TRIERES

TOWARDS THE DEVELOPMENT OF A HYDROGEN VALLEY DEMONSTRATING APPLICATIONS IN AN INTEGRATED ECOSYSTEM IN GREECE

Project ID	101112056
PRR 2024	Pillar 6 – H_2 valleys
Call topic	HORIZON-JTI-CLEANH2-2022-06-02: Hydrogen valleys (small-scale)
Project total costs	EUR 10 492 431.25
Clean H_2 JU max. contribution	EUR 7 995 825.63
Project period	1.7.2023–30.4.2028
Coordinator	Motor Oil (Hellas) Diilistiria Korinthou AE, Greece
Beneficiaries	Anónymos Etaireía Diórygas Korínthou AE, Avinoil Viomichaniki Emporiki Kai Naftiliaki Etaireia Petrelaion Monoprosopi Anonymi Etaireia, Dímos Loutrakíou – Perachóras – Agíon Theodóron, Dimosia Epicheirisi Ilektrismou Anonymi Etaireia, Dioryga Gas Monoprosopi Anonymi Etaireia Fysikou Aeriou, Ecoferry Naytiki Etaireia, Elliniki Etaireia Symmetochon Kai Periousias AE, Ethnicon Metsovion Polytechnion, FEN Research GmbH, Fulgor Monoprosopi Anonymi Eteria Elliniki Viomixania Kalodion, Hydrogen Egypt, Hydrus Anotati Synektiki Michaniki Etaireia Symvoulon Anonymi Etaireia, Idryma Technologias Kai Erevnas, Kition Ocean Port Ltd, LPC Monoprosopi Anonymi Etaireia Epexergasias Kai Emporias Lipantikon Kai Petrelaioeidon Proionton, National Centre for Scientific Research 'Demokritos', New Energy Environmental Solutions & Technologies E.E., Nova Telecommunications & Media Single Member SA, Odikes Sygkoinonies A.E., Olympia Odos Anonymi Etairia Parachorisis Gia Ton Autokinitodromo Eleusina Korinthos Patra Pyrgos Tsakona, Omospondia Ergodoton & Viomichanon Kyprou, Perifereia Peloponnisou, Piraeus Port Authority SA, Rijksuniversiteit Groningen, Stichting New Energy Coalition

https://www.trieres-h2.eu/

PROJECT AND GENERAL OBJECTIVES

Greece is focusing on sustainable innovation through the Trieres hydrogen valley, a renewable energy project based around the Motor Oil Hellas Corinth Refinery complex. The project aims to enhance local green renewable hydrogen production, transportation and end use in an integrated ecosystem. Initially small-scale, it aims to increase hydrogen production and consumption in the Balkans, south-eastern Europe and the eastern Mediterranean. The Trieres valley is a major hub of investment and talent, placing Greece on the hydrogen map for the first time thanks to its geopolitical and climate advantage.

The first Greek hydrogen valley will integrate the development, establishment and operation of the following projects.

- The first is green hydrogen production.
  - Hydrogen will be produced by an alkaline electrolyser (30 MW) with batteries for continuous operation.
  - Project will produce 2 410 t/year of green hydrogen through renewable energy systems.
- The second is green hydrogen logistics.
  - Project includes a trailer-filling terminal, a virtual pipeline and polymer pipelines connected to three consumption points.
  - Five hydrogen refuelling stations are to be in place for hydrogen distribution.
  - Hydrogen-bunkering facilities in Piraeus will service short-sea shipping vessels.
  - A compressor will be connected to the onshore natural gas pipeline of Dioriga Gas.
- The third is green hydrogen end-use applications.
  - **Maritime.** One short-sea ferry vessel will be retrofitted with a 200 kW fuel cell (FC) system.
  - **Road.** A group of FC electric vehicles will be created.
  - **Industry.** Motor Oil Hellas and LPC will consume green hydrogen to decarbonise their production processes.
  - **Energy.** Hydrogen will be injected up to 5 % volume into the national natural gas grid using the floating storage and regasification unit of Dioriga Gas.

NON-QUANTITATIVE OBJECTIVES

- Activate the hydrogen market in Greece by demonstrating the integration of various hydrogen pillars.
- Facilitate information sharing between valleys and elevate the energy market in the Balkans, south-eastern Europe and the eastern Mediterranean.
- Demonstrate the combination and integration of multiple hydrogen applications into an efficient ecosystem covering the full hydrogen value chain.
- Divide end users into three sectors: mobility, industry and energy.
- Strengthen visibility and improve public awareness of strategic actors in the hydrogen value chain and emerging hydrogen ecosystems.
- Increase public knowledge of hydrogen end uses, related technologies and applications.
- Create a replicable model so the hydrogen technologies can be reproduced and multiplied throughout small- and large-scale valleys and flagship hydrogen projects.
- Add value to the current hydrogen knowledge curve and support its take-off in the near future through state-of-the-art scientific and socioeconomic investment.

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PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives	Green hydrogen consumption in the energy sector	t/year	1 000	
	Developed digital twin blueprint	number	1	
	Green hydrogen consumption in the industry sector (lubricant production and oil refinery)	t/year	1 322	
	Green hydrogen consumption in the road transport sector	t/year	≥ 22	
	FC technology for light-duty vehicles	number	≥ 2	
	Hydrogen storage and transportation	t/year	1 105	
	Public awareness events	number	20	
	Hydrogen distribution (natural gas grid compression and injection capacities)	t/h	3	
	CO_2 emission reduction	t/year	9 880	
	Hydrogen distribution (compression capacity)	kg/h	180	
	PhD summer schools	number	20	
	FC technology for ships (capacity of FCs)	kW	200	
	Unified standards and specifications for hydrogen production, storage, distribution and use	number	2	
	Low-temperature PEMFC for onshore application (FC capacity)	kWe	100	
	Training programmes for reskilling	number	10	
	Hydrogen refuelling stations	number	5	
	FC technology for HD vehicles	number	≤ 3	
	Green hydrogen supply	t/year	2 410	
	Hydrogen purification system	number	1	
	Green hydrogen consumption in the maritime transport sector	t/year	66	
	New jobs created	number	92	
	Scientific publications	number	20	
	Valley safety management plans	number	1	

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