

»» NEWSLETTER ««

dairy_{4.0}

Advanced, trustworthy AI and data solutions for individualised automated milking & feeding of dairy cows



Co-funded by the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)

Over the past months, dAlry 4.0 project has continued to advance the development of AI-driven robotic solutions for modern farming. By integrating advanced sensing technologies, AI, and automated robotics, the project aims to transform conventional milking systems into data-driven and animal-centric farm management platforms.

Following the internal validation of individual components, the consortium has now focused on system integration and preliminary testing of the core modules.

These developments represent an important step toward delivering a fully integrated ecosystem combining sensing, AI analytics, robotics and cloud-based Decision Support System, supporting farmers with improved monitoring, early detection capabilities, and more informed management decision.



Co-funded by the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)



»»» Vision-based animal monitoring

Significant progress has been achieved in the vision-based monitoring module that analyse cow behaviour and health indicators during the milking process.

The current system integrates multiple visual sensing components capable of extracting various indicators.

Data collected from these modules are processed through the Animal Status Classifier, which aggregates the outputs and generates animal-level indicators used by downstream AI models.

Preliminary tests demonstrate that the system can successfully process ,multi-frame observations and generate consistent monitoring outputs



Co-funded by the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

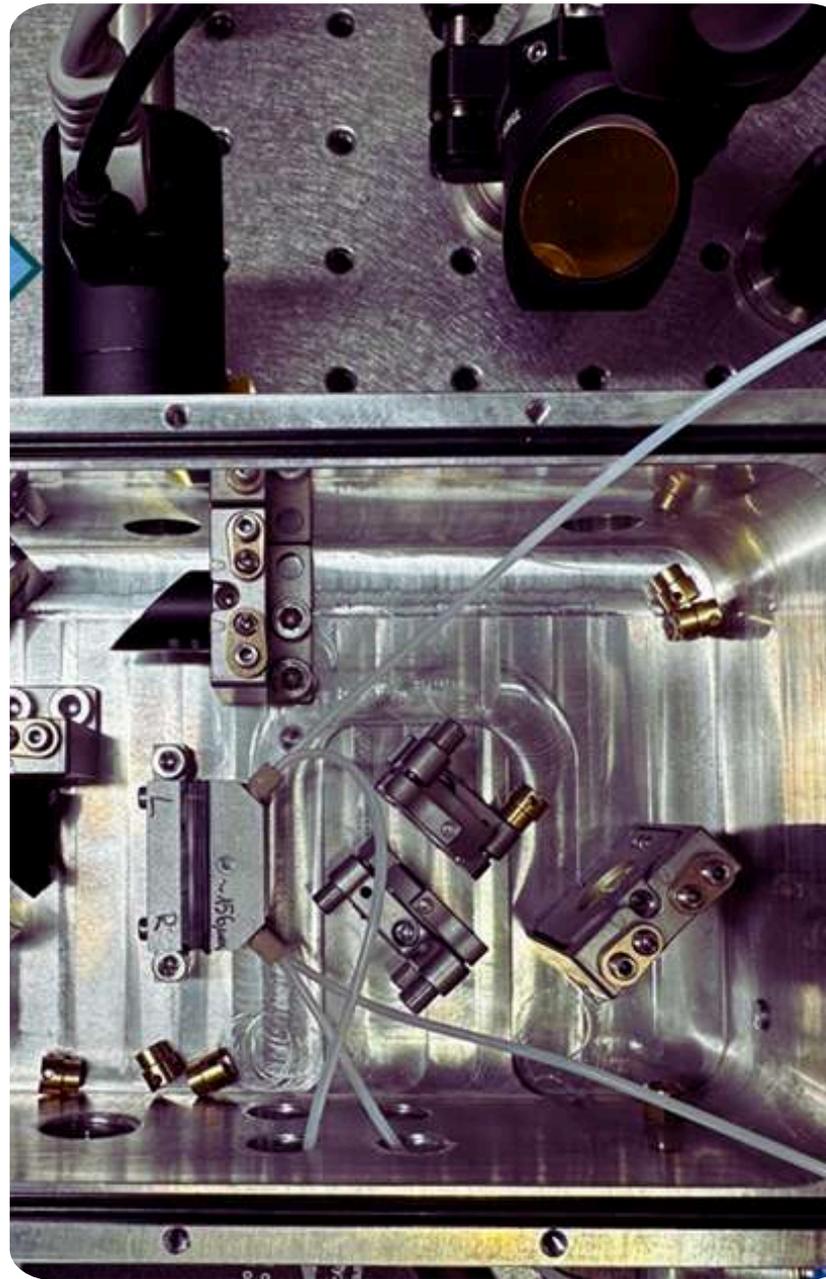
This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)

➤➤➤ Milk Quality Analysis module

Another important milestone has been reached in the milk quality analysis subsystem.

The prototype integrates:

- An automated homogenisation unit
- Filtration and sample preparation modules
- An optical sensing system for spectral analysis



Initial laboratory validation confirmed the stability of the measurement workflow and demonstrated the feasibility of rapid milk analysis within the robotic environment.

These results support the next phase of integration with the milking robot and the cloud-based data platform



Co-funded by the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

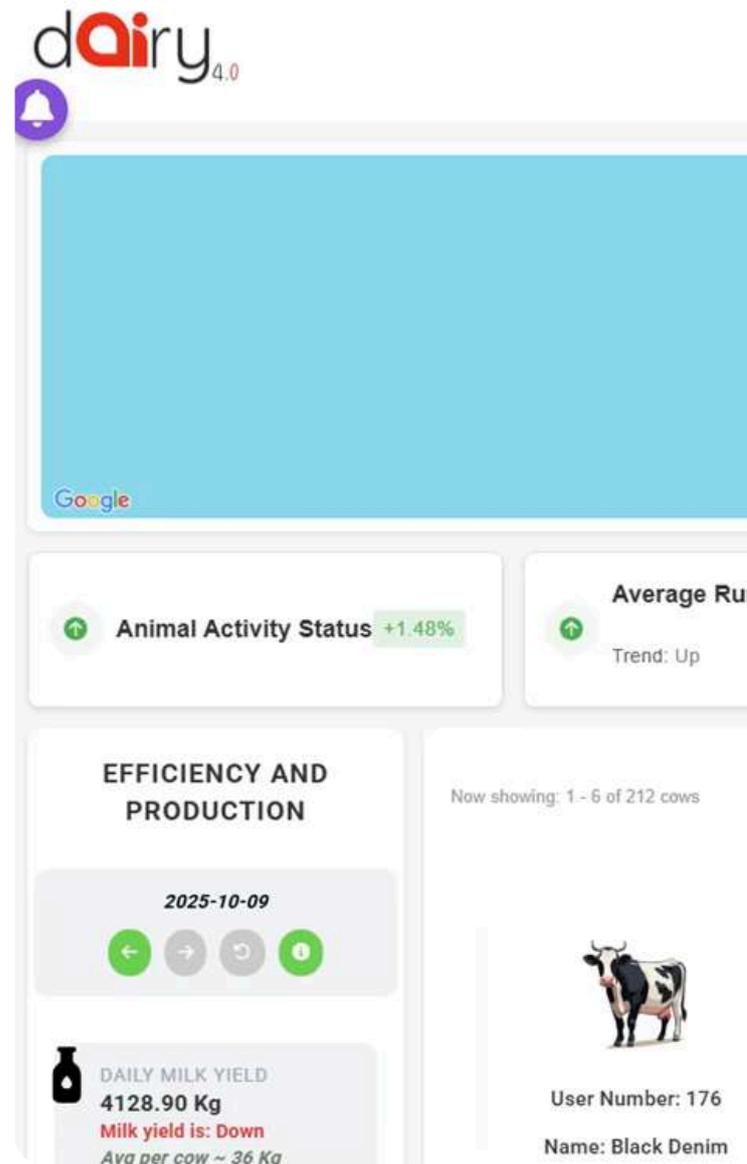
This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)

»»» Data Infrastructure & DSS

The dAlry 4.0 cloud platform continues to evolve and now supports the integration of multiple data streams originating from the robotic system.

The infrastructure enables:

- Harmonised data exchange between project modules
- Storage and processing of sensors and robot data
- Communication with the DSS



The DSS integrates outputs from the Animal Status Classifier and simulation tools, enabling the generation of alerts and management recommendations.

These tools will ultimately support farmers in making data-driven decisions related to animal health, feeding strategies, and milk production management.



Co-funded by the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)



➤➤➤ Robotic Integration

One of the most important achievements of the recent project period has been the first integration of the sensing and AI modules with the robotic milking system.

The preliminary integrated robot now connects:

- Vision-based monitoring modules
- Milk quality analysis subsystem
- Robotic control components
- Communication interfaces for data exchange.

This integration allows the system to collect sensor data during milking operations and transmit it to the project's data infrastructure for further processing.

While this version represents an early stage of system integration, it confirms the technical feasibility of combining multiple AI-driven modules within a single robotic platform.

TECHNICAL UPDATES COMING NEXT

- Extended testing of the integrated robot
- Optimisation of sensing modules
- Further developments of the DSS
- Preparation for pilot farm demonstrations



Co-funded by the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)

24M Review Meeting

The 24M progress review of the dAlry 4.0 project took place in the Netherlands, hosted at LELY's premises. The meeting provided an excellent opportunity for the consortium to present the progress achieved so far and to discuss the next steps toward realizing the project's ambitious goals.

Both the Project Officer and the external reviewer participated in person, contributing to constructive discussions on the project's technical and scientific developments.

On the second day, participants joined a tour on LELY's farm, gaining first-hand insight into how LELY's milking robots operate in real farming conditions. This experience highlighted how automation and AI are reshaping the dairy sector—improving efficiency, sustainability, and animal welfare.



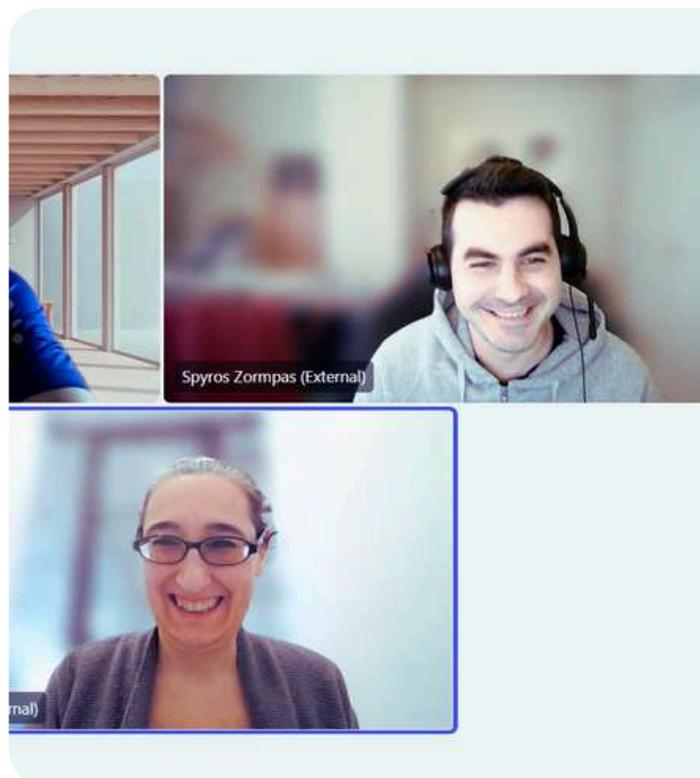


Laser World of Photonics 2025

The dAlry 4.0 project was presented at Laser World of Photonics Conference, an important international event in the field of photonics and optical technologies. Our partner, ALPES, attended the conference, engaging with stakeholders to share the latest project, also highlighted its primary role in the project by providing novel External Cavity Quantum Cascade Lasers (EC-QCLs) for milk quality analysis.

Clustering activities

dAlry 4.0, participated in the KO meeting of the sister projects (SolIDAIR, EMERALD, SeConRob, PERKS) funded under the same topic (HORIZON-CL4-2022-DIGITAL-EMERGING-02-05). In this first meeting the projects present their objectives, and explore alternatives for joint activities.



Wrapping up our second newsletter edition, we're thrilled by the progress within our **dAlry 4.0** project.

Our vision for sustainable agriculture propels us forward.

With gratitude to our partners, we stride into the future, eager to pioneer advancements in dairy farming.

Stay tuned for updates as we revolutionize the field through technology and commitment.

dairy_{4.0}



www.dairy40.eu



info@dairy40.eu

Follow us!



@dAlry40

MEET THE CONSORTIUM



CYRIC



UAB
Universitat Autònoma
de Barcelona



ALPES
LASERS



Co-funded by
the European Union

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI)