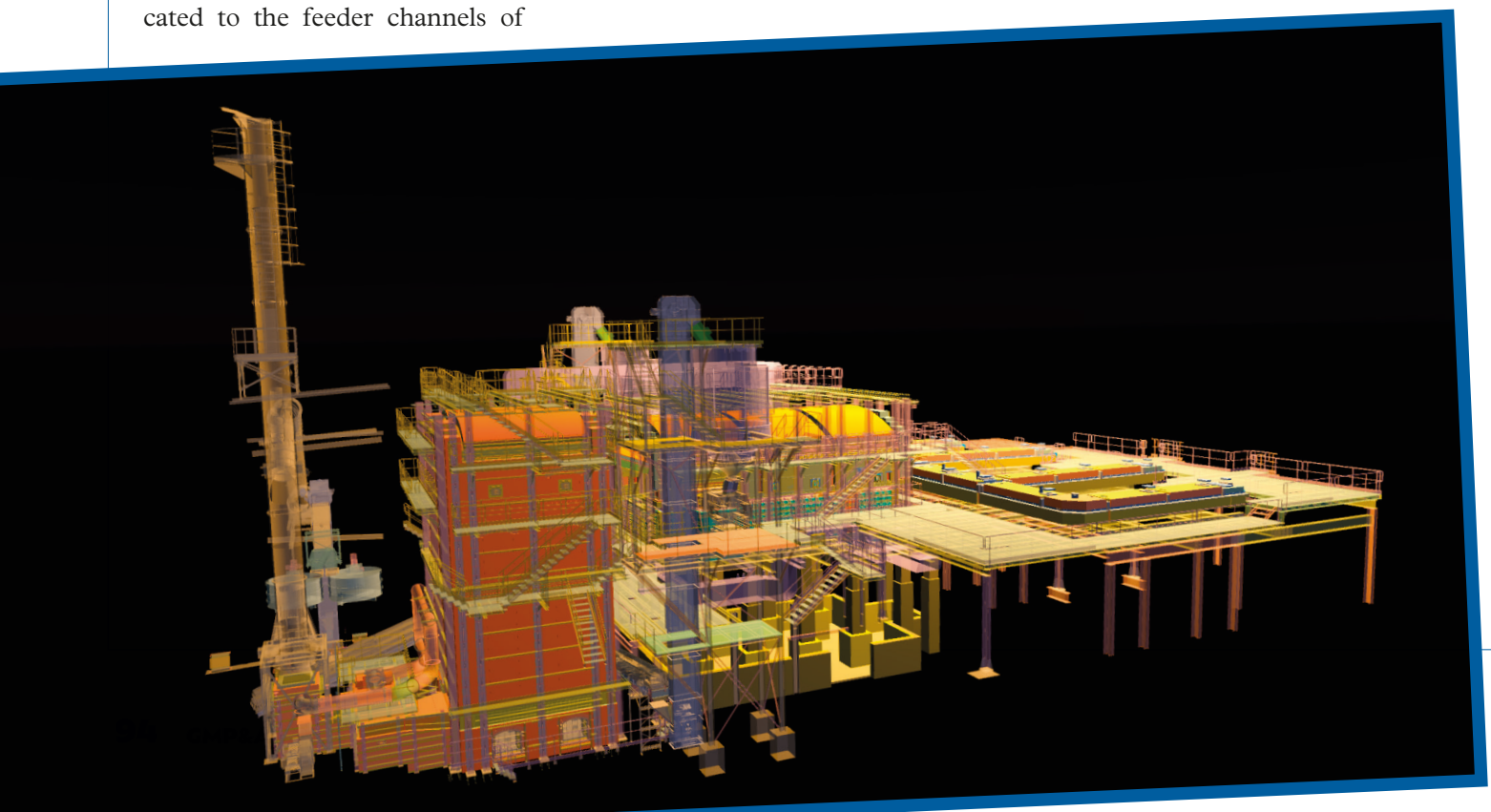
Container machine feeder channels supported by TECSIGLASS digital twin

Ongoing innovation within the glass industry continues to set new standards for efficiency and sustainability. Today a joint initiative between TECSIGLASS, the University of Genoa, SIRELAB and STG now marks a significant step forward in optimizing glass container production processes. TECSIGLASS has set the ambitious goal of developing a digital twin (DT) dedicated to the feeder channels of glass container machines. The project, based upon available expertise and industry-specific modeling experiences already developed, aims to revolutionize the industrial approach through the implementation of advanced simulation and monitoring technologies. The project is currently underway with the support of glass manufacturers who have agreed to share some operating parameters.

PRODUCTION OPTIMISATION

The proposed digital twin is designed to simulate real-time operating conditions, thereby allowing for the prediction of changes, optimizing thermal management to reduce waste and energy costs and quickly adapting to production changes. The channels are currently managed primarily through operational experience. The



In a winning collaboration with the University of Genoa, SIRELAB and STG, TECSIGLASS is currently developing a groundbreaking digital twin for glass container machine feeder channels. This innovative technology aims to optimize production by using advanced simulations, AI and data integration, thereby enhancing efficiency, sustainability and training within the glass industry.

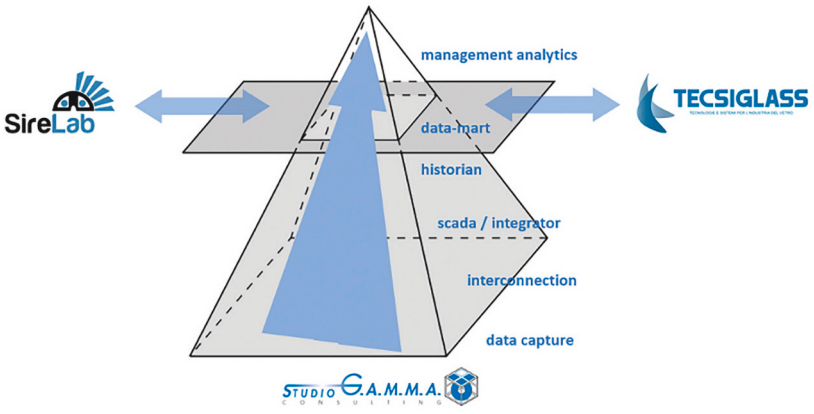
project implements advanced CFD (Computational Fluid Dynamics) simulations at various levels of complexity, as well as data mining and machine learning techniques to predict and optimize operating conditions. Field-monitored data, appropriately processed, gets integrated with information from AI algorithms and numerical models.

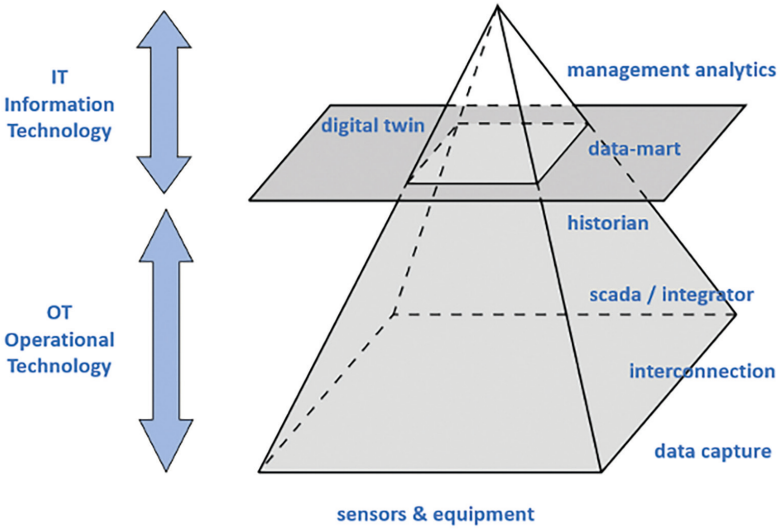
In this way, the DT ensures the following benefits, all typical of an advanced digitalisation process:

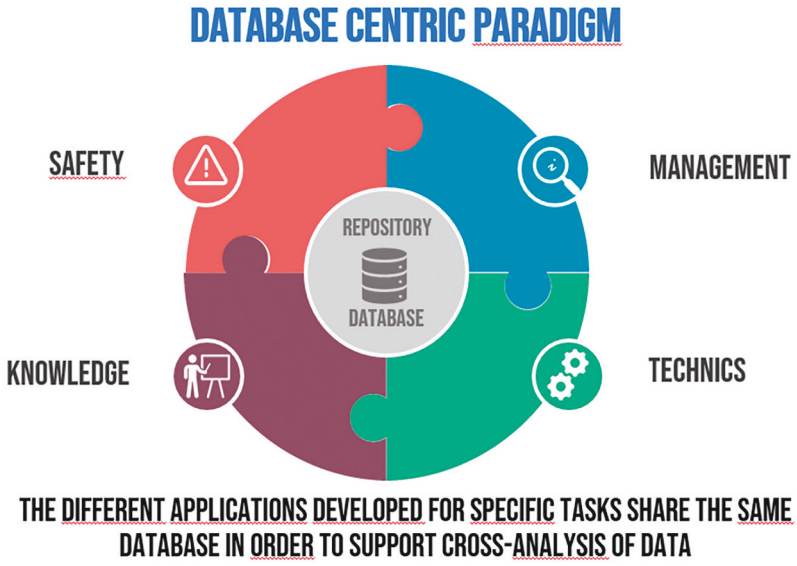
- Knowledge Standardization
  Digitalization allows for detailed documentation of every phase of the production process, making critical information and best practices accessible to all employees.
- Ease of Access
  Information can be easily consulted through centralized platforms, ensuring that all employees have access to data, procedures, and technical manuals when needed.
- Continuous Training
  The Digital Twin can be used to develop or integrate training programs that allow employees to learn new skills and operational methodologies.
- Simulative Training
  Through digital simulations and virtual reality, employees can practice and improve their skills without risk to actual production.
- Knowledge Sharing
  Digitalization facilitates knowledge sharing among employees, reducing the risk of key skills being concentrated in a few individuals.
- Information Backup
  Digitalised information is easier to store and retrieve, preventing knowledge loss in the event of staff turnover.
- Reduced Dependence on Specific Skills
  The company reduces its reliance on manual and specific skills of individual employees, making the process more robust and less vulnerable.

INVESTING IN EXCELLENCE

The digital twin, as an application, is implemented in a client-server logic based on a centralized database architecture, which characterizes the new paradigm that Tecsiglass, along with its partners, is developing to provide decision support tools, monitoring and the analysis of process and furnace system engineering.







Here Tecsiglass trusts that the investment in digitalization is strategic - strongly believing that the glass industry will continue to benefit from technological innovation, with the integration of artificial intelligence and machine learning in the digital twins of various systems and components. This will enable even more precise and predictive management of production processes - further consolidating the glass industry's position as a leader in sustainable and high-quality production. In addition to its well-established furnace and feeder system engineering and construction services, Tecsiglass can extend its technological offering with innovative applications and services associated with simulation and data management. ■

TECSIGLASS
TECNOLOGIE E SISTEMI PER L'INDUSTRIA DEL VETRO

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ABOUT TECSIGLASS

Founded in 2018, Tecsiglass has had a very rapid development thanks to the presence of professionals operating in the design and supply of furnaces for glass production. In just a few years, it has gained the position of leading company on the Italian market. Most of the projects have been assigned to Tecsiglass. Here, during July and August 2024, Bormioli Luigi Altare and Abbiategrasso emerge as twin notables. The Vetrobalsamo Furnace 2 and Technoglas Voitsberg furnace 2 are set to be completed by the end of this year. The company's business approach is very dynamic, with skilled professionals supporting customers from engineering works to hot repair maintenance - including the supply of plant and equipment for the furnace, refractories, demolition and cold works.