

Have you ever dreamt of being able to see the future in advance?

At the Air Products Laguna de Duero site, this question has evolved from a metaphor into a practical challenge: how to anticipate unsafe situations before they materialise in complex and dynamic industrial environments, where human perception has natural limits.

To address this challenge, an innovative safety solution based on cutting-edge artificial intelligence technology has been deployed at Air Products Laguna de Duero (Spain), transforming conventional CCTV into a powerful preventive tool. Using advanced computational algorithms and history-matching techniques, the platform analyses images in real time, learns from past events and identifies patterns that may lead to unsafe situations. Rather than reacting to incidents once they occur, the system enables anticipation, providing early visibility of emerging risks.

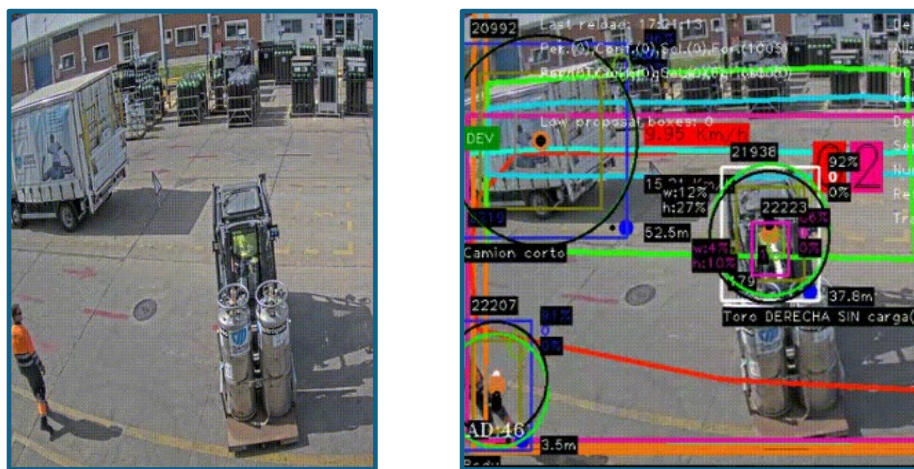


Image 1: (L) Real image captured (R) Real time analysis, providing details of a potential risky situation due to the forklift movement towards the rear of the truck where it could be not seen by another forklift

A fundamental design principle of the project was that the tool should never act as a “policeman”. Its purpose is not to monitor or judge people, but to support them. By highlighting behaviors, movements or interactions that could evolve into hazardous scenarios, the system helps operators and supervisors detect what might escape the human eye during routine operations, reinforcing prevention without constraining normal work.

The solution focuses on high-risk activities such as truck loading and unloading, forklift movements and interactions between vehicles and pedestrians. By interpreting the relative position and trajectories of vehicles, loads and people, the AI can anticipate potential collisions, blind-spot situations or unsafe routes. Visual and acoustic alerts provide immediate feedback, enhancing situational awareness directly in the field.

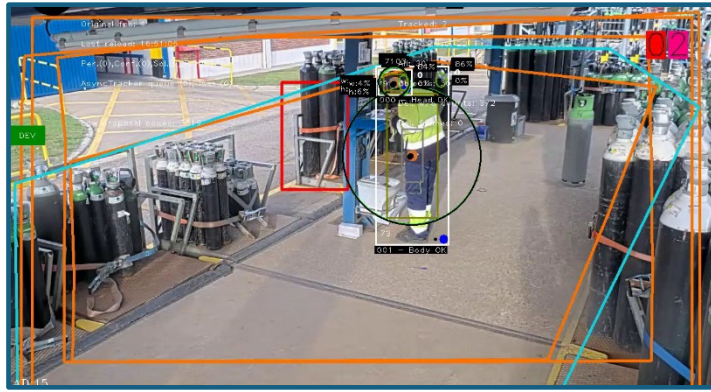


Image 2: System detection through parametrization

Beyond those core use cases, the system supports safety and efficiency through additional functionalities, including detection of missing personal protective equipment, supervision of access and occupancy in production areas, monitoring of cylinder handling and positioning, and identification of abnormal situations such as a person remaining motionless. In parallel, the system feeds a web-based platform where detected events are analysed by type, location and frequency, enabling trend identification, lessons-learned and data-driven preventive actions. Even at an early stage, the solution has already increased risk awareness and helped identify hotspots that were previously underestimated or overlooked.

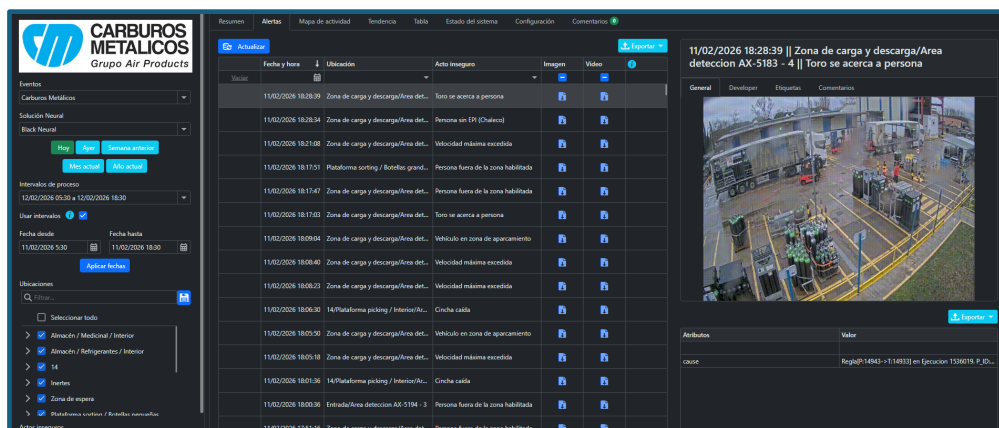


Image 3. Web based platform, enabling users to properly analyze situations and optimize corrective / preventive actions

The project was implemented following an agile methodology. An initial phase focused on system design and hardware installation, ensuring robust infrastructure and appropriate coverage. This was followed by incremental software deliveries, with successive use cases implemented, tested and validated directly in the field. This iterative approach allowed continuous refinement, ensuring the technology remained aligned with real operational needs and risks.

Ultimately, this project demonstrates how artificial intelligence can be pragmatically integrated into industrial safety, not as a control mechanism, but as a tool to extend human perception, improve anticipation and support safer decision-making.

Because it all starts with the same question: have you ever dreamt of being able to see the future in advance?