Healthy Workplaces Good Practice Awards 2023–2025

CASE STUDY

Digital solutions to reduce risks in glass production

ORGANISATION/COMPANY	COUNTRY	SECTOR	TASKS
AGC Glass Europe, Upstream Division	Belgium	Flat glass production	Producing and processing glass at manufacturing plants

Introduction to the case study

AGC Glass Europe is a large international glass manufacturing group based in Belgium. Aiming to reach zero lost time through injury at all its plants, management has been implementing a series of digital solutions since 2022 to upgrade its safety system. For example, new software facilitates safety inspections and chemical products management. Intelligent cameras and sensors help prevent collisions with mobile equipment, and virtual reality is used in safety training. Methods to link AI-based computer vision with surveillance cameras for early detection of hazards are also being explored.

Background

AGC Glass Europe produces and processes flat glass for the construction and automotive sectors, among others. The Upstream Division produces glass in large dimensions. Its products are intended for processing, either internally through the Downstream Division or directly by customers. Approximately 3,000 employees work in the company's Upstream factories across Europe.

For years, the company implemented a safety system to reduce risks and accidents at its plants. In 2022, it introduced a new programme called *Safety of the Future* that aims to reach and maintain zero lost time through injury due to work-related incidents. This programme expands on its current safety system, taking into account technological evolution and digitalisation.

The company bases its safety programme on the following questions:

- What innovative methods can help build our safety culture?
- What new technologies can help us eliminate serious risks?
- How can digital technology improve our safety system?
- Which new risks need to be managed in the future due to the evolution of production lines?

Aims

AGC Glass Europe envisions tomorrow's occupational safety in the frame of digital technology, robotics, AI and virtual reality. It aims to implement new innovative methods, technologies and digitalisation to advance its safety system, while building on the foundations of its current one.

What was done and how?

Concerning digitalisation, after a market analysis, AGC decided to customise existing software solutions or develop internal solutions. These are outlined in the seven projects below.

1) Computer vision and surveillance cameras for safety monitoring

The company has run pilot tests to assess how existing surveillance cameras could be coupled with the

capabilities of computer vision (AI) for early detection of dangerous situations at its plants.

With the help of the AI Competence Centre at AGC Glass Europe, the first pilot took place in 2023 to address the risk of unloading a truck without stabiliser legs in position.

The process was successful enough to be applied in plants. However, to avoid false alerts, more images are needed to re-train AI models.

Next steps: The company plans to reuse the same system to detect risks during the unloading of chemical products.

2) Software to record safety inspections and non-conformities

Safety inspections at plants had been carried out with a paper checklist, while results and any non-conformities were later recorded in an Excel file. To eliminate paperwork and improve the efficiency of follow-ups to non-conformities, the company has customised third-party software to develop its own forms.

- Non-conformities are recorded directly on a smart phone with photos, and safety inspection results are recorded immediately.
- A worker can register a non-conformity during inspection and link actions directly to this specific non-conformity.
- Email notification of the non-conformity is sent to the area supervisor, who sees when it was registered and which area/equipment it refers to (with a photo/video of the issue).
- Action management for follow-up to a non-conformity is done in the system.

3) Software for accident declaration and action plan

The company has digitalised the process of collecting and processing data regarding accidents and incidents. The customised third-party software registers the declaration of accidents and the follow-up action plan.

4) Software for chemical products management

Third-party software has been deployed to register and process data regarding chemicals.

- A chemical database is now in place at all AGC plants to facilitate compliance with REACH (registration, evaluation, authorisation and restriction of chemicals) and CLP (classification, labelling and packaging of chemicals) Regulations in the EU.
- Deployment involves safety managers using it to manage chemical risks and introduce new chemical products in plants (management of change procedure).

5) Software to analyse fire risks

Together with the National Fire and Intrusion Protection Association, AGC has defined a tool (checklist) to analyse fire risks in its electrical rooms and to set priorities to improve its fire risk level. Internal software has been developed to facilitate the use of the tool. The AGC customised software is now available at all its plants.

6) New technologies to prevent risk of collisions with mobile equipment

Using existing technology on the market, AGC has implemented solutions to reduce the risk of collisions with mobile equipment.

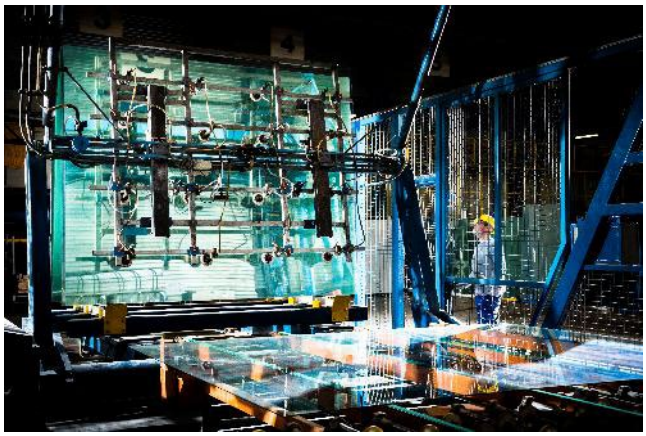
- Intelligent cameras are installed on some mobile equipment to improve pedestrian detection.
- Some plants use detectors on mobile equipment linked with pedestrian badges to decrease risks of collision.
- Some mobile equipment is outfitted with a system that requires the use of badges by the driver to start the equipment. The system also includes shock detection, a checklist before start, maintenance follow-up and an alarm.

7) Virtual reality as a training tool

Virtual reality has been chosen as a training method because workers can experience and react to hazardous situations in environments free from physical harm.

Applications have been developed with an external consultant.

- **Pedestrian in an AGC factory:** employees learn to pay attention to their own safety by using pedestrian lanes, minding crossways and stopping to respect priority.
- **Driving a forklift:** as a forklift operator, workers learn the difficulties of detecting pedestrians due to blind spots.



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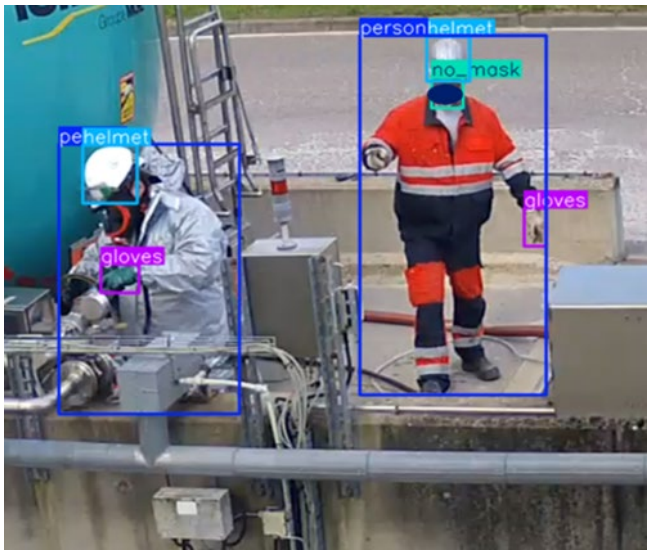
What was achieved?

All the implemented digital measures have increased the efficiency of the company's safety system through the timely detection of risks and their prevention, the use of virtual reality for worker training, and through better follow-up of non-conformities.

Success factors

- Top management not only supported projects to improve its prevention culture, but also ensured their swift implementation.
- The management of change was well-organised during the implementation of new digital tools and technologies and adapted training for the users.
- To improve safety awareness, all workers were involved in accident prevention training through virtual reality.



Transferability

Glass producers and manufacturers with similar work environments will benefit from this example. Many of the digital solutions could also be easily adapted in other sectors where, for example, collision with mobile equipment is a risk, safety training is best taught through virtual reality, and where software eliminates paperwork from safety inspections.

Costs and benefits

Costs

Costs incurred by the company include purchasing licences for third-party software, developing information technology and training workers.

Benefits

Overall, safety at the plants has been greatly improved, resulting in fewer accidents and less absenteeism due to work-related injuries.

Key features of good practice example

- The company already had an efficient prevention policy. Despite this, it looked for ways to improve and prepare for future OSH challenges.
- To improve risk detection, prevent accidents and ensure employee safety, a variety of digital technologies were implemented, including AI, smart detectors and badges, intelligent cameras, software and virtual reality.

Further information

Further information can be found at:

https://www.agc-glass.eu/en/news

AGC Glass Europe envisions tomorrow's occupational safety in the frame of a holistic digital approach using various technologies, such as robotics, AI and virtual reality.