



Report on networking actions

LIFE Smart Oxy-Boost
LIFE17 CCM/BG/000069



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With the contribution of the LIFE financial instrument of the European Community

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Project description

The LIFE Smart Oxy-Boost project aimed at demonstrating partial oxy-fuel conversion of side-fired regenerative (air-fuel) float glass furnace and had 4 main objectives:

- Reducing specific CO₂ emissions from combustion by 4,2% and total specific CO₂ emissions by 2,8% in an air-fuel float glass furnace by only using approximately 10% of the amount of O₂ and less than 10% of the CAPEX required for a typical full oxy-fuel furnace conversion
- Reducing specific energy consumption by 4,2% while increasing production by 15,4%
- Reducing particulate emissions by 5%
- Reducing NO_x emissions by 10%

The balance (partial conversion) between air-fuel and full oxy-combustion allows decreasing GHG emissions (compared to air-fuel) while ensuring the replication of the Smart Oxy-Boost technology thanks to its financial viability (compared to full oxy-combustion).

Lowering GHG emissions and energy consumption is a coupled challenge in the industry because the methods employed have to be environmentally sustainable and at the same time economically viable. In response, LIFE Smart Oxy-Boost aimed at facilitating the wide-spread use of partial oxy-fuel conversion in air-fuel float glass furnaces with an innovative combination of smart burners equipped with sensors and wireless communication means in communication with the process changes in the furnace.

Objectives

The objective of this action is to ensure an effective networking with other projects, to a mutual benefit, not only during the project duration but also after its termination.

The main objective is the transfer of knowledge and information exchange with professionals of the area and of the LIFE programme.

The benefits from this action are diverse, but the main result is to transfer expertise and new knowledge. Sharing development approaches can also optimize the management and the monitoring of the project. Another objective is to develop our own network and to have contacts of diverse expertise for further collaborative activities or projects.



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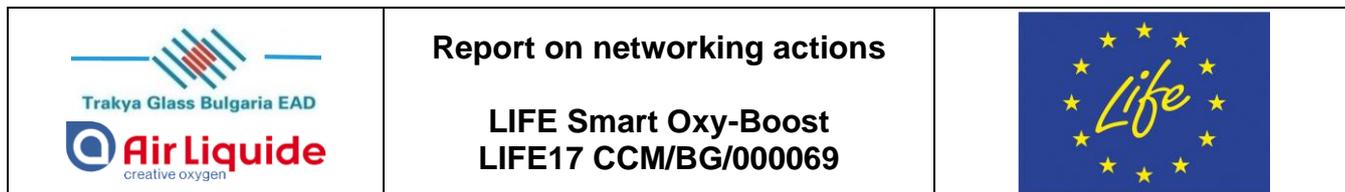
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Networking activities: general approach

TGB contacted the following project coordinators listed below table.1 within the scope of network activities via Cordis. Networking message is shared at annex.1. Unfortunately No response has been received from this network channel.

Program	Project	Coordinator
FP7-ENERGY - Specific Programme "Cooperation": Energy	CRAFTEM Carbon Reduction by Auxiliary Firing TEchniques for glass Melter	ENGIE
H2020	Design for Resource and Energy efficiency in cerAMic kilns	SACMI FORNI SPA
H2020	Innovative and efficient solution, based on modular, versatile, smart process units for energy and resource flexibility in highly energy intensive processes	FUNDACION TECNALIA RESEARCH & INNOVATION
H2020	Novel integrated refurbishment solution as a key path towards creating eco-efficient and competitive furnaces	FUNDACION CIRCE CENTRO DE INVESTIGACION DE RECURSOS Y CONSUMOS ENERGETICOS
H2020	SmartMelt: A Data-Driven Melting Process Optimizer	NOVAMET SARL
H2020	Decarbonisation of carbon-intensive industries (Iron and Steel Industries) through Power to gas and Oxy-fuel combustion	UNIVERSIDAD DE ZARAGOZA
H2020	Development of a Low CO2 Iron and Steelmaking Integrated Process Route for a Sustainable European Steel Industry	TATA STEEL NEDERLAND TECHNOLOGY BV



SUCCESSFUL ACTIONS:

1- TGB made contact with two project coordinators **The Prime Glass project** (www.primeglass.it) and **LIFE SUGAR** (Sustainable Glass: Architecture of a furnace heat recovery system including a steam Reformer). The first contact was made in June 2020. Projects were presented mutually through e-mail correspondence and on-line meetings.

The LIFE SUGAR project will operate interventions in glass industry capable of reducing energy consumption and CO₂ emissions by recovering the residual heat from exhaust flue gases from the combustion of fossil fuels to produce thermal energy, by means of an additional thermal and chemical vector (in addition to the combustion air) represented by the hydrogen-rich syngas produced by an endothermic SMR reaction. Thus, it will explore the use of hydrogen-based combustion in the glass sector to pave the way to carbon-free industry.

The efforts of both sides to reduce emissions and save energy are interesting to each other. After the Covid-19 outbreak, a mutual exchange of detailed information and a visit will be planned with them.

2- ICG (International Commission on Glass):

ICG is an organization that seeks to generate value by leveraging its know-how and network to bring academia and industry together while constantly striving to attract young talent to invest in a sustainable glass society.

ICG organization has sub-committees named TC, which are specialized in their field, and Şişecam plays an active role in these committees.

Technical Committee on Energy Efficiency TC09, mainly focus on glass melting since this contributes on average about 60-65 % to the total energy consumption in glass production. The aim of this committee is to identify the major process steps with energy efficiency improvement potentials, to select suitable technologies, to test or develop tools that supports energy efficiency investigations such as energy balance models, protocols for energy management, energy audits and finally to define research activities for developing energy saving glass production methods. The LIFE Smart Oxy-Boost project was presented in 07 April 2021 Video Conference to the TC9 Energy Efficiency committee members. In particular, flat glass manufacturers were closely interested in Smart Oxy-boost results, LIFE grant opportunities, and LIFE's general procedures all necessary information has been explained to them.

LIFE projects, of which Şişecam is a project partner, are featured on the TC9 poster (fig.1).

3- 36th Glass Symposium, 12 November 2021

LIFE Smart Oxy-boost project was represented by Gyunay Redzheb (TGB) at the operational excellence session of 36th Glass Symposium.(fig.2). The presentation and speech were jointly prepared with Air Liquide.

 <p>Trakya Glass Bulgaria EAD Air Liquide creative oxygen</p>	<p>Report on networking actions</p> <p>LIFE Smart Oxy-Boost LIFE17 CCM/BG/000069</p>	
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More than 750 participants from 40 countries participated in this on-line symposium and the LIFE Smart Oxy-boost project was presented at this on-line meeting. It was understood from the questions after the presentation that the interest was high.

Technical Committee 9: Energy Efficiency



Expert group of ICG for energy efficiency in glass production

International Commission on Glass

Activities TC 09:

- Share practical experiences, activities and problems related to new energy saving technologies;
- Review appropriate technologies;
- Identifying the major process steps for potential for energy efficiency improvement;
- Share energy consumption and CO₂ emission data (anonymous) for internal benchmarking;
- Preparation of a paper on energy efficiency;
- Thermodynamic simulations to determine theoretical heat demand of glass batches;
- Organize symposia concerning best practice and state of the art for energy efficiency;

Members of TC09 (2019):

Glass producer	CEO	Participating / consulting / Technical assistance	Support for glass industry
Trakya	IVIC	ICG	Financi
Sibelco	STV	ADMS	Air Liquide
Schott	Schott Glass		Schott
Schott	Gallan		Glass Service
Sibelco	Hollman & Jans		
Amalgam			
EMC			
Libbey			
Technical Expert			
ICG			
ICG			
ICG			



Activities:

Environment

ICG's TC09 focuses on energy

Hans van Limpt*, chairman of the ICG's Technical Committee TC09, outlines the role of the new group and how it will address energy efficiency in glassmaking.



Glass International July/August 2015

Contact for more informations:

Chair	- Hans van Limpt (Sibelco)	hans.van.limpt@sibelco.com
Vice-chair	- Wolfgang Schmidbauer (Schott)	wolfgang.schmidbauer@schott.com
Secretary	- Erik Muijsenberg (Glass Service)	erik.muijsenberg@gsi.cz



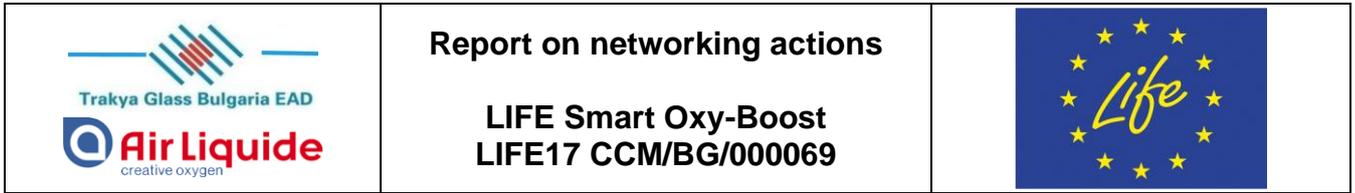


Fig.1 TC9 Poster (Annual report of ICG TC9)

SESSION TOPIC		OPERATIONAL EXCELLENCE
CHAIR		OZAN ÖZER (Coating Technologies Director, Şişecam, TR)
15:00	15:20	"Standardization: A Powerful Tool to Achieve Excellence in Container Glass Technology" Dr. ESTELA ALEJANDRO (Glass Technology Manager, Vidrala, ES)
15:20	15:40	"Double Action Baffle for IS Machines & Plasma Coating for Troughs" ARTUR BIISHEV (Technical Director, Ruscam LLC, Kuban, Şişecam, RU)
15:40	16:00	"LIFE Smart Oxygen Boosting System Implemented in Flat Glass Furnace" GYUNAY REDZHEB (Plant Engineer, Trakya Glass Bulgaria, Şişecam, BG)
16:00	16:20	"Composition Optimization of Crystalline & Soda Lime Silicate Glass" MERT ÇAĞDAŞ (Batch and Furnace Engineer, Glassware Kırklareli Plant, Şişecam, TR)

Fig.2 36th Glass Symposium, Operational Excellence Session

4- In the frame of Smart Oxy-Boost project AL made a presentation called "Clear Efficiency". ICG international Congress in Boston, USA in 2019.

2022&Beyond PLAN

2- Şişecam will present LIFE projects at Green Balkans meeting 2022.

In October 2021, "Natura 2000 in Bulgaria" (LIFE17 GIE/BG/371) project planned to host f the national coordination meeting of the LIFE projects in Bulgaria. Due to Covid-19 pandemic situation, the meeting was postponed to 2022. If the meeting is held in 2022, Şişecam will make a presentation called "LIFE projects in Şişecam".

Lessons learnt and recommendations

The covid 19 pandemic conditions negatively affected the network actions of the project. Since there was no opportunity for face-to-face meetings and site visits, network activities were mostly carried out as on-line meetings.

We tried to contact several project coordinators by CORDIS but unfortunately we couldn't get any response. We think that the reasons listed below may cause this situation.

- 1-Title/role change of the project coordinator,
- 2- Company change of the project coordinator,
- 3- Those who have completed the project are no longer interested in the network,

Considering today's conditions, the necessity of on-line meetings has increased a lot. It would be very beneficial for the LIFE consortium to develop a platform that provides on-line meetings, network activities. For example, meeting of Life projects for Climate Change Mitigation once in a year would be beneficial.