

Session	Decarbonizing the Glass Industry (I)
Date	APRIL 10, 2025
Time (CET)	13:15 - 13:45
Chair	Serkan Şahin



INVITED SPEAKER

Horizon Europe project H₂GLASS: Outcomes of the First Campaigns of Industrial Scale H₂ Combustion Trials Performed in a Container Glass Melting Furnace of Steklarna Hrastnik

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Biography

Simone Tiozzo is the Head of the Research and Development department of Stazione Sperimentale del Vetro (SSV), the Italian glass science and technology research institute (Venice), where he has been working for 13 years. SSV provides since 1956 analytical and technical support to the whole glass industry chain and to most industry sectors, offering services such as chemical analysis and micro-analysis, defects identification and interpretation, mechanical testing and fracture analysis, on-site emission measurements, energy audits, product certification.

The main focus of His applied research activity is glass sustainability, with projects dedicated to, for example: reduction of pollutant and GHG emissions of glass melting furnaces, implementation and testing of innovative solutions for Hydrogen combustion, steam methane reforming and CO₂ capture and storage in glass furnaces, Design for Recycling of glass based packaging items, etc.

Abstract

Within the framework of the Horizon Europe H₂GLASS Project, from the 20th November to the 1st December 2023, several days of experimental campaigns of preliminary H₂ combustion trials took place in the industrial demonstrator site of Steklarna Hrastnik. The tests were carried out on an oxy-fuel fired furnace producing high quality flint glass for the manufacture of premium beverage containers, and were aimed at assessing the impact of the combustion of various H₂/Natural Gas blends on the gaseous emissions, on glass quality and on the energy transfer by flames to the melt and raw materials.

The trials involved feeding different couples of burners (out of 6 total) at a time with fuel mixtures ranging from 0% to 100% H₂, that is experimenting combustion configurations where H₂ accounted for up to the 60% in volume of the total fuel input, thus contributing up to 33% of the total power required for glass melting, which translates into an equivalent up to 33% reduction in direct combustion CO₂ emissions.

During the trials, SSV carried out simultaneous multi-parametric measurements in several points of the furnace system, deploying its MCM – Multipoint Continuous Monitoring approach for glass furnace behavior characterization. This presentation will highlight the main results and evidences gathered from these on-site measurements, providing a first assessment of the impact of increasing H₂ concentrations in fuel on combustion, emissions and production of the studied furnace.



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