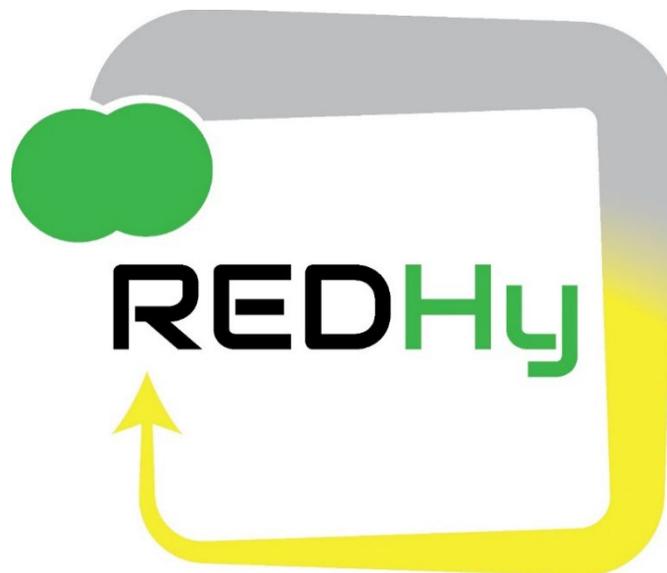


HORIZON EUROPE PROGRAMME
TOPIC HORIZON-CLEANH2-2023-01-01

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REDHY

**Redox-Mediated economic, critical raw material free,
low capex and highly efficient green hydrogen
production technology**



REDHY - Deliverable report

D5.3 – MEA engineering for zero – gap cell

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Related WP	WP5	
Deliverable Title	MEAS engineering for zero – gap cell	
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Public Summary

REDHY project develops an innovative water electrolysis technology based on stable single cell architecture that couples redox mediators with external heterogeneous catalysts for efficient O₂ and H₂ evolution. A key objective is to spatially separate oxygen and hydrogen production within the cell, reducing gas crossover and safety risks, enhancing overall cell performance and utilization as well.

The main goal is to validate an electrochemical system that integrate bipolar membranes, specific redox couples, heterogeneous catalysts and advanced high-surface-area electrodes, all designed using non-critical raw materials.

The deliverable D5.3 focuses on the engineering and fabrication of membrane electrode assemblies (MEAs) manufactured with bipolar membranes, high surface electrode coated with CRM-free heterogeneous catalysts in the presence of selected redox couples. Electrochemical and durability tests on zero – gap cells are carried out to evaluate the electrochemical efficiency, the activity of catalysts and redox mediators in order to providing a proof-of-concept for scalable efficient electrolyzer designs.

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3	Uniresearch B.V.	UNR	SME	NL
4	Universitat Politecnica de Valancia	UPV	HES	ES
5	Industrie De Nora S.p.A.	IDN	IND	IT
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7	Consiglio Nazionale Delle Ricerche	CNR	RTO	IT

*IND-Industry; SME-Small and medium enterprise; RTO-Research organization; HES-Higher Educational Establishment

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