

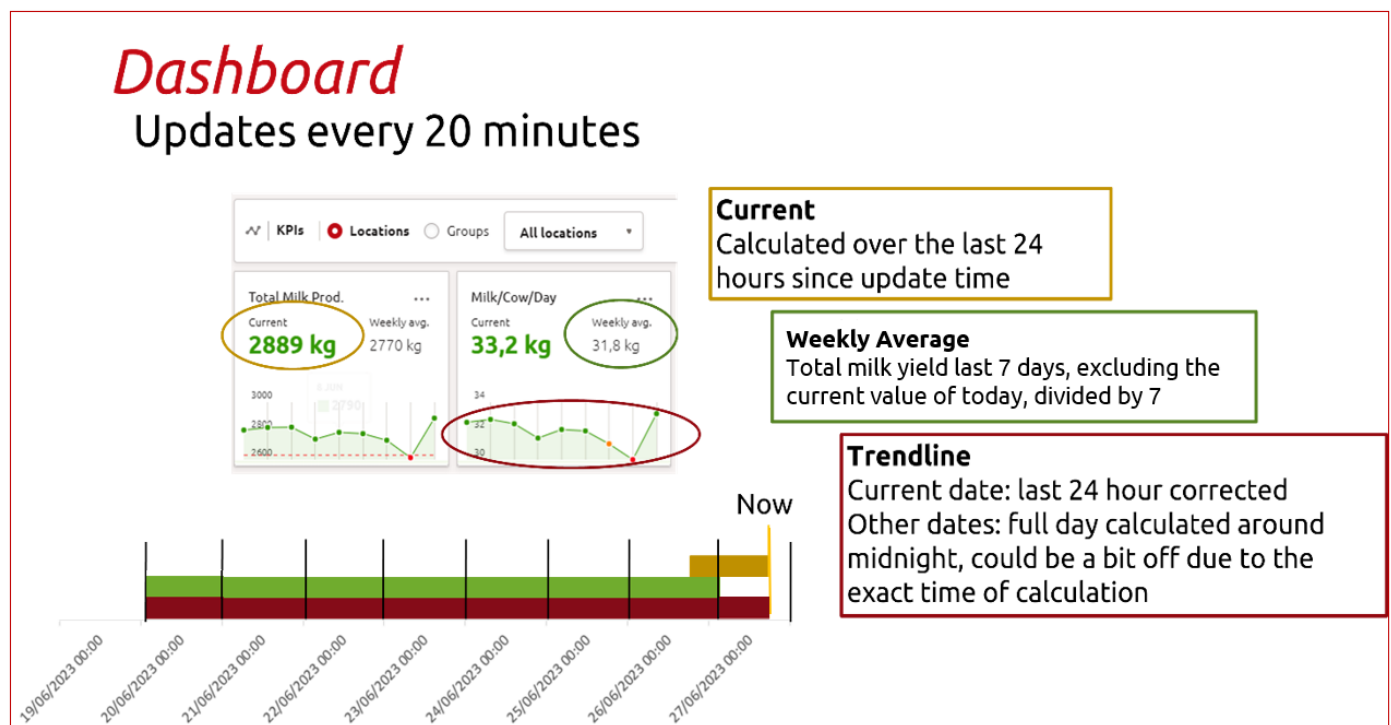
KPI Calculations: the numbers explained

Details

Dashboard KPIs

When you open the Horizon app, you start on the dashboard, which provides a quick snapshot of the current farm's performance. The dashboard is updated every 20 minutes to show the latest values. A KPI is presented in different ways: as the current value, the weekly average and a trend line. Here is a breakdown of where these values originate:

- **Current value:** This indicates the KPIs performance over the past 24 hours since the last update (which is when the dashboard is opened and refreshed every 20 minutes).
- **Weekly average:** This indicates the KPIs performance over the past 7 days, excluding the today value.
- **Trend line:** The trend line shows the values of the past 7 days per 24 hours (00: to 00:00), excluding today's value, which reflects the past 24 hours to today (the same as the current value). Keep in mind that updating KPIs starts at 00:00, and then updates each KPI one by one, therefore some KPIs are updated at 00:07 and others are 00:01, but the time interval is always 24 hours, so from 00:07-00:07 or 00:01-00:01.

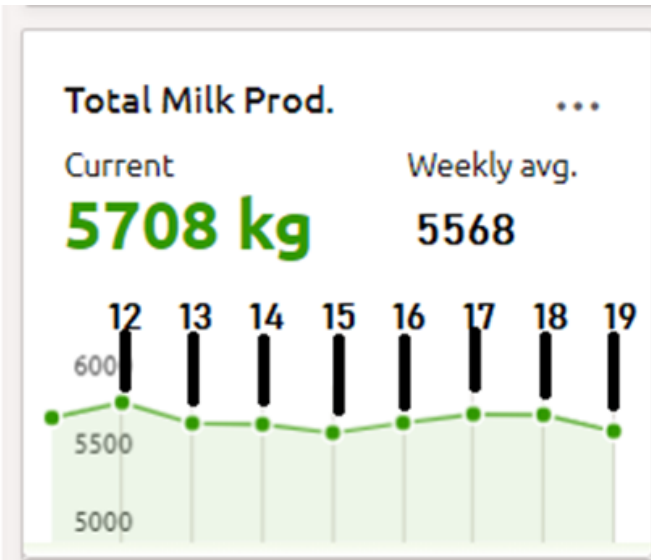


Weekly average

The weekly average is the average of the last 7 days, excluding the value of today.

- Example with the picture below:

- Day 19 will be excluded in the average
- Calculation will take into account day 12-18 (7 days)
 - 12: 5400 kg
 - 13: 5466 kg
 - 14 : 5566 kg
 - 15: 5672 kg
 - 16: 5443 kg
 - 17 : 5655 kg
 - 18: 5772 kg
 - 19: **excluded**
 - **AVG is 5568 (all values divided by 7)**



Click-through

By clicking through, you get access to more recent data, as calculated when opening the KPI. This allows a deep dive into the specific KPI and ensures that you stay informed about the most up-to-date values.

The first click-through level provides 2 values: the value and the average. The value represents the calculation of the last 24 hours and the average represents the calculation of the last 168 hours (7 days).

If you click through to the second level, new values appear. The value shows the calculation in 24-hour increments, for example if it is 4pm, the values are 4 PM- 4 PM- 4PM. The average (color in dark green) shows the calculation of the last 168 hours (7 days). If indicated in red, there is a deviation from the averages, this threshold differs for each KPI and is explained on the Lely Horizon Help page.

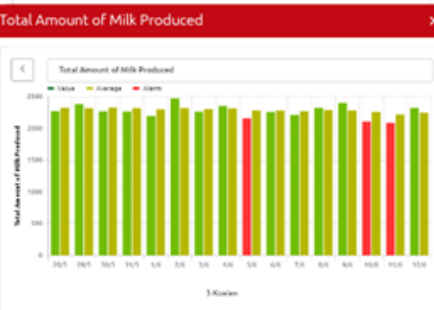
KPI Click through

Calculated upon opening (data more recent than KPI)



1st level click through

- **Value:** calculation of last 24 hours
- **Average:** calculation of last 168 hours (7 days)



2nd level click through

- **Value:** calculation in 24 hours steps (for example, 4PM-4PM-4PM)
- **Average:** calculation of last 168 hours (7 days)

Reports

Reports are updated at midnight, starting at 00:00. It may happen that the first report is updated at 00:00 and the last report is updated at 00:09. If the report is updated at 00:09, the value is still calculated based on 24-hour time, i.e. from 00:09 to 00:09 the day before. Opening a report at different times during the day does not affect these values refreshed at midnight. Except for the “today” values, as these are calculated when opening. The different refresh intervals make it difficult to compare numbers, as the KPI value may differ from a report value, but between reports, values with the same parameter can also differ slightly.

Summary

Feature	Definition	Refresh
KPI current	Last 24h update 20 min	20 min
KPI Weekly avg.	Last full 7 days, excluding today	20 min
KPI trend	Value per day	Shortly after midnight
KPI click through current	Last 24h value	Upon opening

KPI click through average	Average	Upon opening
Reports historic	Value per 24h	Shortly after midnight
Reports today	Last 24h value	Upon opening

Each KPI is calculated in a different way. To better understand these KPIs, the table below explains each individual KPI in detail.

KPI	Total Amount of Milk Produced (Total Milk Prod.)
Definition	The total production of milk in the last 24 hours.
Explanation	• A sum of milk yield for all milk visits, including failed milkings. • The amount is all milk weighed by the Astronaut and includes separation milk and 'overflow' from the milk jar. 'Overflow' from the milk jar occurs for milkings of > 28 kg, where some of the milk is pumped away during milking. • Cows which are dried off or leave the farm in the last 7 days will not be included in the calculation.
Threshold	• (-) if deviation is higher than 5% then red, 2% - 5% orange, otherwise green. • Compare current with average.
Misunderstanding	• Total amount of milk produced is not similar to bulk tank total.

KPI	Milk Production/Cow/Day (Milk/Cow/Day)
Definition	The average milk production per day per cow.
Explanation	• Total Milk Production divided by the number of lactating cows that had at least one milk visit, including failures, training visits, refusals. • Cows which are dried off or leave the farm during the week, will not be part of the calculation.
Threshold	• (-) if deviation is higher than 5% then red, 2% - 5% orange, else green. • Compare current with average.
Misunderstanding	Not the average of individual milk production.

KPI	Number of refusals (Refusals)
Definition	The average number of refusals by the Astronaut per cow.
Explanation	• Count of all refusals divided by the number of unique animals that had at least one milk visit, including failures, training visits, refusals.
Threshold	• if <1 red else green.
Additional information	There are multiple reasons for refusal: 1. Cow Returns Too Fast (hardly seen) 2. Unknown Cow (hardly seen) 3. Milking Not Allowed 4. BlockTime

	5. Cancel By User 6. Cancel By Timeout (happens when cow is set to 'milk under supervision' but nobody accepted the milking at E-link. After 5 minutes the visit is cancelled by timeout) 7. Other 8. Min Milk Interval Not Passed (typical refusal) 9. Waiting For Visit Data (hardly seen) 10. Milk Settings Not Found 11. Milk Visit Not Found
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KPI	Number of Failures (Failures)
Definition	The average number of failed milkings per Astronaut.
Explanation	A failed milking is an unsuccessful milking. The cow was recognized and has milking access, but the robot was unable to connect the teat cups or finish the milking. Count of all failures divided by the number of Astronauts.
Threshold	• if > 5 then red otherwise if < 3 green otherwise orange.
Additional information	This can be cow- or robot-related. The farmer should check whether the failures are frequent for the same cow or robot and take action based on this. Report 13 shows cows that have had a failure in the past.

KPI	Number of visits (No. of visits)
Definition	The number of visits to Astronaut for all cows, excluding refusals. This is a count of all the unique visits to Astronaut.
Explanation	• Count of all visits to the Astronaut for all cows including milkings, training visits and failures, excluding refusals.
Threshold	• (-) if deviation is higher than 5% then red, otherwise green.

	• Compare average with current.
Misunderstanding	Not equal to the number of milkings.

KPI	Number of Milkings/Cow/Day (Milking/Cow/Day)
Definition	The average number of milkings per cow.
Explanation	• Total number of milkings divided by the number of cows that had at least one successful milking. Failed milkings, refusals and training visits are excluded.
Threshold	• if <2.5 red else green. • Compare average with current.
Misunderstanding	Here training visits, refusals and failures are excluded. Selects only animals that are in lactation.

KPI	Milk speed (Milk
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	Speed)
Definition	Average kg of milk obtained per minute for the last 24hrs. This is calculated taking the milk yield for each milking and divide it by the duration in seconds for the quarter that took the longest to milk. The average of all milking is then calculated and multiplied by 60 to get the milk speed in kg per minute.
Related variables	• Milk yield • Milk duration

Explanation	• Milk yield per milking divided by the milk time duration for that milking. The average of all milkings is milk speed. • Milk time duration is the duration in seconds for the longest milking quarter, from attaching teat cup to take-off.
Threshold	• (-) if deviation is higher than %5 then red, else green. • Compare average with current.

Additional information	• Milk time duration is the longest milking quarter. This is not equal to the 'Milk time' in reports. Milk time is the total time needed for milking, from first teat attached until last teat cup taken off.
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KPI	Number of connection attempts (Connect Attempts)
Definition	The average number of connection attempts for all teatcups per milking in the last 24hrs. This is calculated by summing

	all the connection attempts for all teats and all visits divided by the number of teatcups and visits.
Related variables	• Attachment of teatcups.
Explanation	• Summation of all connection attempts, divided by the number of teatcups and visits.
Threshold	• if >1.3 red else green. • Compare average with current.
Misunderstanding	Failed milkings and training visits are included, but have 0 connection attempts. When farms have a high number of failed

	milking or training visits, this can result in a lower number for connection attempts.
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KPI	Amount of Milk Separated (Milk Separated)
Definition	Amount of milk separated in the last 24hrs. This is calculated by summing the milk yield of the milking where the milk did not go to the default milk tank.
Related variables	• Milk visits • Milk yield • Milk destination
Explanation	• Summation

	of all milk that did not go to the default milk tank.
Threshold	• (+) if deviation is higher than 5% then red, else green. • Compare average with current.
Misunderstanding	

KPI	Number of Cows in Milk Separation (Cows Milk sep.)
Definition	The number of unique cows that had at least one milking in the last 24hrs where their milk was separated. This is calculated by counting the unique

	number of animals that had at least 1 milking where the milk yield did not go to the default milk tank, plus cows which had an automatic robot stop.
Related variables	• Milk visits • Milk destination
Explanation	• The number of unique cows that had at least one milking where their milk was separated. This applies to all cows where the milk did not go to the default milk tank.
Threshold	• (+) if deviation is higher than 5% then red, else green.

	• Compare average with current.
Misunderstanding	Cows which had an automatic robot stop are included in this number.

KPI	Average Boxtime / Visit (Box time/Visit)
Definition	The average time of a box visit in seconds. Boxtime is calculated from the moment the robot recognizes the cow, untill the moment the cow leaves the box. The average boxtime is then calculated by the sum of all

	boxtimes devided by the number of visits. Refusals are excluded.
Related variables	• Bovertime
Explanation	• Summation of all box time divided by the number of visits, excluding refusals. • Bovertime is calculated from the moment the Astronaut recognizes the cow until the moment the cow has left the box.
Threshold	• (+) if deviation is higher than 5% then red, else green. • Compare average with

	current.
Misunderstanding	Training visits and failed milkings are included.

KPI	Kg Concentrates Fed
Definition	The total amount of concentrates dosed in both Astronaut and Cosmix. This is calculated by summing the kg of concentrates fed to all cows.
Related variables	• Feed visits • Feed intake
Explanation	• Summation of all the concentrates is given by robot included restfeed. • All concentrates feeding in the

	Robot and Cosmix.
Threshold	• (-) if deviation is higher than 5% then red, else green. • Compare average with current.
Misunderstanding	• Concentrate dosed in Vector is not taken into account.

KPI	Kg rest feed Concentrates
Definition	The amount of concentrates in kg that cannot be fed anymore due to feeding limitations (50% of daily amount by default in Horizon). This is calculated by summing the amount of rest feed for all cows.
Related variables	• Rest feed
Explanation	• Summation of all the restfeed. • All restfeed feeding in the

	Robot and Cosmix.
Threshold	• (+) if deviation is higher than 10% then red, else green. • Compare the average with current.
Misunderstanding	

KPI	Kg Concentrates per 100 kg milk
Definition	The amount of concentrates in kg that is eaten per 100kg of milk produced. This is calculated by summing the feed intake for concentrates and dividing it by the milk yield.
Related variables	• Milkyield • Feed intake
Explanation	• Indication how many concentrates is fed per 100 kg milk. • All cows who are visiting the robot (including training).
Threshold	• (+) if deviation is higher than 10% then red, else green. • Compare the average with current.
Misunderstanding	

KPI	Kg Concentrates / Kg Milk >60
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Definition	The amount of concentrates in kg eaten in the last 24hrs by cows that are 60 days or more in lactation per 100kg of milk. It is calculated by summing the concentrate intake for cows that are in lactation for 60 days or more and dividing it by the sum of milk yield in kg of these cows.
Related variables	• Milk yield • Feed intake
Explanation	• Indication how many concentrates is fed per 100 kg milk. • All cows with more than 60 lactation days are included who are milked in the last day.
Threshold	• (+) if deviation is higher than 5% then red, else green. • Compare the average with current.
Misunderstanding	Cows below 60 days are not included.

KPI	Kg Concentrates / Kg Milk <60
Definition	The amount of concentrates in kg eaten in the last 24hrs by cows that are less than 60 days in lactation per 100kg of milk. It is calculated by summing the concentrate intake for cows that are less than 60 days in lactation and dividing it by the sum of milk yield in kg of these cows.
Related variables	• Milk yield • Feed intake
Explanation	• Indication how many concentrates is fed per 100 kg milk. • All cows with less than 60 in lactation days are included who are milked in the last day.
Threshold	• (+) if deviation is higher than 5% then red, else green. • Compare the average with current.
Misunderstanding	Cows above 60 days are not included.

KPI	Rumination activity
Definition	Average rumination time of the herd in the last 24 hours.
Related variables	• Rumination activity
Explanation	• Summation of all rumination time divided by the number of cows with rumination measurement.
Threshold	• (+) if deviation is higher than 15% then red, 10% -15% orange, < 10% green. • Compare the average with current.
Misunderstanding	

KPI	Averages Fat Indication %
Definition	The average % of fat estimated in the milk. Calculated by summing the amount of milk yield for all milk visits multiplied by the indicated fat percentage as derived by the MQC2, divided by the sum of milk yield for all milkings.
Related variables	• Milk yied • Milk visits • Milk fat
Explanation	• Indication of the fat percentage. • Fat percentage will be measured by the MQC2.
Threshold	• (-) if deviation is higher than 5% then red, 2% -5% orange, else green. • Compare the average with current.
Additional information	Timely calibration will result in more accurate fat measurements from the robot. We advise calibrating the sensors every month and with ration changes.

KPI	Averages Protein Indication %
Definition	The average % of Protein estimated in the milk. Calculated by summing the amount of milk yield for all milk visits multiplied by the indicated Protein percentage as derived by the MQC2, divided by the sum of milk yield for all milkings.
Related variables	• Milk yied • Milk visits • Milk protein
Explanation	• Indication of the fat percentage. • Fat percentage will be measured by the MQCC2.
Threshold	• (-) if deviation is higher than 5% then red, 2% -5% orange, else green. • Compare the average with current.
Additional information	Timely calibration will result in more accurate fat measurements from the robot. We advise calibrating the sensors every month and with ration changes.

KPI	Avarage Fat/Protein Ratio dividing
Definition	The ratio of fat over protein in the milk for the last 24hrs. Calculated by dividing the average fat % indication by the average protein % indication.
Related variables	• Milk yied • Milk visits • Milk protein • Milk fat
Threshold	• (-) if deviation is higher than 5% then red, 2% -5% orange, else green. • Compare the average with current.
Misunderstanding	

KPI	Free Time %
Definition	Average percentage per day that the astronaut robots are free.
Related variables	Free time robots
Explanation	- Summation of all free time - Mentioned as no free time - Refusing - Milking time - Accustoming - Cleaning - Alarm - Mentioned as free time - Out of operation - Empty robot
Threshold	(-)if deviation is higher than 20% then red, 10% -20% orange, else green. - Compare the average with current.
Misunderstanding	

KPI	Treatment time
Definition	The average time a cow receives treatment at the robot is in seconds. Calculated by taking the average of all treatments.
Explanation	The time that the robot is recognizing the cow till the moment the cow is attached.
Threshold	(+)if > 5 then red else if <5 green else orange. - Compare the average with current.

Misunderstanding	
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KPI	Feed Efficiency
Definition	For lactating dairy cows, feed efficiency equals energy-corrected milk divided by dry matter intake.
Related variables	• Milk yield • Dry matter intake
Explanation	• Feed efficiency in dairy cows is based on the relative ability to turn feed into milk. In other words, it is the amount of milk produced per amount of dry matter consumed. It is therefore sometimes called dry matter intake efficiency.
Threshold	• (-) if deviation is higher than 10% then red, else green. • Compare the average with current.
Misunderstanding	

KPI	Total Eating Minutes
Definition	The average number of minutes a cow was eating
Related variables	• Eating minutes
Explanation	• Dairy cows in free stalls spend 4 to 6 hours eating
Threshold	• (+) if deviation is higher than 15% then red, 10% -15% orange, < 10% green. • Compare the average with current.
Misunderstanding	

KPI	Milk Production Energy Corrected
Definition	Average milk productie energie corrected.
Related variables	• Milk yield • Fat • protein
Explanation	• Energy Corrected Milk (ECM) is a calculation that factors in three different variables—kg of milk, fat, and protein—allowing producers to better evaluate their herd's productivity and efficiency
Threshold	• (-) if deviation is higher than 5% then red, 2% -5% orange, else green • Compare the average with current
Misunderstanding	

KPI	Rumination activity lactation cows
Definition	Average rumination time of the herd in the last 24 hours
Related variables	• Rumination activity
Explanation	• Summation of all rumination time divided by the number of cows.
Threshold	• (+) if deviation is higher than 15% then red, 10% -15% orange, < 10% green. • Compare the average with current.
Misunderstanding	Only included lactation cows.

Definitions of the milking process

Treatment Time Pre	Time from the moment the arm starts to move until brushing is finished
Connect time	Time from first scan until last teat cup is connected
Dead milk time	Period when there is no milk flow detected by the MQC2 at the beginning of milking. Average time from successfully connected teat cup until milk flow is detected per quarter for the first attachment
Box time	Boxtime is calculated from the moment the Astronaut recognizes the cow until the moment the cow has left the box.
Milk time	Time from first teat cup successfully connected until last teat cup taken-off
Milk time duration	Duration of the longest milking quarter, from attaching teat cup to take-off.
Treatment time	Box time minus milk time duration

Internal Remarks

Content owner: Jet Huijser & Coenraad van der Mark

Keywords Horizon KPI Dashboard Calculations FMS

Solution ID

230721084800480

Last Modified Date

06/11/2024 07:04:49 AM

Taxonomy

- 006. Aftermarket > 6.5 Farm Management Support > FMS 3. Support materials > 3.6 Lely Horizon > 3.6.1 Dashboard
- 005. Management Systems > 5.3 Lely Horizon > 5.3.3 Horizon software > 5.3.3.1 Dashboard

Collections

- 1.Visible to all users

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