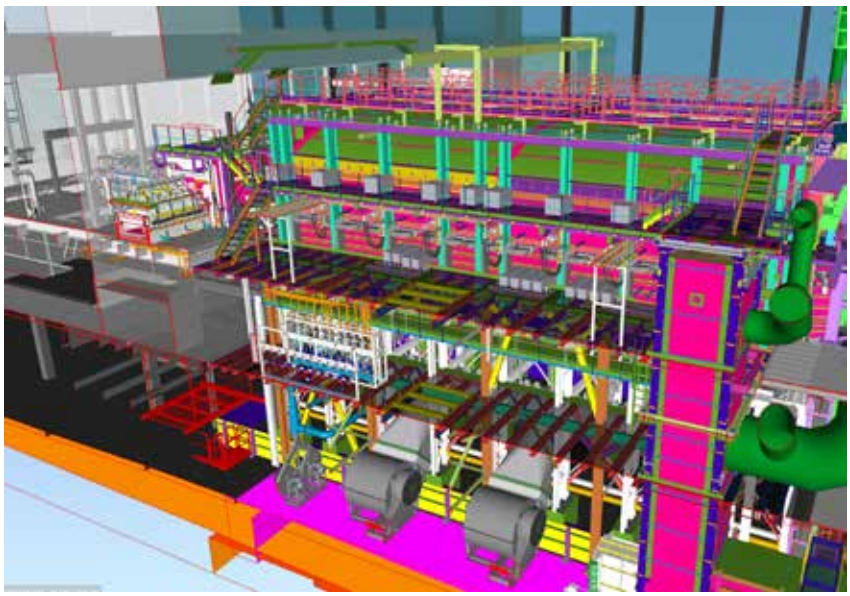
# The BIM-centred design culture at STARA GLASS

Tailored digitalisation in the glass production industry has taken shape at Stara Glass through the long-term evolution of its Technical Department. For more than thirty years, the department has acted as a driver of growth, grounded in engineering expertise, operational flexibility and design capability. Founded in the 1990s with a focus on refractory design for melting furnaces, it progressively expanded into steel structures, heat recovery systems and special equipment, enabling full EPC project management shared transparently with clients via collaborative digital platforms. A significant step forward came with the adoption of laser scanning technology, enabling highly accurate surveys that are essential during revamping projects in active production environments, where minimising interference between existing structures and new installations is critical.



## FROM ENGINEERING TO INTEGRATED BIM PROCESSES

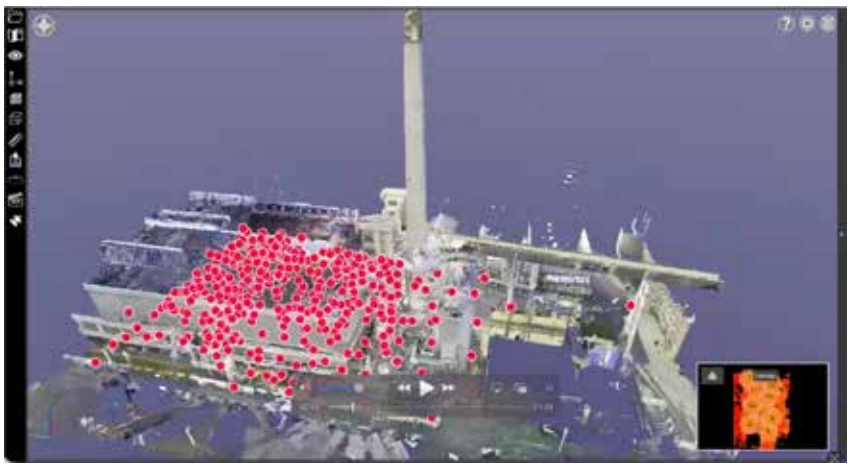
Since 2019, Stara Glass has pursued a structured digital transformation based on BIM, adopted not as a support tool but as a core working methodology. BIM now underpins every stage of glass plant design and construction, reshaping coordination, decision-making and risk management across projects. The BIM model developed by Stara Glass extends far beyond three-dimensional visualisation. Structural elements, piping systems and equipment are enriched with technical, economic and management data. Tools such as Tekla Structures, combined with shared environments like Trimble Connect, support high-precision modeling and real-time collaboration among designers, suppliers and clients, while automated notifications ensure all stakeholders work on the latest data set.

**Laura Trichilo - Technical Designer**

## SMART FABRICATION AND DIGITAL TWIN APPLICATIONS

Key innovations include the generation of NC files for automated metal cutting and the integration of augmented reality systems. QR codes applied directly to components provide immediate access to drawings, operating instructions and system diagrams via tablets or headsets - improving traceability and on-site efficiency. The development of a digital twin -a faithful digital replica of the physical plant- delivers measurable advantages in monitoring and managing glass production systems. Through IoT sensors, the model supports continuous monitoring, simulations, predictive maintenance and technical training, significantly enhancing safety, reliability and operational continuity.

**Built on three decades of engineering practice, STARA GLASS has embedded BIM into glass plant design to improve coordination, accuracy and lifecycle control. The approach combines laser scanning, data-rich modeling and collaborative platforms - turning digital tools into operational assets for complex furnace and plant projects.**



## ORGANISATION, STANDARDS AND FUTURE BIM DIMENSIONS

Usability remains a central focus of the BIM system, ensuring accessibility even for less experienced operators. Intuitive, contextual interfaces allow rapid understanding of each project phase, while sensors installed on critical components such as valves and bolts detect real-time stress conditions and anomalies. The Technical Department consists of seven specialised professionals capable of independently managing complete projects and supporting Project Managers during execution. This internal structure is reinforced by a consolidated network of external collaborators, allowing Stara Glass to handle complex EPC refurbishments that require close coordination among multiple technical disciplines and suppliers. In projects where existing structures cannot be modified, custom design capability becomes decisive. Laser scanning, combined with early collaboration with site managers, ensures accuracy during preliminary phases. Under the guidance of BIM Specialist Laura Trichilo, the practical implementation of BIM -covering 3D modeling, clash detection and shared data environments- has become a strategic asset. "The strength of BIM lies in its ability to foresee problems before they arise. It's not just a technological tool, but a system for operational and design safety," Trichilo explains. In compliance with EN ISO 19650 and UNI 11337 standards, Stara Glass has launched a certification programme targeting 50 percent of the technical team as BIM Coordinators by the first half of 2026, alongside BIM Specialist qualifications within Stara Tech. Future development will integrate advanced BIM dimensions: 4D for scheduling, 5D for cost control, 6D for sustainability analysis and 7D for plant management and maintenance, transforming the digital model into an active, value-generating system for the glass manufacturing industry. ■


**STARA GLASS**

Piazza Rossetti 3A/1
16129 Genoa (GE) - ITALY
Tel.: +39 010 576391
staraglass@hydragroup.it
www.staraglass.it