HEALTHY WORKPLACES SUMMIT 2025

Safe and healthy work in the digital age

DIGITIZATION AND PRECISION FARMING IN VINEYARD WORK FOR HUMAN SAFETY AND WELL-BEING
The “Perla del Garda” good practice.

Giovanna Prandini, Bilbao 2025

European Agency for Safety and Health at Work

Healthy Workplaces

Together

The organisation

“Perla del Garda” is an Italian estate producer of wine from its own vineyards in organic and sustainable agricolture

www.perladelgarda.it

The technical partner

A global leader in the design, development and supply of global solutions and integrated systems for the off-highway vehicle market

www.cobogroup.net

The information provider

Italian Association of Workplace Safety Trainers and Operators
Italian partner’s European Campaing

www.aifos.org

Where are we?

The Perla del Garda estate winery is located in Italy's Lake Garda wine region. It employs 13 people directly in the winery and vineyards, with a total staff of 22 across the company.

Since 2013, the vineyards have been farmed organically and sustainably. The winery holds Equalitas, Viva, S.Q.N.P.I., and "Make it Sustainable" certifications, which recognise Perla del Garda's ongoing commitment to a truly holistic sustainability – environmental, economic, and social – with particular attention to the ethical treatment, health and safety of its workers.

What do we do?

Perla del Garda is a true estate winery, producing wine exclusively from its own vineyards (either fully owned or long-term leased).

One of the greatest strengths of estate production is complete control over every step of the process — from vineyard management to vinification and bottling — which guarantees uncompromising quality at every stage.

For today's consumers who increasingly seek authenticity and transparency, this means we can trace every bottle back to the exact vineyard plot and describe precisely how the wine was made.

The main challenge, of course, lies in the significant investment required to maintain the vineyards and operate a fully equipped winery.

Risks in the vineyard

Operating a tractor in a vineyard requires exceptional skill and experience.
Even brief lapses in attention can lead to serious accidents, such as collisions with vines, sideways rollovers, running over workers performing manual tasks or unintentionally striking visitors, animals or obstacles between the rows.

Stress and fatigue further amplify these risks, potentially causing damage to the vines and crops while, most critically, compromising the safety of everyone on the estate.

Reduce stress and risks

We took several steps between 2022 and 2024 to develop robust safety protocols.

First, we conducted a detailed study and mapping of the vineyards: slopes, aspect, row length, and layout to analyze and establish critical risk thresholds. These parameters enabled the VLN (Visual Lane Navigation) kit to use artificial intelligence to detect hazards in real time and issue automatic alerts to the driver.

The system continuously feeds operational data back to our technicians, who use it to train and refine the AI's neural network. This ongoing learning process allows the technology to progressively "self-secure" improving its accuracy and effectiveness over time.

COBO VNL kit

The VLN Kit includes the following features which are designed to enhance health and safety

1. Automatic lane guidance (GPS-free): The system only activates when all safety conditions are met and it keeps the tractor precisely centered in the row.

2. Real-time object detection: Instantly identifies and alerts the driver to people, animals or obstacles in the path.

3. Automatic Tilt Alert: Continuously monitors lateral slope and speed, warning the driver the moment there is a risk of sideways rollover.

COBO Digital Solution

aifos
ASSOCIAZIONE ITALIANA FORMATORI ED OPERATORI DELLA SICUREZZA SUL LAVORO

COBO

PERLA DEL GARDA

Perla del Garda has partnered with COBO to implement an advanced digital solution that enables tractors to “drive themselves” using artificial vision for fully autonomous navigation along vineyard rows.

This innovative system allows the operator to activate automatic, robotic steering once inside the rows, taking over precise control of the steering wheel while the driver remains fully responsible for monitoring and overall operation.

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Life is a priority

The COBO system instantly detects any person in the row, immediately alerts the operator, and – if necessary – automatically stops the tractor to prevent a collision.

Data management

1/

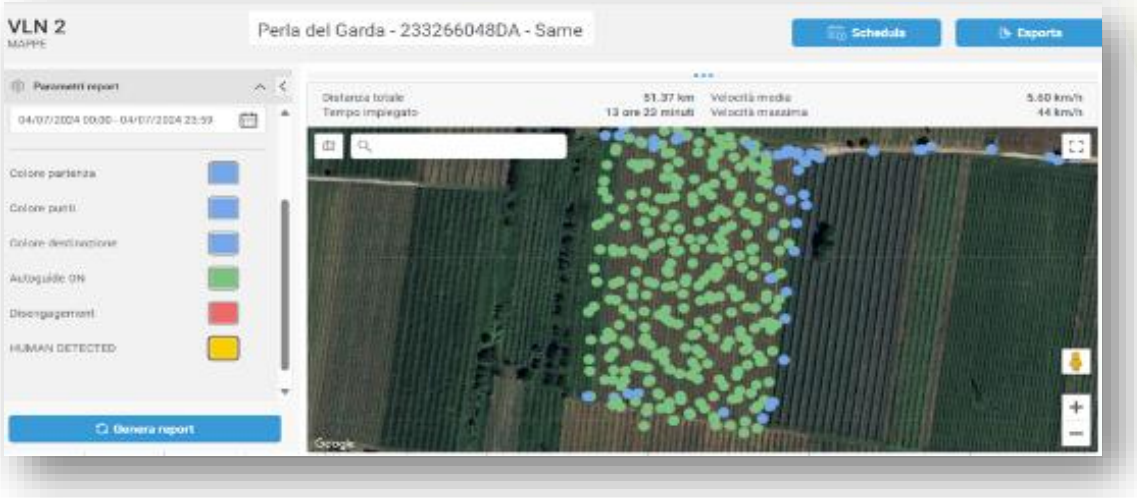
Full traceability of operations

2/

Automatic recording of working hours and fuel/electricity consumption by vineyard block and task type

3/

Sensor-based monitoring of tool and implement usage, enabling precise tracking of operating hours and timely scheduling of maintenance – ensuring the machinery always performs at peak efficiency and reliability.

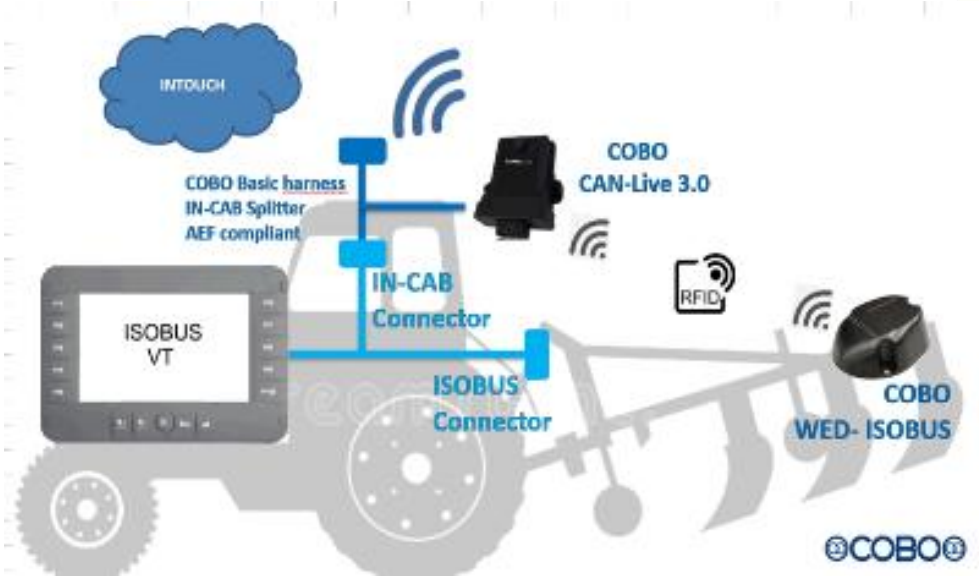


Warning

Workers feel safer and more supported thanks to the automatic guidance system. They trust its smooth, precise operation and appreciate the immediate alerts it issues whenever a hazard is detected.

The project has significantly reduced physical and mental fatigue for operators, lowering stress levels and contributing directly to better overall risk prevention.

The mapped data also provides valuable insights for work planning and resource allocation. For instance, if the system repeatedly triggers an “excessive slope” warning in a particular row, the Vineyard Manager can assign the most suitable tractor and the most experienced driver to that section, further enhancing safety and efficiency.



Savings

The technology was retrofitted to the winery's existing tractors, removing any need to invest in new machines and effectively modernising the entire fleet through digitisation.

Thanks to built-in sensors that monitor usage in real time, the system now prompts exactly when scheduled maintenance is due.

This predictive approach delivers substantial cost savings: equipment lasts longer, suffers less wear, and fully respects its intended life cycle, all while reducing unexpected downtime.

COBO VNL kit

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Thank you !

Grazie !

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