



THIS PROJECT IS CO-FUNDED BY THE EUROPEAN UNION'S LIFE PROGRAMME - LIFE19 CCM/IT/001314

OBJECTIVE

The LIFE SUGAR project aims at testing and developing a technology that **significantly decreases the fuel consumption and CO₂ emissions** of industrial glass production.

The LIFE SUGAR project aims to develop a **heat recovery module that can efficiently use the residual heat of furnace waste gases** to convert a part of the natural gas into syngas (a fuel mixture based on hydrogen & carbon oxides), thanks to an **innovative technologic embodiment of Steam-Methane Reforming (SMR)**.

The LIFE SUGAR concept can be applied to most glass productions.

THE MOCK UP

In the mock up, the Steam Methane Reforming (SMR) reaction is tested at the laboratory scale. The plant consists in two main sections:

- the **Reforming Module** reproduces the heat exchanger geometry and the reactor layout with the aim of studying the **SMR process in different operating conditions and with different catalyst characteristics**.
- the **Combustion Module** reproduces the combustion geometry and operating conditions of an end-port furnace and is equipped with an **advanced laser detection system for flame front and emission analysis**.

Goals:

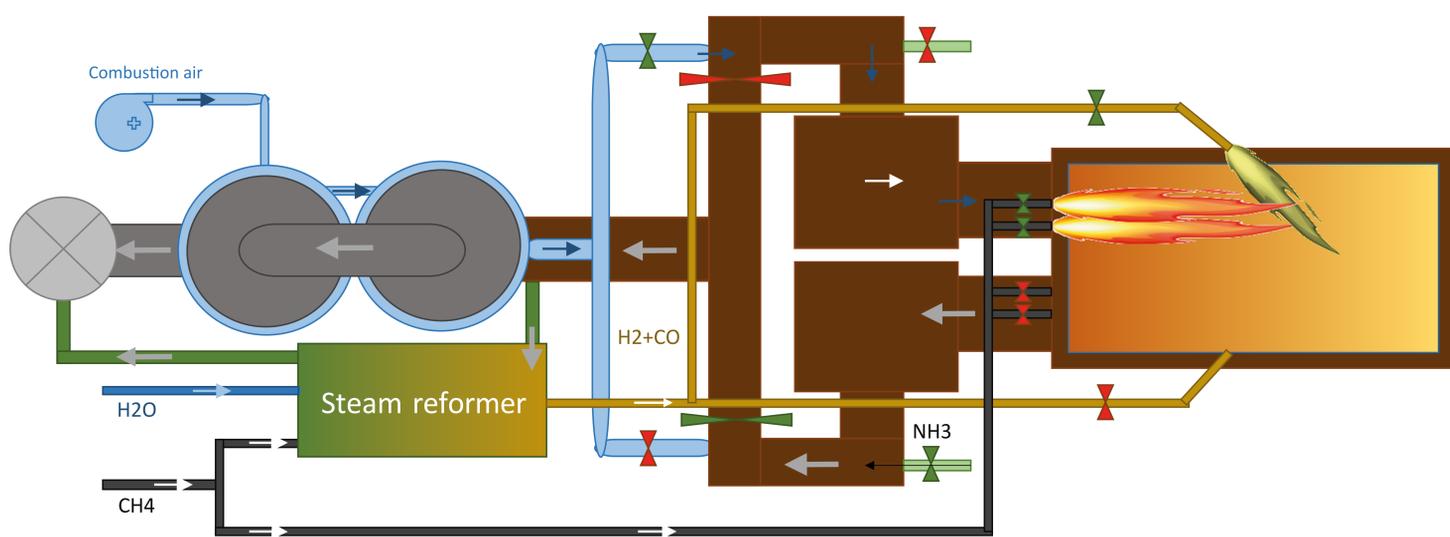
- Determine best catalyst type for the process conditions
- Define the best layout for the SMR process
- Analyse the impact of syngas effects on flame and emissions

THE PILOT

The Pilot System will implement the SUGAR technology into a real industrial plant at a 1:5 scale compared to the final full scale commercial component. The module will be installed in a Centauro Furnace, in parallel with the metallic heat recovery section.

Goals:

- Demonstrate the technical feasibility of the SMR process in glass furnaces
- Demonstrate the energy performance of the SMR process in glass furnaces
- Analyse the effects of syngas combustion on CO₂ and NO_x emissions and flame behavior



PARTNERS



Stara Glass is a Genova-based company that provides services for the glass industry such as furnace design, EPC, turnkey projects, heat balances always with the mission of ensuring high quality, energy sustainability and environment-friendly glass.
www.staraglass.com



KT - Kinetics Technology (KT), a company of Maire Tecnimont, is a leading international technology licensor and EPC contractor with a significant track record in steam reforming.
www.kt-met.com



Johnson Matthey is a global leader in science that enables a cleaner and healthier world. The target is making the most efficient use of the planet's natural resources in areas such as low emission transport and chemical processing under the motto "Inspiring science, enhancing life".
www.matthey.com



Stazione Sperimentale del Vetro is a national research institute and analytical laboratory founded in 1954. It is the only Italian official body devoted to the support of the whole glass industry chain, and has a strong technical expertise on a broad range of topics related to glass production, such as raw materials, glass quality, process optimization, refractories, furnaces, emissions, sustainability and environmental issues.
www.spevetro.it



University of Genova provides the project with scientific advice on combustion and provides furthermore human and hardware resources for Computational Fluid-Dynamic (CFD) analysis and for experimental tests with detailed flame measurement facilities in the mock-up installation.
www.unige.it



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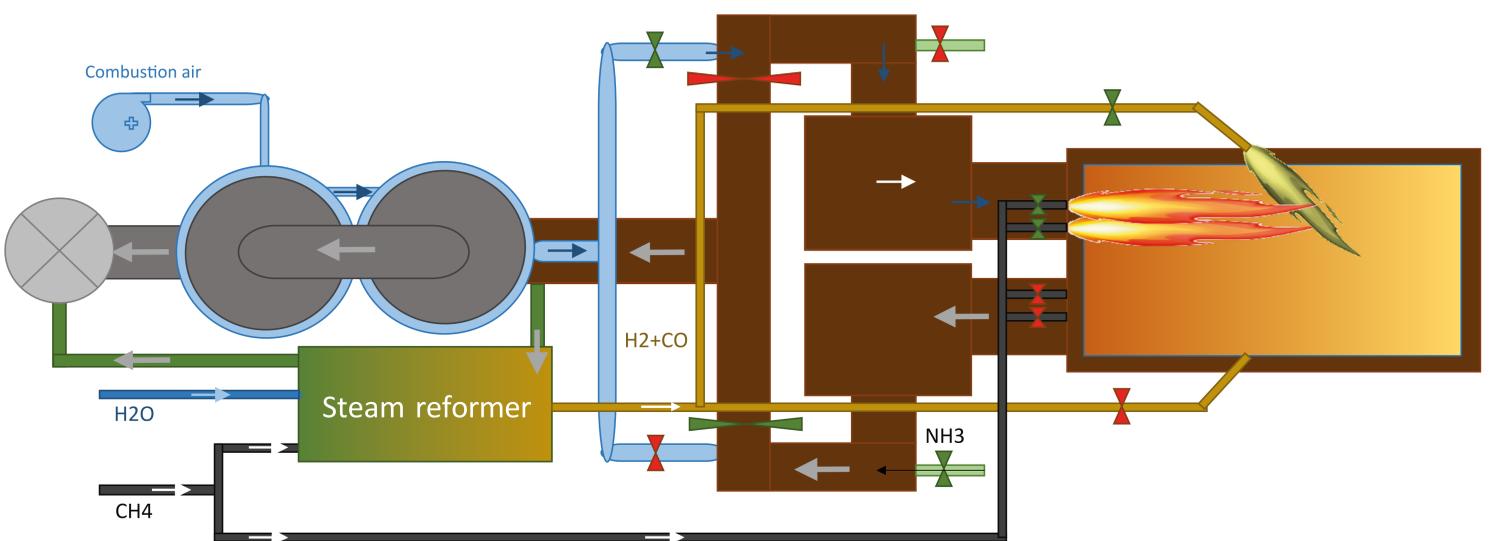
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