**Partnership Carnot ARTS - Verallia**

Verallia has adopted a digital twin to train people in key machine maintenance on its continuous production line

As demand for glass packaging increases, production units are working day and night. Thanks to Carnot ARTS, Verallia now has a virtual training application for preparing maintenance work on a crucial component: the gas mixer that powers its furnaces.

Supportrice Innovation

Verallia's plant in Chalon-sur-Saône supplies glass containers to agri-food businesses and is home to the Verallia France Glass School, created to meet the specific needs of this industry. The plant has a single air/gas mixer that powers all of the glass melting burners. The slightest incident affects both production and delivery schedules. While the technicians who work on the mixer maintenance have obviously received theoretical training, it is not possible to make the mixer available to train them in how to handle specific incidents. To show technicians what to do in the event of breakdowns or damage, Institut Carnot ARTS has created a special simulator with a digital twin of the technical equipment that reproduces not only the machine, but all of the possible interactions as well.
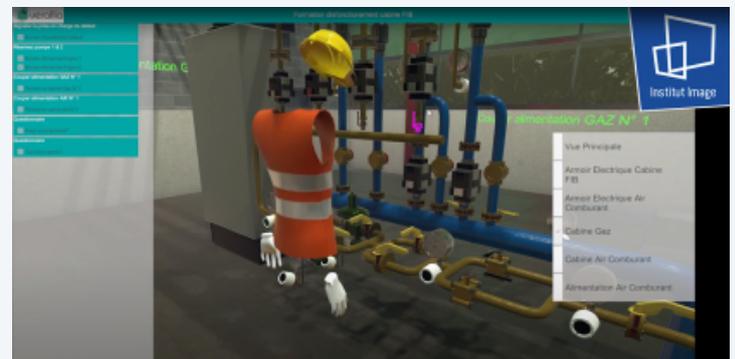
The client needs

Verallia is an independent group with around 10 000 employees and 32 glass manufacturing plants spread throughout 11 countries. It is European leader – and the world's third largest producer – of glass packaging for beverages and food products. Verallia provides innovative, customized and eco-friendly solutions for more than 10 000 businesses worldwide. To meet growing demand, the Group is focused on adapting its existing production lines and is harnessing AI to bring it into the Industry 4.0 era. In the absence of a national glass manufacturing sector, Verallia founded its own Glass School over 50 years ago and approached the Carnot ARTS Image Institute to create an interactive simulation of work on the mixer with a view to training operators. During training sessions, the simulator is brought to life by a virtual reality mask that displays a simplified but functional replica of the machine, allowing operators to gain a better understanding of how the actual system works and the machine's reactions.

Partnership

Institut Image is the part of Carnot ARTS that specialises in virtual immersion techniques. To design the simulator, it first had to analyse this complex process in order to define the appropriate level of simplification that would make the application functionally representative and faithful to the real system. The operator is thus immersed in a representation of the machine together with realistic possible interactions.

To develop this special digital twin, scientific obstacles needed to be removed, in particular to identify the correct cognitive load. This allows the operator to focus on the task in hand – a must for ensuring the relevance of the learning application. This is the case when operators have to move around so that neither task specialization nor unnecessary movements distract them, and during interactions with the virtual system to ensure that they have a clear idea of how to manipulate the different components.

The partnership has provided Verallia with an effective learning tool that limits the scope for incidents affecting a key component of its production process.