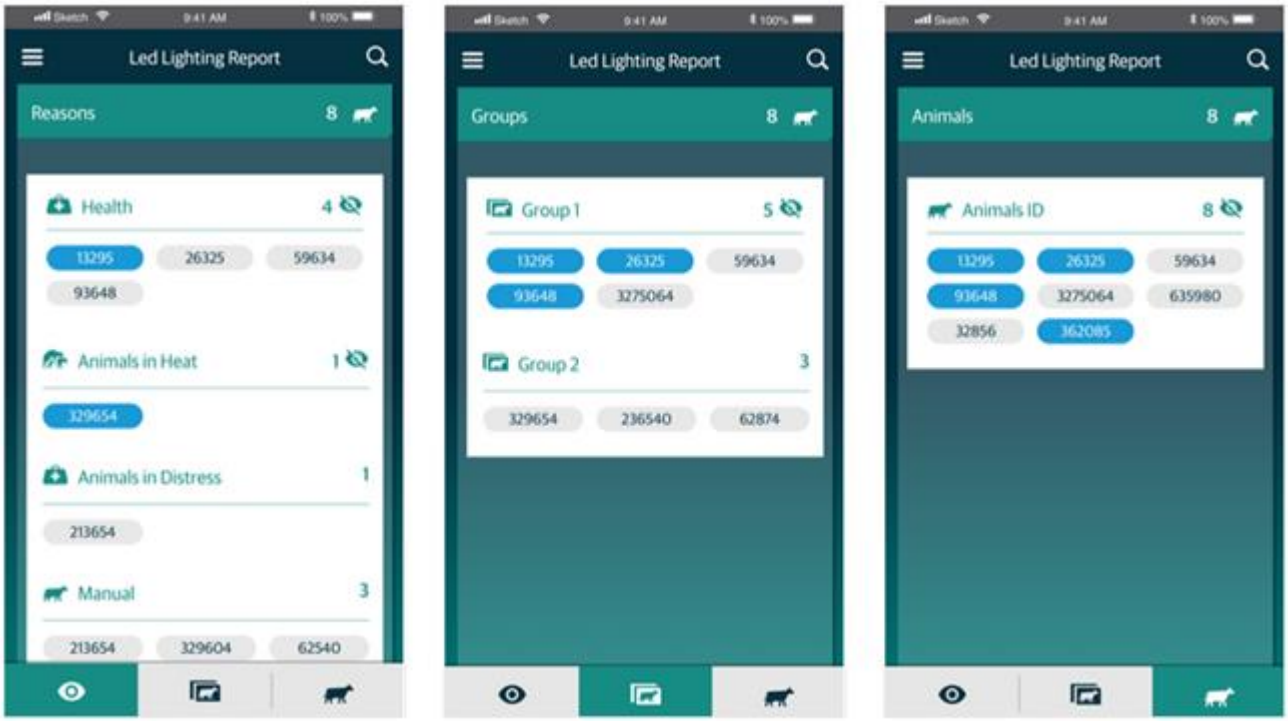
The Led Lighting Report is available on the SenseHub Mobile Application. Access the Main Menu from the Dashboard and tap, LED Lighting Report.

The LED Lighting Report is useful when working on the farm in the groups. This report allows farmers to turn-off LEDs on animals that have completed their treatment or examination. This conserves battery life.

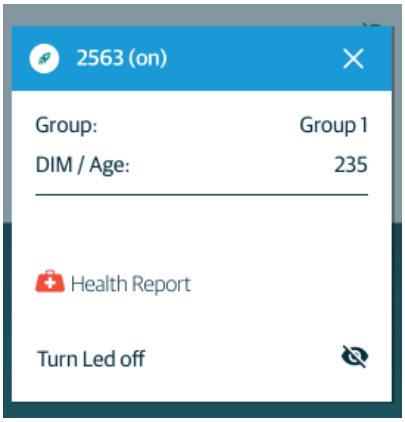


The LED Lighting Report displays the lit LEDs in three different views:

- Reasons – Display by the name of the LED Task.
- Groups – Display by the groups where the Lit LED animals are located.
- Animals – Display the list of animals that have lit LEDs according to ALL active LED tasks.

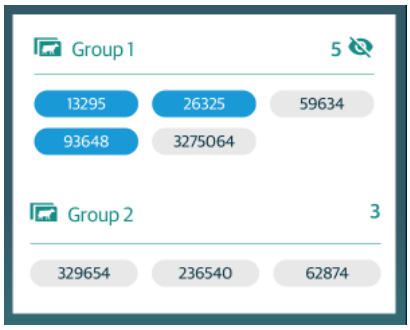


Touching the Chip 329654 displays the mini animal card for this animal.



The mini animal card shows the Animal Number, Group, DIM/Age, the Reason the LED is on, and give the option to turn the LED Off.

LEDs can be turned off also by clicking the LED icon at the top of the group section.



8.6 LED Lighting FAQ

To ensure a lifetime of high performance we suggest using the LED Lighting feature for up to 60 hours of LED lighting per year.

LED Lighting Tasks will not function and/or will be stopped early in some cases:

- LED Tasks do not operate during a system version update. Note that this includes updates to remote antennas that may not complete during the configured system update time.
- LED Tasks do not operate while tag firmware is being updated. If there is more than one antenna, then this make take some time.
- LED Tasks do not operate while the farm is undergoing an RF channel change.
- LEDs will not light on any Monitoring Ear Tag V2 Flex that has a Critical Battery Alert.

8.7 Why isn't the LED Lit?

There are several reasons why the LED might not be lit on a particular tag:

- There are already 1000 tags with LEDs lit on the farm.
- The tag is/was outside the range of the Antenna and has not received the command to light its LED.
- It is less than 20 minutes since the lighting command was sent. Tags on Animals that were not in reports may take 20 minutes or so until the LED on their tag is lit.

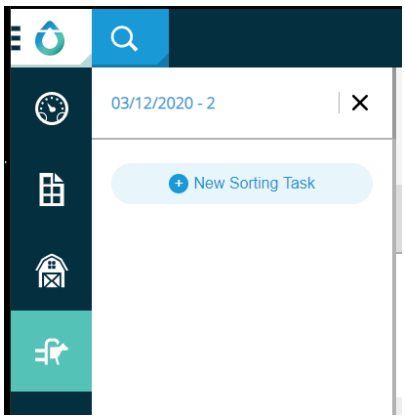
8.8 Sorting Scheduler

The Sorting Scheduler is where all the sorting tasks are configured, edited, and viewed. Configure Sorting Tasks using Reports, or individual animals. A Sorting Task can also be created from the Tag Status of Unidentified Tag on Cow status.

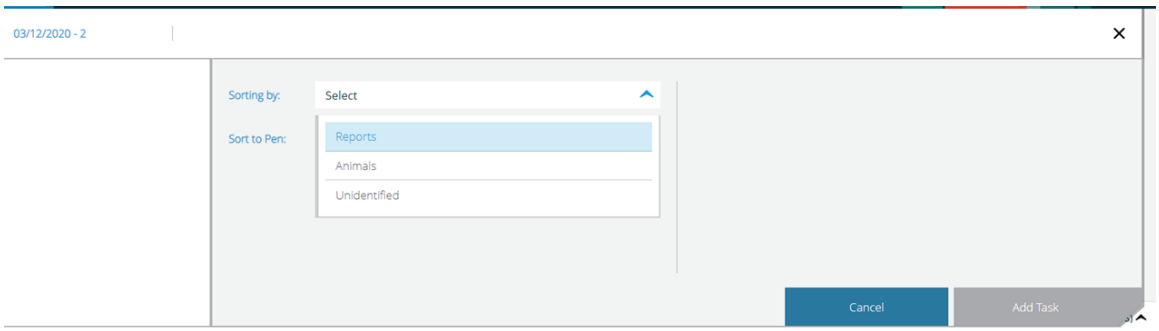
- Go to  Sorting Gate → Sorting Scheduler; the Sorting Scheduler appears.



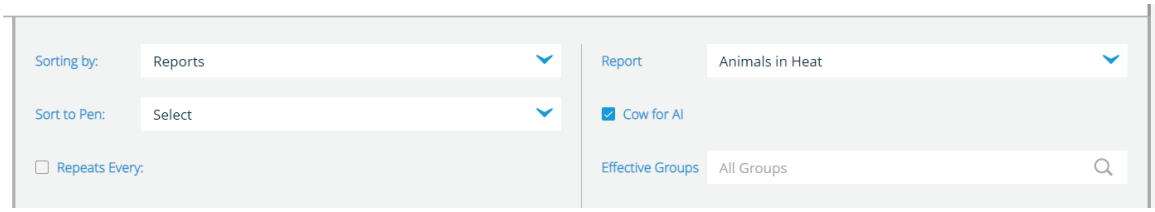
1. Click into any future shift to create a new Sorting Task.



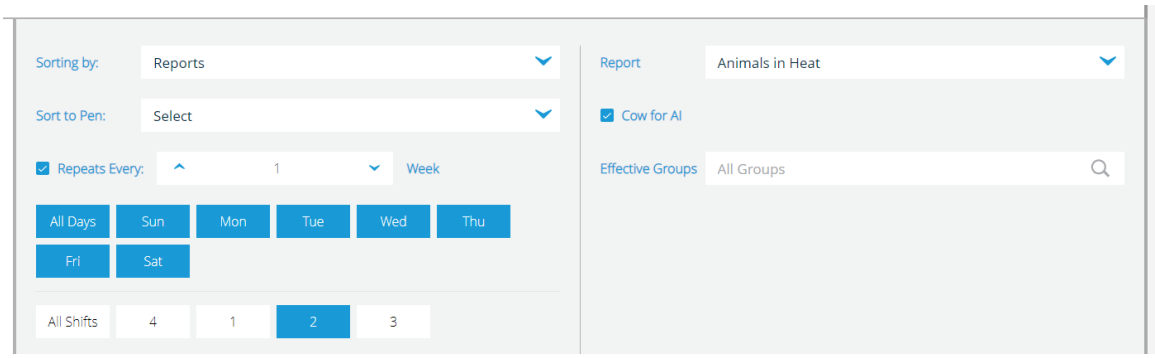
2. Choose if you wish to sort by Reports, Animals, or Unidentified Tags.



3. After selecting Reports, choose the report, and if desired the available filter. Custom Reports can also be used to create sorting task/s.



4. Choose the Pen that is the destination of the sorted animals.
5. Choose the frequency that the sorting task occurs, and the effective groups.



6. Review and when complete click on Add Task; the task is created, saved, and appears in the Sorting Scheduler.



Pinpointing Animals using SenseHub

8.9 Why are the Animals in the Sorting Pen Different?

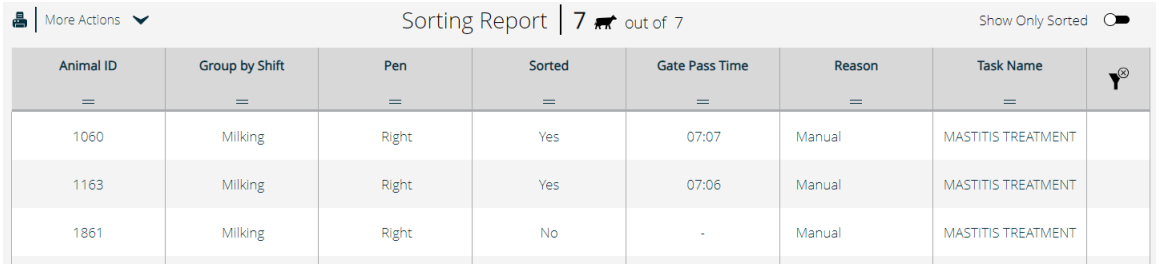
After creating a Sorting Task, the animals that are actually sorted, the animals in the Sorting Pen, are different from those that are expected.

1. After milking there are animals in the Sorting Pen that should not be there, animals were sorted unnecessarily.
    a. If after checking all the reports and manual sorts for this shift there is still no reason for these “extra” animals, check the photocells and make sure they are clean.
2. After milking there are animals missing from the Sorting Pen, animals required were not sorted.
    a. If after checking all the reports used to sort animals and confirming the required animals appear in the reports, check the photocells, and make sure they are clean.
    b. Check and make sure the animal entered the report before she passed thru the sorting gate.

8.10 Sorting Report

The Sorting Report gives a summary of the cows that were expected to be sorted at the sorting gate for any given shift

- Go to  Sorting Gate → Sorting Report; the Sorting Report for the current shift appears.



Field	Description
Animal ID	The Identification number assigned to the animal in SenseHub™
Group by Shift	The group where the animal is assigned
Pen	The pen the animal is held in after being sorted
Sorted	Was the animal sorted – Yes or No
Gate Pass Time	The time when the cow past thru the sorting gate.
Reason	The reason the cow was sorted.
Task Name	The name of the configured Sorting Task

NOTE

If an animal passes thru the sorting the gate BEFORE it is in the report that is scheduled for sorting during the shift, the Reason cell is colored red, and appears with a timestamp that is the time the animal entered the report.

9 System Settings

The System Settings area has essential information about the configuration and working environment of the SenseHub System.

9.1 System Dashboard

From the SenseHub Dashboard click on  System; the System Dashboard appears.

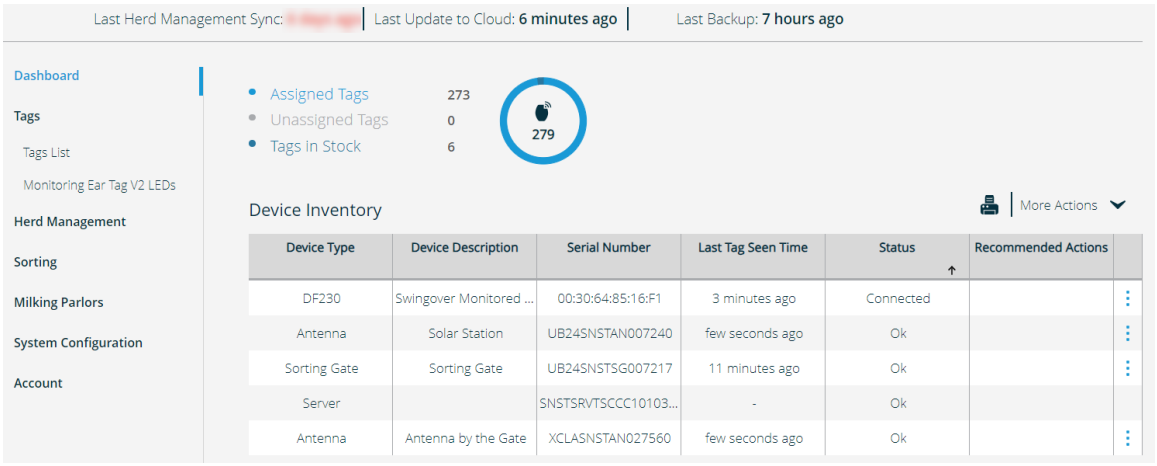


Table Item	Description
Last Update to Cloud	The last time the cloud was updated.
Last Backup	The last time the SenseHub system performed a backup.
Tag summary	A graphic summary of the tags in use on this farm.
Device Type	The type of the device.
Device Description	The description or name of the device. Click on  to edit. Give the SenseHub Controller a significant name.
Serial Number	The serial number of the device.
Last Tag Seen Time	The last time a tag was identified by the device.
Status	The status of the device.

Table Item	Description
Recommended Actions	Perform this recommended action to resolve this issue that appears in the Status column.
Last Management Sync	The last time SenseHub sync'd with the configured Herd Management System. If there is no Herd Management System configured this does not appear.

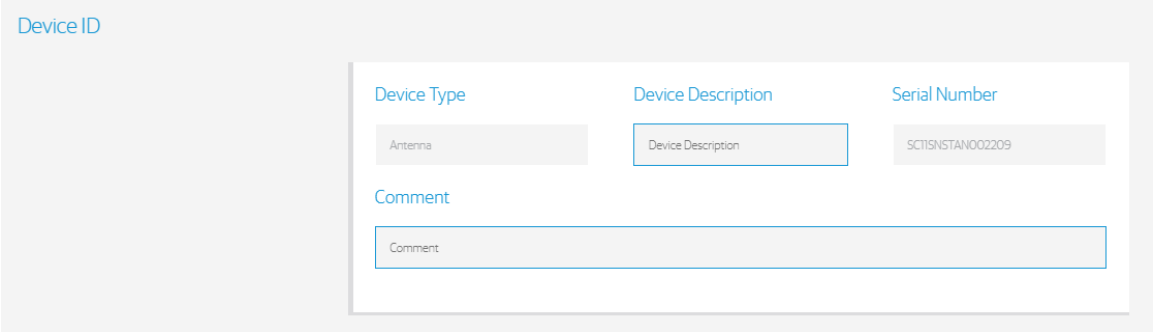
9.1.1 Device Details

Clicking on the Device in the Device Type column displays the Device Details.



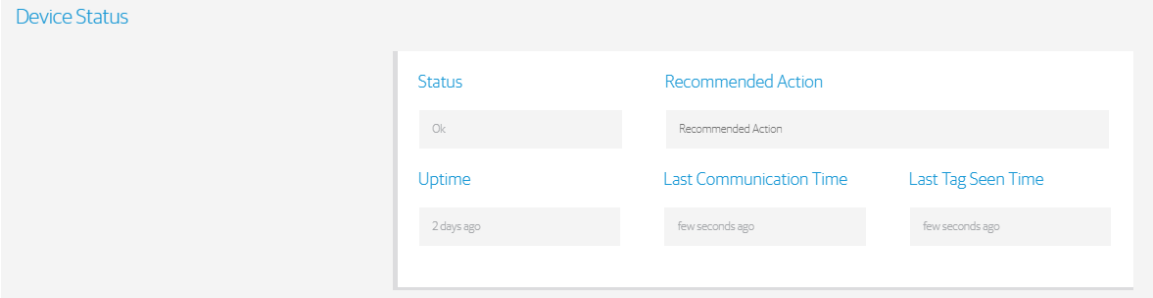
There are 4 sections here:

- Device ID: The type and name of the device.
- Device Status: the status and correction action for this device.
- Device Versions: the version running on the device.
- Device Network: The network configuration and properties of this device.



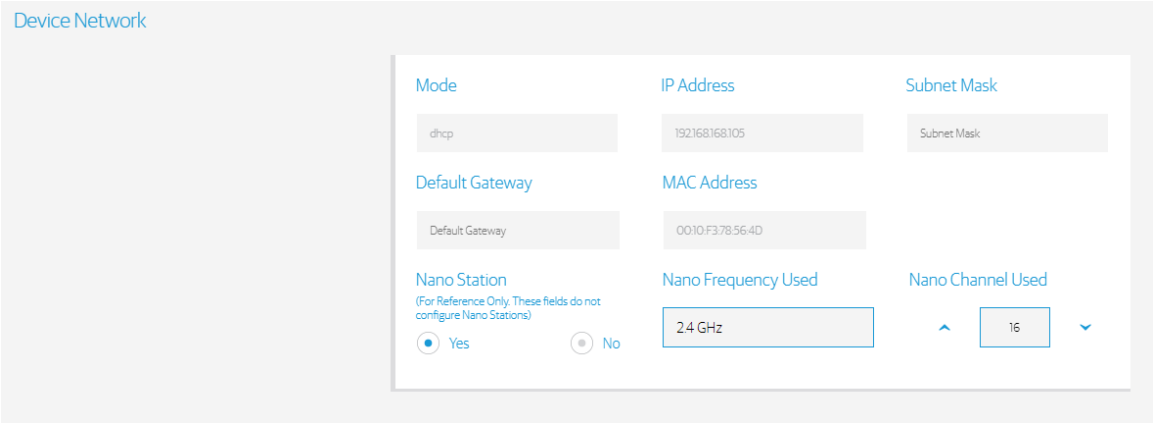
1. The type and ID of the device. It is recommended to enter information in the description and comment fields to help locate this device on the farm.

System Settings



2. The status along with recommended action is available in this section. This section also displays the current uptime of the operating system and communication time for this device as well as the last tag seen time.

3. The Device Versions section displays the versions of the device and is device dependent.

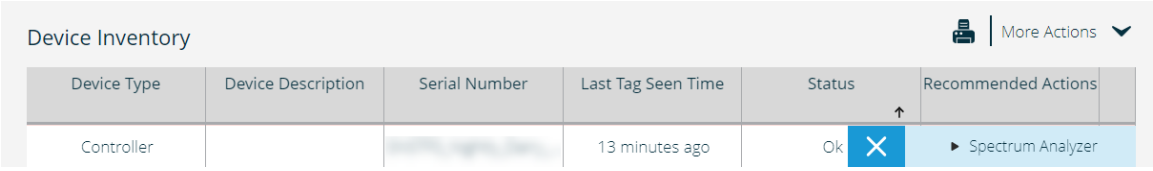


4. The Device Network section displays information about the configuration of the network. There is also a section here for manually adding information about nano stations that may be in use on this farm.

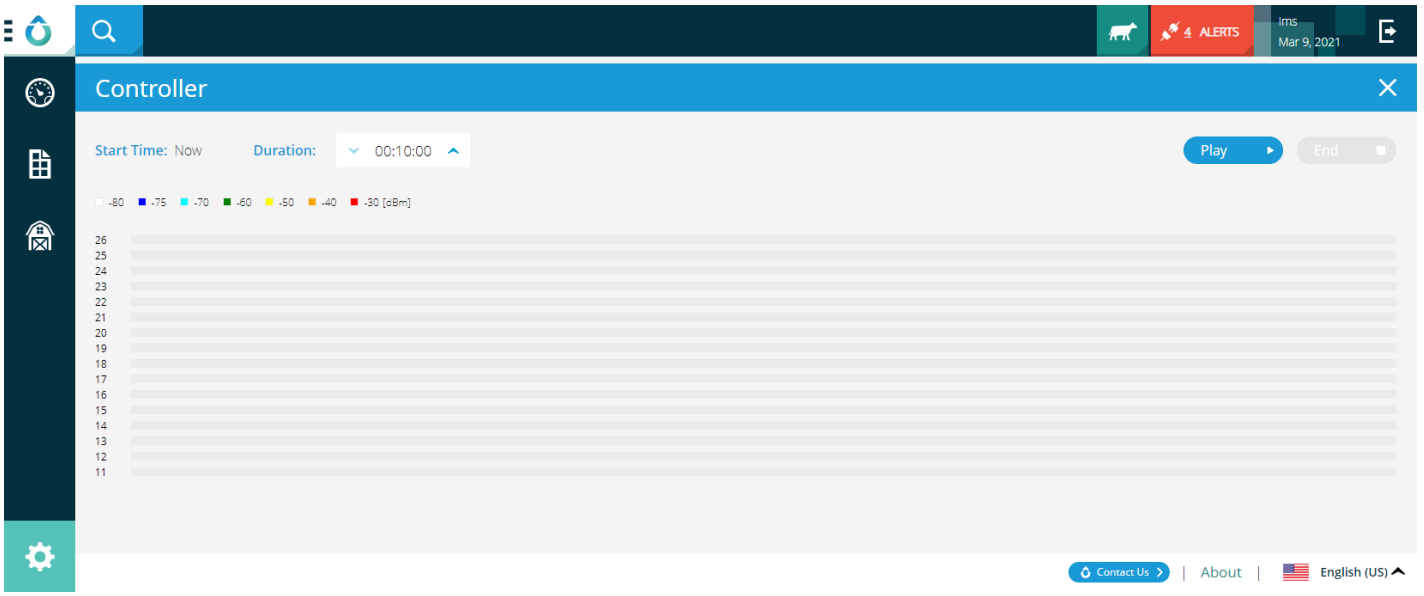
9.1.2 Spectrum Analyzer

The Spectrum Analyzer is a technical tool for technicians to use to analyze how much RF, Radio Frequency, or simply radio, traffic already exists on the channels that our Flex Tags use for communications.

1. In the Device Inventory table click on the 3 dots at the end of the line for a controller or antenna.



2. Click on Spectrum Analyzer and the Spectrum Analyzer screen appears.



   a. The spectrum analyzer screen displays the name of the device.

      Another reason to always give devices a significant name connected to their mounting location.

   b. The Start Time and Duration for the Spectrum Analyzer run.

      The Start time appears only after Play is clicked. The duration of the Spectrum Analyzer run can be from 10 minutes, default, to 24 hours, and the run stops automatically.

NOTE

No data is received from tags from this antenna while the Spectrum Analyzer is running.

c. Play/Pause and End buttons.

d. Key for understanding how clear or noisy each of the channels during the Spectrum Analyzer run.

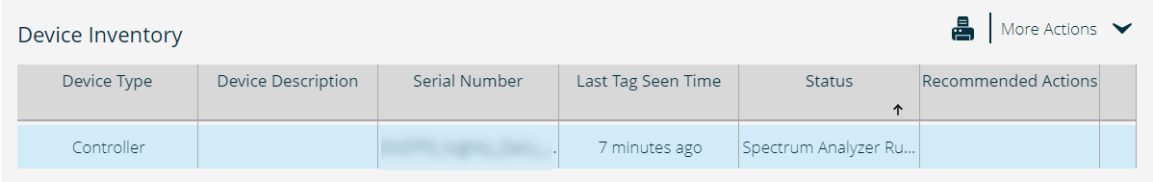
RF Noise (in dBm)	Meaning
-80	No Noise/clear
-75	
-70	
-60	
-50	
-40	
-30	Most noise

3. After Clicking 

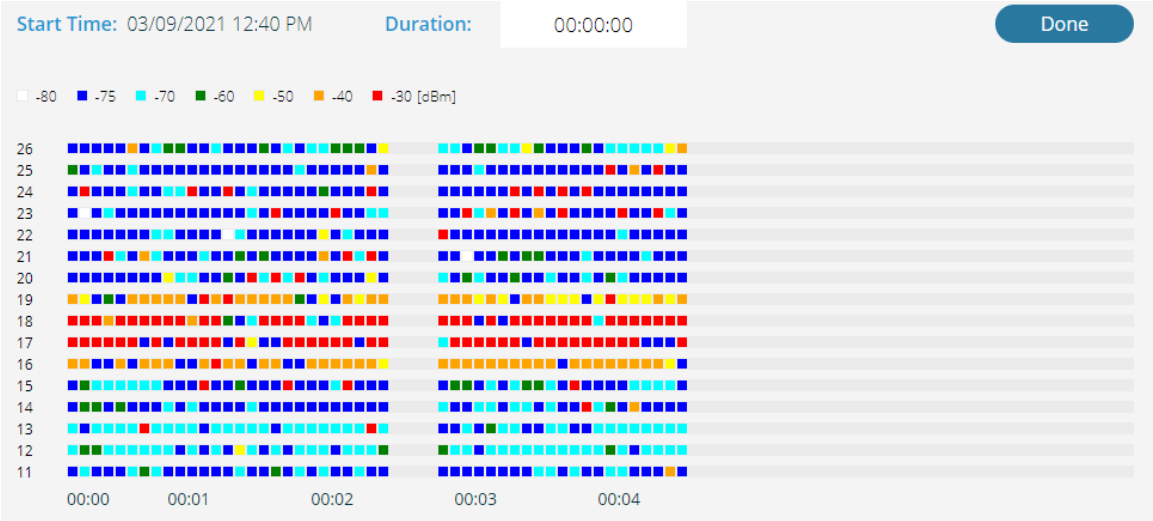
Play the Spectrum Analyzer begins, and data appears on the screen.



The Spectrum Analyzer screen can be minimized, and other work performed on SenseHub. Note that while the spectrum analyzer is running no tag data is received on this antenna.



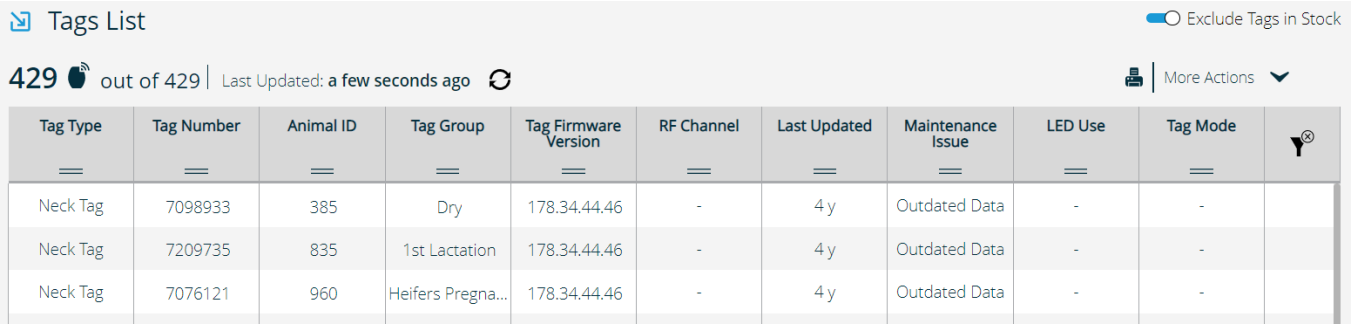
4. The Spectrum Analyzer run can be paused. No data is displayed on the screen while the run is paused. Note that the duration countdown clock is still running. If a spectrum analyzer run is set to run for 15 minutes, and then after 7 minutes of the run it is paused for 10 minutes, when the run is unpaused this run will be complete. 7 +10 = 17 minutes 2 minutes more that the configured duration.
5. When resuming the Spectrum Analyzer Run after a pause, a gap appears indicating that the run was paused for a time.



6. After stopping the Spectrum Analyzer run or when it completes clicking Done Done, the Spectrum Analyzer screen closes, and the antenna returns to normal operation.

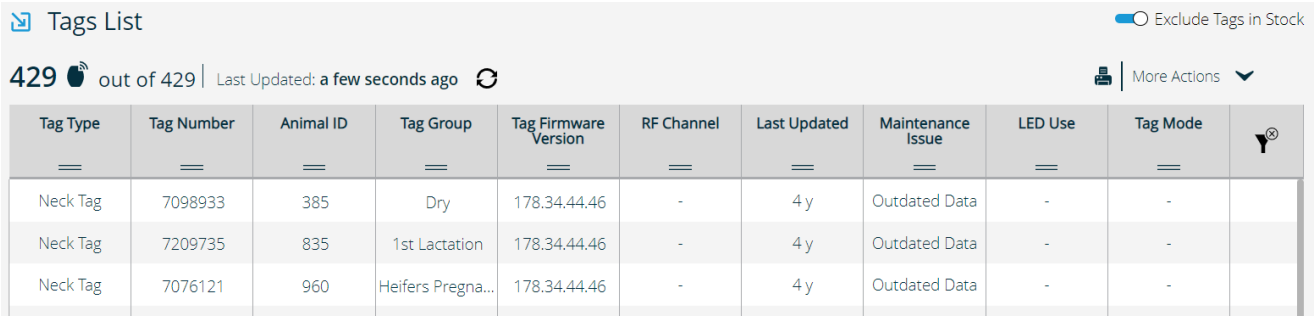
9.2 Tag List

Click on Tags, the Tag List appears.



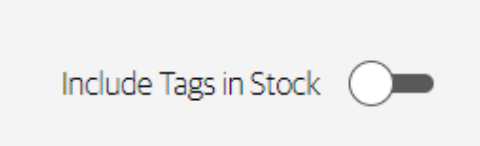
Column Header	Description
Tag Type	The type of the tag
Tag Number	The number of the tag.
Animal ID	The number of the animal that is paired with the tag.
Group	The group where the animal is.
Software Version	The active software version running on the tag.
RF Channel	The configured RF Chanel used by the tag.
Last Updated	The last time data was received from the tag.
Maintenance Issue	The current Maintenance Issue, if any, identified for this tag.
LED Use	The number of Slow Mode LED Blinking hours the tag has used
Tag Mode	The current operational mode of the tag

Click on  to expand the view to include all the columns.



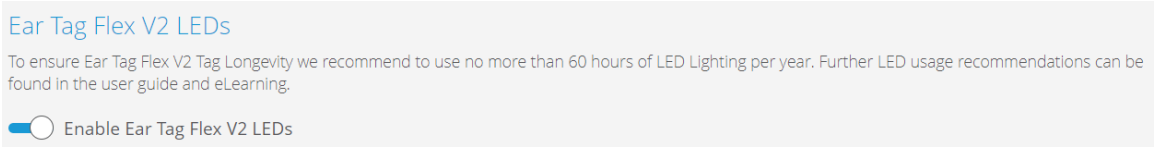
NOTE

By default, this table only shows tags that are paired with cows/animals.



9.2.1 Monitoring EarV2 LEDs

This toggle Enables/Disables the lighting of Monitoring EarV2 LEDs

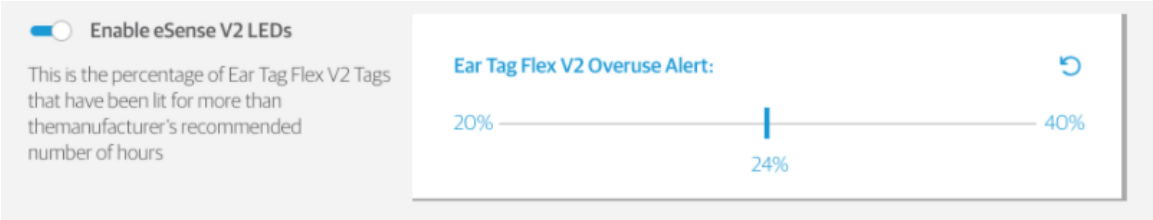


When a Monitoring EarV2 tag is assigned to an animal is switched to Enabled automatically. If this toggle is ever switched to Disable, it must be enabled again manually.

9.2.2 Battery Alerts

When Monitoring Ear Tag V2 Flex are enabled and in use on the farm, two battery alerts are available:

- Overuse Alert
- Critical Battery Alert

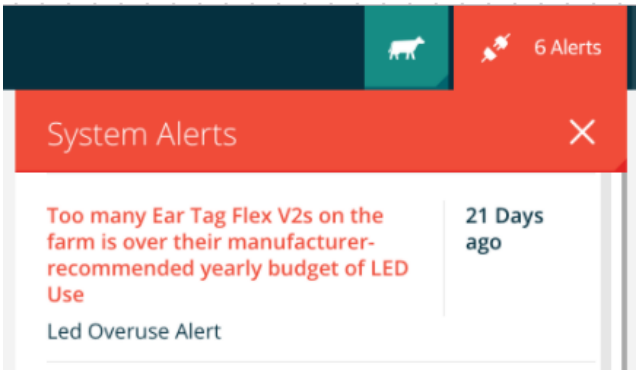


NOTE

30 Assigned Ear Tags Flex V2 are required for the Alerts to be generated.

9.2.3 Battery Overuse Alert

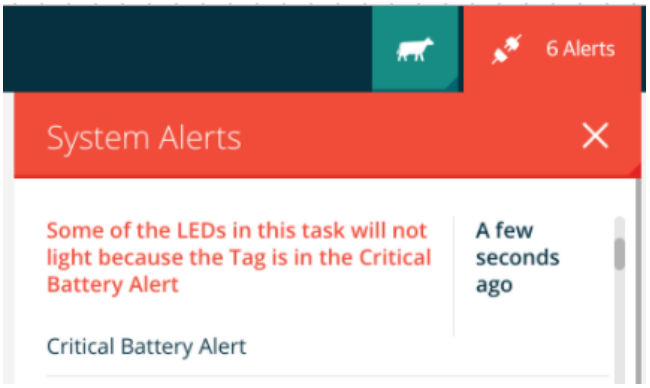
When LED use on Monitoring EarV2 tags goes over the recommended manufacturer's number of hours, currently 60 hours per year, for the configured percentage of tags, the Battery Overuse Alert appears.



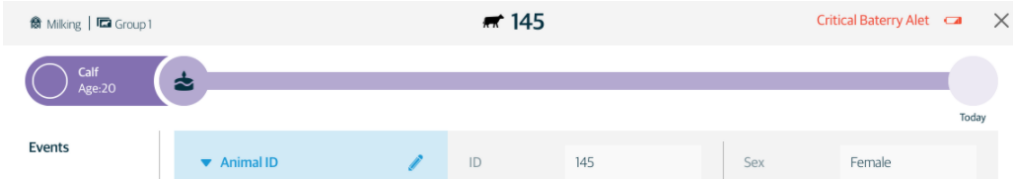
When this alert appears, it is an opportunity re-evaluate the LED use on the farm.

9.2.4 Critical Battery Alert

When a Critical Battery Alert appears, this means that it is time to replace the tags that show this alert.

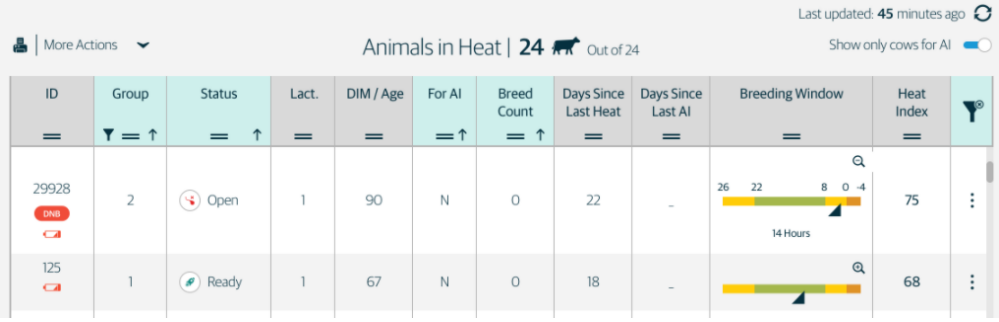


Tags that have Critical Battery Alerts will not have their LEDs lit if they are part of a LED Task, nor will they update their firmware if a Tag Update is initiated.



The Critical Battery Alert appears on the Cow Card and in each report where there are animals with tags that have a Critical Battery Alert.

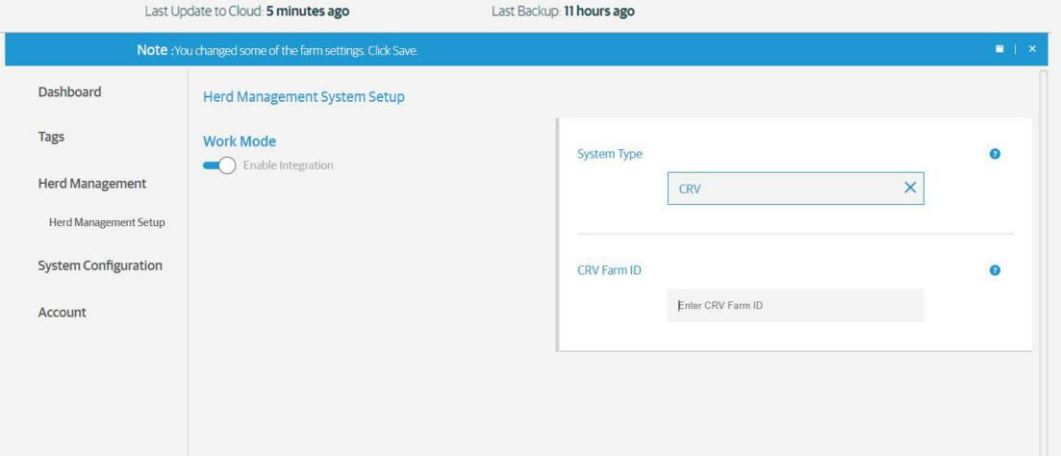
System Settings



9.3 Herd Management Setup

The Herd Management Setup section identifies and defines the current system configuration. Is the system configured to work in SCR Mode, stand alone, or is it configured to work integrated with a Herd Management System.

- If the Herd Management System was not configured during registration, go to System → Herd Management and choose the Herd Management System in use on the farm.

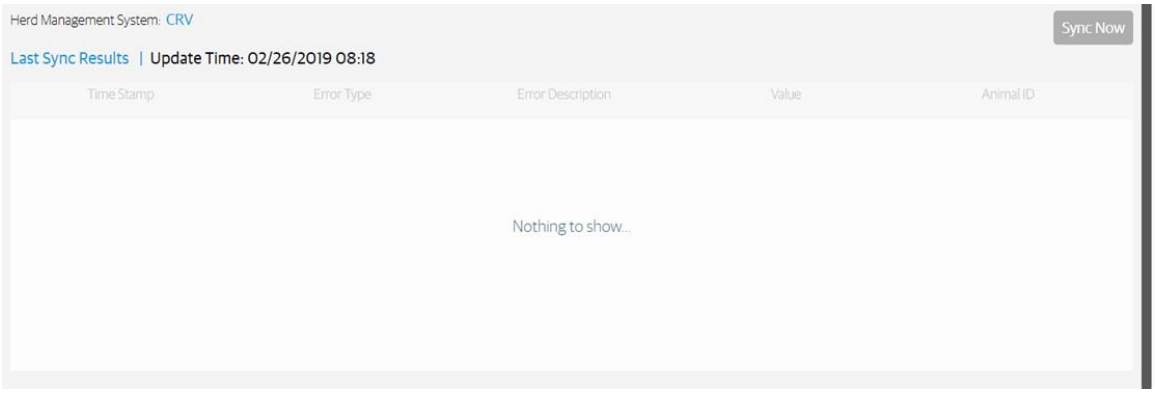


Depending on the Herd Management System you are using you will need to add additional information. When configuration is complete click save  to save the configuration.

9.3.1 Monitoring Herd Management

SenseHub monitors and reports on the status of the most recent synchronization with the Herd Management System.

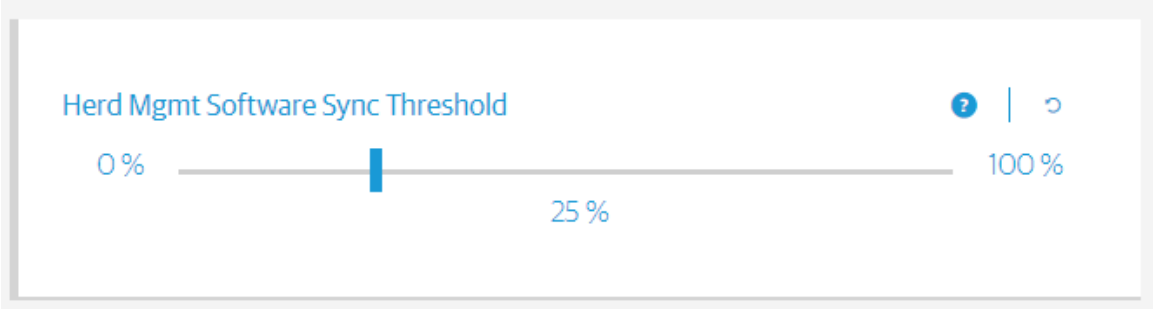
- Go to System → Herd Management → Results the last Sync Results screen appears.



Field	Description
Time Stamp	The time the error occurred
Error Type	The type of Error
Error Description	Long Description of the error
Value	The value in error
Animal ID	The Animal ID record that contains the error

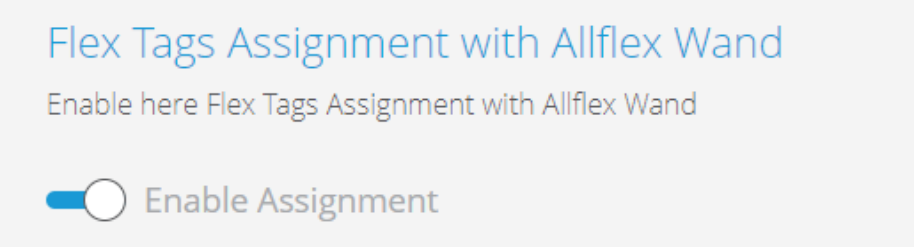
9.3.2 Herd Management Synchronization Threshold

This threshold defines the percentage of cows that may be culled because of a Herd Management Software synchronization.



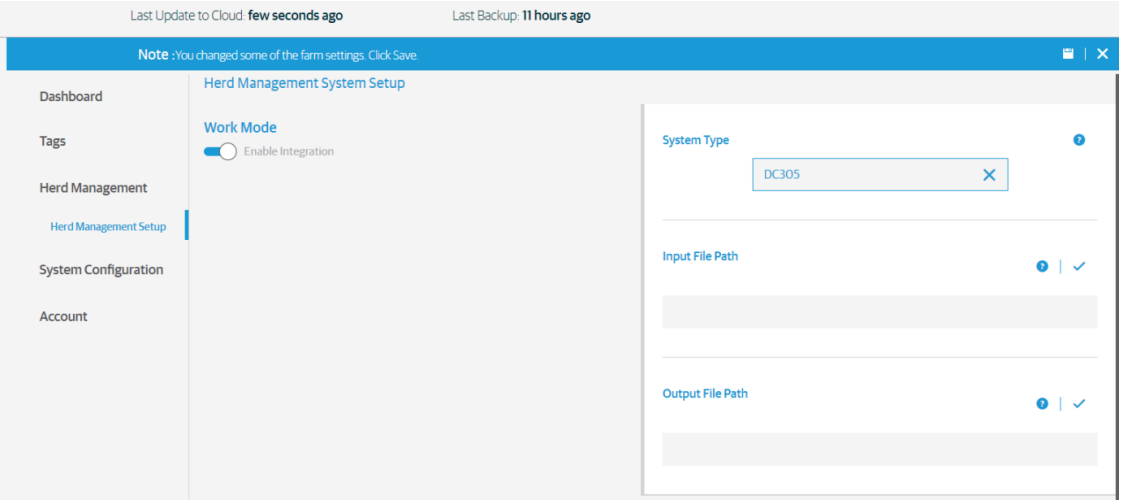
9.3.3 Flex Tag Assignment with Allflex Wand

When this is enabled, Flex Tags will be paired with animals when using the Allflex Wand. Pairing with the Allflex Wand will also overrule any pairing of Flex tags sent by the Herd Management Software.



9.3.4 Herd Management Setup – Status File

The Herd Management Setup section identifies and defines the current system configuration. Is the system configured to work in Allflex Mode, stand alone, or is it configured to work integrated with a Herd Management System.



When choosing to work in DC305 or PC Dart Modes the input and output file paths must be defined. These are the file paths where DC305 / PC Dart places the Status File, Input File Path, and where SenseHub, Output File Path, places its output files.

Create the Input and Output file paths on the same PC where the SenseHub Status File Service is installed. The installation is described on page 24.

If SenseHub does not appear to be synchronizing with the Herd Management System you are using contact your SCR Dealer for assistance, Link Services may need to be enabled for your installation.

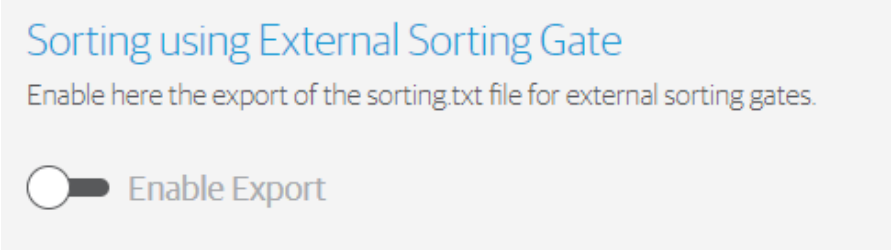
NOTE

It is highly recommended to browse on the local PC where the SenseHub Status File Service is installed using Windows Explorer to the correct file location and then copy that path to the correct window in the browser as the input or output file path as required.

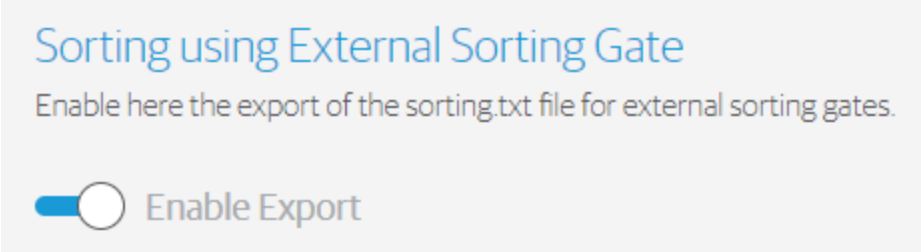
9.3.5 Sorting using External Sorting Gate

When SenseHub is configured to use one of the Herd Management Systems that employ the Status File Protocol, it is possible to create a sorting list for an external, non-Allflex, sorting gate. This sorting gate must be able to accept TXT files as sorting lists.

1. Using the SenseHub Web App go to System → Herd Management→ Sorting using External Sorting Gate.



2. Enable the export of the sorting.txt file by sliding the slider to the right.



3. Click Save in the menu bar at the top of the page.



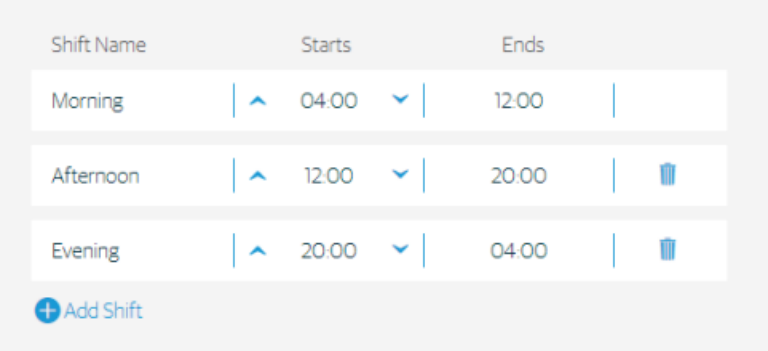
4. Export of the sorting.txt file is enables and the file will be exported to the Status File Output path as configured.



NOTE

The External Sorting gate must be able to read the file from the PC where the Output File path is found.

5. Go to Farm → Settings → Shifts and make sure the shifts are configured correctly.



   a. Up to 6 shifts can be configured. The total of all shifts during a day must equal 24 hours.

Proceed now to Sorting Scheduler on page 208 and configure the sorting tasks for the External Sorting Gate.

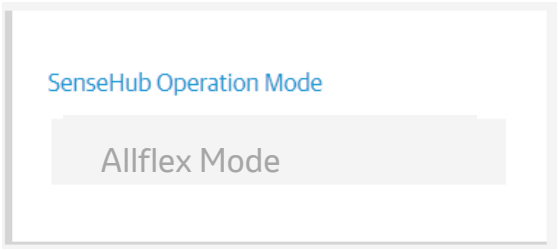
NOTE

Link Services must be enabled for this farm to enable this functionality.

9.4 System Configuration

This section contains configuration information about the SenseHub Operation Mode, Tag Communication Configuration, and Internal Algo Versions.

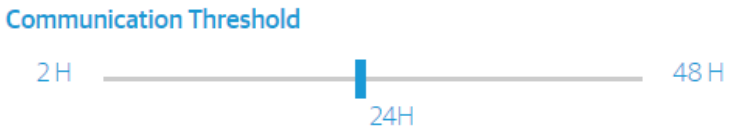
- SenseHub Operation Mode – Choose between Allflex Mode and Minimal Validation Modes of operation. Using Allflex Mode guarantees the full functionality of the system. The system will provide less utility when used in Minimal Validation mode.



NOTE

Once configured at registration it is not possible to change the SenseHub Mode of Operation.

- Tag Communication Configuration – Configure when tags that have not identified since assignment and tags that have identified at least once since assignment but not in a while appear in the Tag Maintenance Report.

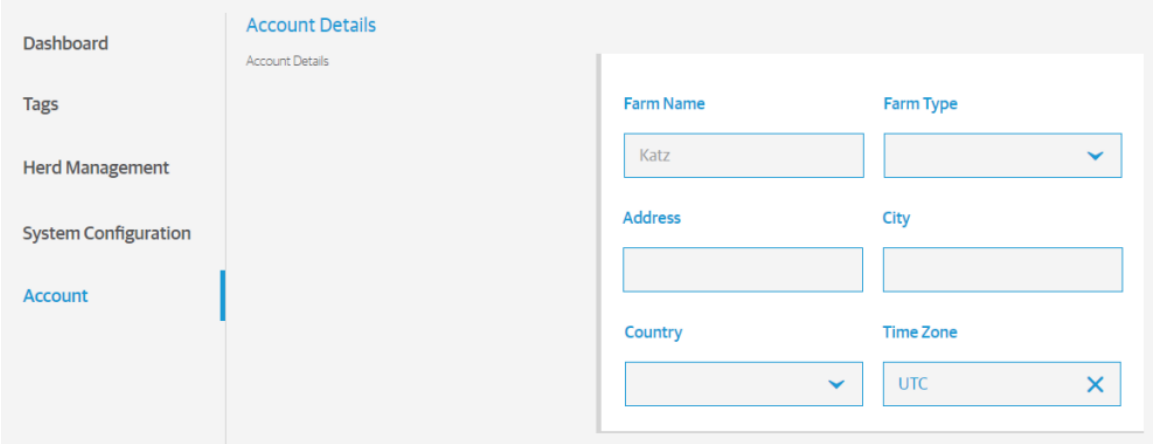


- Algo Versions – This section contains essential information needed to communicate to Technical Support.



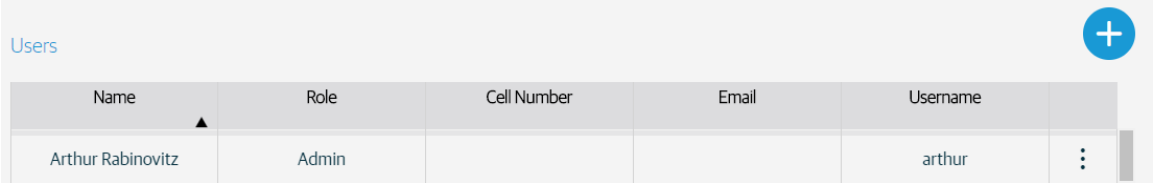
9.5 Account Details

This section contains the current configured account details.



9.5.1 Users

The users page is where Users to the local SenseHub™ system are added and managed.

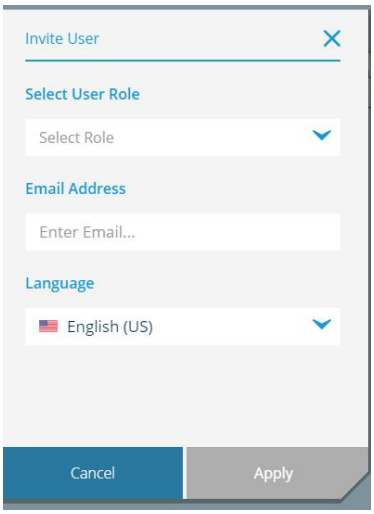


There are 4 user Roles available on SenseHub™:

- Admin – the user that is created during registration is the system administrator and has access to edit everything in SenseHub™. There is only one Admin per SenseHub™.
- Farm Manager – This user can edit all settings related to the Farm, its operation, and the cows. This user may not edit System Settings.
- Farmer –This user can enter events and view cows, reports, and graphs.
- External User – This type of user should be used for consultants and service providers to the farm like the breeder, veterinarian, and feeding consultant. With this user service providers/consultants can receive alerts from the system. They can also access the system but only as Read-only users.

To add a new user, click on  Add, and then choose the user role to add.

Complete the User Details and click Apply.



Continue to Alerts on page 191 to configure the types of notifications and alerts sent to the users, and on which devices.

NOTE

All Newly added users must read and accept the End User License Agreement, EULA. This is only available from the WEB Interface and is not Available from the Mobile Interface.

Appendix A Certifications

telefication

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

TCB

Telefication B.V.
Edisonstraat 12a
Zevenaar, NL-6902 PK
Netherlands

Date of Grant: 01/16/2017

Application
Dated: 01/06/2017

SCR Engineers Ltd.
18 Hamelacha street, Poleg Industrial Zone
P.O. Box 13564,
Netanya, 42138
Israel

Attention: Eli Kamhine , VP Technologies

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER:	AMUT04
Name of Grantee:	SCR Engineers Ltd.
Equipment Class:	Part 15 Low Power Transceiver, Rx Verified
Notes:	eSense ear tag

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	15C	2405.0 - 2480.0			

Certificate No.: 162185948/AA/00	Mark Chung Product Assessor	Mark Chung

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telefication

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Date of Grant: 01/13/2016

Application
Dated: 01/13/2016

SCR Engineers Ltd.
18 Hamelacha street, Poleg Industrial Zone
P.O. Box 13564,
Netanya, 42138
Israel

Attention: Eli Kamhine , VP Technologies

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER:	AMUT03
Name of Grantee:	SCR Engineers Ltd.
Equipment Class:	**Part 15 Low Power Transceiver, Rx Verified**
Notes:	**Activity based tag**

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	15C	**2405.0 - 2480.0**			

Certificate No.: 152185079/AA/00	Mark Chung Product Assessor	Mark Chung

Appendix A Certifications

HERMON LABORATORIES

CERTIFICATE OF CONFORMITY

With EN 301 489-3: V1.6.1: 2013, other than telecommunication center equipment and EN 301 489-1 V1.9.2: 2011, other than telecommunication center equipment Standards harmonized under article 3.1(b) of R&TTE Directive 1999/5/EC

With AS/NZS CISPR 22: 2009 + A1(10), Class B Standard

Certificate Number SCREMC_EN.26956C

This certificate of conformity has been granted to the applicant based on the results of tests and evaluations, performed by Hermon Laboratories from April 16 to May 4, 2015 on representative sample of the specified product.

Product description

Product name:	Activity based tag
Model:	HR-TAG-LDn
Serial number:	PO055798
Hardware version:	04.04
Software release:	001.002.021.026

Applicant/Manufacturer details

Name:	SCR Engineers Ltd.
Address:	18 Hamelacha street, Netanya, POB 13564, Israel
Telephone number:	+972 73 240 6053
Fax number:	+972 9865 0703

This is to certify that the tested product sample satisfies the requirements of the above listed standard/s.

Measurement/test results are contained in the test report: SCREMC_EN.26956.

The comments in the associated (if applicable) test report/s shall be taken into account and used in conjunction with this certificate

Michael Nikishin,
EMC & Radio Group Manager
Hermon Laboratories Ltd.

July 20, 2015 **Page 1 of 1**

EXPERTS IN GLOBAL COMPLIANCE SOLUTIONS

EMC Radio Telecom Environmental Product Safety International Approvals

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Hatachana St., POB 23, Binyamina 30500 Israel
Phone: +972 4 628 8001, Fax: +972 4 628 8277
Email: mail@hermonlabs.com, www.hermonlabs.com

Appendix A Certifications

HERMON LABORATORIES

CERTIFICATE OF CONFORMITY

With EN 301 489-3: V1.6.1: 2013, other than telecommunication center equipment and EN 301 489-1 V1.9.2: 2011, other than telecommunication center equipment Standards harmonized under article 3.1(b) of R&TTE Directive 1999/5/EC

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Product description

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Michael Nikishin,
EMC & Radio Group Manager
Hermon Laboratories Ltd.

July 20, 2015 **Page 1 of 1**

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Appendix A Certifications

HERMON LABORATORIES

CERTIFICATE OF CONFORMITY

CERTIFICATE

With AS/NZS CISPR 22: 2009 + A1(10), Class B standard

With EN 301 489-3: V1.6.1: 2013, other than telecommunication center equipment and EN 301 489-1 V1.9.2: 2011, other than telecommunication center equipment standards harmonized under article 3.1(b) of R&TTE Directive 1999/5/EC

With EN 300 440-2 V1.4.1: 2010 standard harmonized under article 3(2) of R&TTE Directive 1999/5/EC

With AS/NZS 4268:2012 and AS/NZS 4268/Amdt1:2013 standards

Certificate Number SCREMC_RAD_28575C

This certificate of conformity has been granted to the applicant based on the results of tests and evaluations, performed by Hermon Laboratories from July 11 to 14, 2016 on representative sample of the specified product.

Product description

Product name:	eSense Ear TAG
Model:	AMUT04
Serial number:	QD0000145
Hardware version:	01.02.00
Software release:	110.07.05.06

Applicant/Manufacturer details

Name:	SCR Engineers Ltd.
Address:	18 Hamelacha street, Netanya, POB 13564, Israel
Telephone number:	+972 73 240 6053

This is to certify that the tested product sample satisfies the requirements of the above listed standard/s.

Measurement/test results are contained in the test reports:

SCREMC_28575, SCRRAD_EN.28575.

The comments in the associated (if applicable) test report/s shall be taken into account and used in conjunction with this certificate

Michael Nikishin,
EMC & Radio Group Manager
Hermon Laboratories Ltd.
November 16, 2016

Page 1 of 1

EXPERTS IN GLOBAL COMPLIANCE SOLUTIONS

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Appendix A Certifications

HERMON LABORATORIES

CERTIFICATE OF CONFORMITY

With EN 300 440-2 V1.4.1: 2010 Standard harmonized under article 3(2) of R&TTE Directive 1999/5/EC
With AS/NZS 4268:2012 and AS/NZS 4268/Amdt1:2013 Standard

Certificate Number SCRRAD_EN.26956C

This certificate of conformity has been granted to the applicant based on the results of tests and evaluations, performed by Hermon Laboratories from May 3 to 17, 2015 on representative sample of the specified product.

Product description

Product name:	Activity based tag
Model:	HR-TAG-LDn
Serial number:	PO055798
Hardware version:	04.04
Software release:	001.002.021.026

Applicant/Manufacturer details

Name:	SCR Engineers Ltd.
Address:	18 Hamelacha street, Netanya, POB 13564, Israel
Telephone number:	+972 73 240 6053
Fax number:	+972 9865 0703

This is to certify that the tested product sample satisfies the requirements of the above listed standards.

Measurement/test results are contained in the test report: SCRRAD_EN.26956.

The comments in the associated (if applicable) test report/s shall be taken into account and used in conjunction with this certificate

Michael Nikishin,
EMC & Radio Group Manager
Hermon Laboratories Ltd.

July 15, 2015 **Page 1 of 1**

CERTIFICATE

EXPERTS IN GLOBAL COMPLIANCE SOLUTIONS

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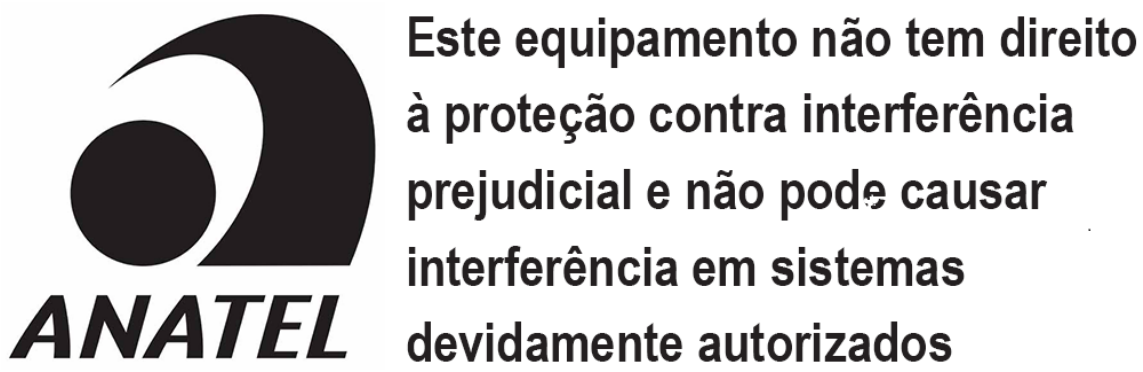
Email: mail@hermonlabs.com, www.hermonlabs.com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à proteção contra interferência
prejudicial e não pode causar
interferência em sistemas
devidamente autorizados