VULKANO

Novel integrated refurbishment solution as a key path towards creating eco-efficient and competitive furnaces

"Leading the change towards eco efficient furnaces"

This project has received funding from the European Unionś Horizon 2020 research and innovation programme under grant agreement no 723803

The overall objective of VULKANO project is to design, implement and validate an advanced retrofitting integrated solution to increase the energy and environmental efficiency in existing PREHEATING AND MELTING INDUSTRIAL FURNACES currently fed with natural gas.

This will be achieved through implementing combined new solutions based on :

1. Improved Refractory Materials
Development and implementation of **new alternative** materials for high-temperature, high-alkali environments capable to operate at higher temperatures or/and for longer periods of time.

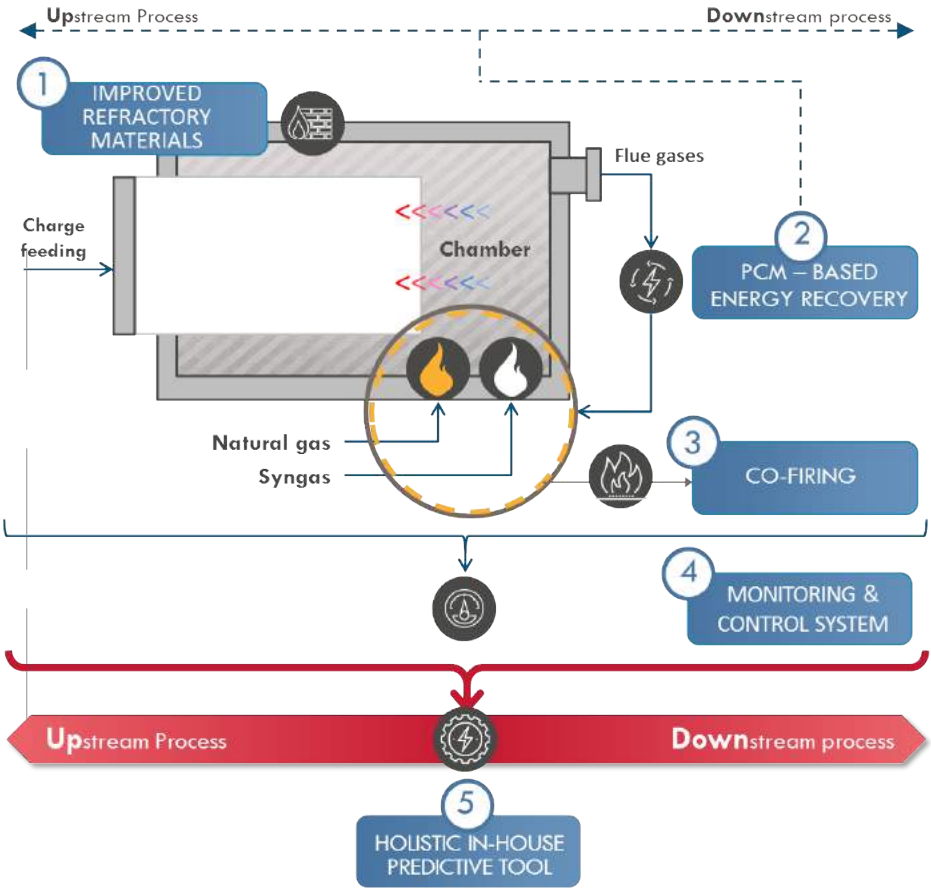
2. PCM-Based Energy Recovery
PCM has a double purpose acting as a physical filter which is able to recover energy at the same time that smooths fluctuations in the temperature profile working similar to a low-pass filter.

3. Co-firing 2nd Energy Source
Second energy source from renewable/alternative feedstocks with the aim to substitute the high percentage of natural gas in industrial furnaces.

4. Integrated Control System
The new and improved control system will directly contribute to achieve a more efficient furnace and consequently important fossil fuel savings.

5. Holistic In-House Predictive Tool
Decision support tool to optimize the furnace design and its energy and environmental performance, considering the interaction furnace-retrofitting solutions and upstream/downstream processes.

INTEGRATED SOLUTION



SPECIFIC OBJECTIVES

20% **INCREASE**
in the overall efficiency of the furnaces

20% **SAVING**
of fuel consumption

15%-40% **REDUCTION**
of fossil fuel consumption

DEVELOPMENT
of an optimization methodogology for preheating/melting furnaces

Demostration & Replication in other sectors

STEEL
Preheating mould furnace
Country: Slovenia / Partner: Valji
Batch Process: 100 – 400 ºC

CERAMIC
Preheating mould furnace
Country: Spain / Partner: Torrecid
Continuous Process. 1500-1580ºC

ALUMINIUM
Simulation of the integrated solution in an aluminium manufacturing plant
Country: Turkey / Partner: ASAS
Preheating and melting process
450-500ºC / 700-720ªC


www.vulkano-h2020.eu

CONSORTIUM

Project coordinator

circe
RESEARCH CENTRE
FOR ENERGY RESOURCES
AND CONSUMPTION

Ceramic demonstrator

TORRECID

Steel demonstrator

VALJI
VALJI, PROIZVODNJA VALJEV IN ULITKOV D.O.O.

Aluminium demonstrator

ASAŞ

Rest of partners:

PCM

bosio
industrial furnace solutions

tecnalia
Corporación Tecnológica

fives

Fraunhofer IMW

cidaut
Transport and Energy Research and Development Foundation

RINA

JEN