

# EVERYWH2ERE

MAKING HYDROGEN AFFORDABLE TO SUSTAINABLY OPERATE EVERYWHERE IN EUROPEAN CITIES



Project ID	779606
PRR 2024	Pillar 4 – H <sub>2</sub> end uses: stationary application
Call topic	FCH-02-10-2017: Transportable FC gensets for temporary power supply in urban applications
Project total cost	EUR 6 770 248.74
Clean H <sub>2</sub> JU max. contribution	EUR 4 999 945.76
Project period	1.2.2018– 31.12.2023
Coordinator	RINA Consulting SpA, Italy
Beneficiaries	Acciona Construccion SA, Delta1 GmbH, FRIEM SpA, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón, Genport SRL, ICLEI Europasekretariat GmbH, Iren Energia SpA, Iren Smart Solutions SpA, Iren SpA, Linde Gas Italia SRL, Mahytec SARL, Parco Scientifico Tecnologico per l'Ambiente SpA, PowerCell Sweden AB, Teknologian Tutkimuskeskus VTT Oy, THT Control Oy

<https://www.everywh2ere.eu/>

## PROJECT AND GENERAL OBJECTIVES

The EVERYWH2ERE project integrated the previously demonstrated robust proton-exchange membrane fuel cell stacks and the low-weight, intrinsically safe pressurised-hydrogen technologies into easy-to-install, easy-to-transport, fuel-cell-based transportable gensets. Six fuel cell – plug and play – gensets fitted in containers were produced and tested through a pan-European demonstration campaign in a demonstration-to-market approach. The prototypes were tested at construction sites, music festivals and urban public events all around Europe, demonstrating their flexibility and their increased lifetimes.

## NON-QUANTITATIVE OBJECTIVES

EVERYWH2ERE aimed to support the development of a regulatory framework for transportable hydrogen-fuelled systems.

## PROGRESS AND MAIN ACHIEVEMENTS

EVERYWH2ERE was a 71-month project. The project ended after having demonstrated fuel-cell-based gensets of 25 kW and 100 kW.

Despite the COVID-19 crisis, the project achieved its objectives.

In particular, the activities related to the achievement of the project's main objective were:

- realisation and validation of three batches of fuel-cell-based gensets of 25 kW and 100 kW;
- implementation of the San Sebastian demonstration in Spain targeting construction sites, the Tenerife demonstration in Spain targeting the cold ironing sector and several demonstrations at events across Europe;
- investigation of the regulatory framework and declaration of conformity for the 100 kW genset;
- development and testing of a second and third batch of gensets;
- engagement of stakeholders in demonstrations in ports, at music festivals, in cities, etc.;
- conduct of the first life-cycle assessment of the EVERYWH2ERE gensets compared with traditional diesel-fuelled gensets;
- mapping of hydrogen supply points in the EU and conduct of a preliminary analysis of logistic aspects;

- definition of contractual models to be proposed to engaged demonstration sites and identification of short-term rental as the most relevant market for EVERYWH2ERE gensets;
- determination of potential business models;
- drafting of EVERYWH2ERE's gensets replication strategy;
- running of a robust dissemination campaign to engage the organisers of music festivals and other events, as well as cities, in the project;
- identification of the film industry as another sector in which EVERYWH2ERE's gensets could be demonstrated;
- identification of the project's key exploitable results and analysis of partners' exploitation intentions and of the intellectual property rights framework.

Effective and appropriate project communication was performed through the project's website, social media, flyers and posters, and dedicated events. A strong effort was made to reach the maximum number of key players in the relevant industries, potential end users and members of the general public who were interested in EVERYWH2ERE solutions. Such efforts resulted in the EVERYWH2ERE consortium being acknowledged through three relevant Fuel Cells and Hydrogen Joint Undertaking (FCH JU) awards:

- FCH JU Best Outreach Award 2020;
- FCH JU Best Innovation Award 2021;
- Atlantic Project Award 2023.


## FUTURE STEPS AND PLANS

The project has finished."

External stakeholders showed interest in the future replication of EVERYWH2ERE gensets in additional demonstration activities at public events (FERCAM-run events in Italy and Expo 2025 in Japan) and offshore (at the Oceanic Platform of the Canary Islands in Spain). In addition, a non-binding letter of intent in which RINA Consulting, Parco Scientifico Tecnologico per l'Ambiente SpA, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón, Genport and PowerCell Sweden commit to following up with the activities related to the EVERYWH2ERE project prototypes is in the process of being signed. This letter sets out the interests of the partners in keeping the prototypes and considers them free to operate them and demonstrate their functionality or to move them to other locations for further research or demonstrations.



## PROJECT TARGETS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?
	CO <sub>2</sub> eq emission savings compared with grid supply	kgCO <sub>2</sub> eq	–	242 (Acciona); 75.6 (Motorland); 24.9 (port of Tenerife)	
	Project website visits	number	–	< 1 000	
	Contractual costs for rental compared with diesel or fossil-fuel-based gensets	%	Around 10	N/A	
	GHG emission savings compared with fossil-fuel-based gensets	kgCO <sub>2</sub> eq	–	> 2 500 (Acciona); 230 (Motorland); 75.9 (port of Tenerife)	
	Stack efficiency	%	50	50.2	
	Reduction of manufacturing costs and time	%	– 20	N/A	
	PBT for a construction company purchasing a genset and using it at its construction sites	years	–	N/A	
	Weight	kg	–	8 600	
	Volume	m <sup>3</sup>	–	32	
	Number of social media interactions	–	–	1 500	
Project's own objectives	FC peak voltage	V	–	270–480	
	LCOE of the genset (identification of replication market with contractual costs ± 10 % of those of current power supply solutions)	€/kWh	1.1	N/A	
	OPEX for maintenance and hydrogen supply	%	– 10	N/A	
	Festivals and events hosting EVERYWH2ERE's H2 Corner	number	3	4	
	Cities involved	number	20	> 20	
	Festivals and events hosting EVERYWH2ERE gensets	number	3–6	2 for 25 kW; 5 for 100 kW	
	Future manufacturing CAPEX (of the system)	€/kW	5 500	2 394 for 100 kW genset; 5 500 for 25 kW genset	
	FC peak current	A	–	250–450	✓
	Stack durability	equivalent operating hours	20 000	20 000	
	Noise emission of the full genset (not only the FC SuSy)	dB	< 65	60	
	Installation time	hours	6	N/A	
	Stakeholder events attended	–	3	19	