

A new glass industry: STARA GLASS'S systemic approach

The global glass industry faces growing pressure to significantly reduce CO2 emissions in line with international decarbonization targets. Stara Glass, a consistent leader in driving innovation within this energy-intensive sector, has developed a visionary roadmap to meet these critical challenges.

By embracing a multifactorial, systemic approach to decarbonization, Stara Glass is charting a sustainable path forward for glass production.

A SHARED VISION FOR DECARBONIZATION

A leader in the design and development of melting fur-

naces, Stara Glass stands at the forefront of innovation aimed at reducing emissions throughout the glass production process. The company holds a key role within the Hydra Group - providing cutting-edge solutions for furnace design and construction, as well as a range of associated



In a systematic approach to setting new sustainability standards for glass production, STARA GLASS is pioneering a multifactorial decarbonization strategy by focusing on energy savings, hydrogen, carbon capture and electrification. Leveraging innovation, partnerships and circular economy solutions, the company seeks to lead the charge toward a carbon-neutral future for the industry.

services. These include advanced combustion system design and innovative approaches to the recovery of refractory materials. Sustained by decades of experience, Stara Glass offers turnkey services that not only ensure high productivity but also lead to significant reductions in NOx emissions and CO₂ output.

A FOUR-PILLARED STRATEGY

The heart of Stara Glass's decarbonization efforts are four key development areas that support a sustainable future for the glass industry. These are:

1. ENERGY SAVING

Through the Life Sugar Project (Sustainable Glass: Architecture of a Furnace Heat Recovery System), Stara Glass has achieved groundbreaking advancements in heat recovery. By employing steam reforming to convert waste heat into hydrogen, the project achieves energy savings of up to 15 percent compared to traditional technologies. A pilot installation is scheduled at the Vetrerie Meridionali plant by 2025, with full commercialization expected by 2026. In addition, Stara Glass is exploring further heat recovery solutions, such as scrap preheating and gas





preheating, which is aimed at maximizing efficiency while reducing both carbon emissions and fuel consumption.

2. HYDROGEN

Hydrogen represents a promising alternative to fossil fuels in glass melting processes. Stara Glass plays a pivotal role in the Horizon H2-GLASS project, where hydrogen combustion is tested in various operational furnaces, with a special focus upon developing burners suited for both regenerative and fossil fuel-based technologies. The project addresses key challenges, including refractory compatibility, combustion geometry and essential safety features - making it a critical step toward large-scale adoption of hydrogen in glass production.

3. CARBON CAPTURE

Stara Glass is also pioneering efforts in carbon capture as part of the Horizon COREu project, which began in January 2024. This initiative is focused on developing carbon capture technologies tailored to the European glass industry - providing technical guidance and solutions for its seamless adoption across operations. Stara Glass is committed to ensuring that glass manufacturers can integrate these systems without compromising efficiency.

4. ELECTRIFICATION

Electrification is a cornerstone of Stara Glass's decarbonisation strategy. By increasing the electrical energy input in glass furnaces, immediate benefits are

achieved in terms of both efficiency and sustainability. Stara Glass's approach includes the possibility of intervention with existing furnaces, enhancing the proportion of electric energy used in the melting process. This 'electric booster' helps reduce the consumption of fossil fuels such as gas and oil, contributing to the decarbonisation process - particularly when the electricity used is sourced from renewable or 'green' energy. However, it is important to highlight that this solution is implemented only when technically feasible - as not all systems can accommodate these changes.

In addition to retrofitting existing furnaces, Stara Glass is advancing hybrid furnace technologies that

rely on over 50 percent electricity for the melting process. The company is also exploring fully electric solutions, customizing systems based on local energy availability and market conditions

PARTNERSHIPS DRIVING INNOVATION

Stara Glass firmly believes that collaboration accelerates progress toward decarbonization. As a result, the company actively engages in various innovation networks, such as the Glass Futures project in St Helens (UK). These partnerships help foster collective efforts towards carbon neutrality and drive industry-wide advancements.

TRADITIONAL FURNACES AND WASTE RECOVERY

Beyond its pioneering work in decarbonisation, Stara Glass is committed to supporting its customers through daily assistance with furnace maintenance, consumption optimisation, and continuous product quality improvement. For instance, the company's structural hot maintenance services reduce air infiltrations,

improve combustion efficiency, and lower fuel consumption, all of which contribute to a more sustainable operation. In addition, Stara Glass is advancing the circular economy by developing cutting-edge solutions for recovering waste materials. From recovering refractory materials to reusing waste heat and resources, the company aims to close the loop on the glass production process - essentially reducing waste and promoting resource efficiency. Stara Glass's approach ensures that every aspect of production aligns with a sustainable future - positioning the company as a key driver of innovation within the sector.

CONCLUSION

The glass industry is at a pivotal moment in addressing its environmental impact, and Stara Glass offers a systematic and comprehensive approach to decarbonization. Focusing on energy savings, hydrogen combustion, carbon capture and electrification, Stara Glass is setting new standards for sustainable glass production.

Through ongoing innovation and strategic partnerships, the company continues to pursue leadership in reducing the carbon footprint of the glass sector. As the industry strives for a sustainable future, Stara Glass remains a steadfast partner, helping to turn decarbonization goals into reality while championing a circular economy where waste is minimized and resources are maximized. ■



STARA GLASS

Piazza Raffaele Rossetti 3 A/1
Genova, 16129 - ITALY
Tel.: +39-010-576391
E-mail: staraglass@hydragroup.it
www.staraglass.com

