D11.1 Interim Exploitation Plan

by ETA Florence Renewable Energies

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Author(s)	Linh Nguyen	
Contributor(s)		
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About DELYCIOUS

As Europe accelerates its transition to clean energy, the Net Zero Industry Act identifies low-carbon hydrogen production as a strategic priority. DELYCIOUS tackles key challenges in water electrolysis technology, focusing on extending electrolyser lifespans and reducing operational costs under variable renewable energy sources. In DELYCIOUS, the development of cost-efficient, innovative, open, universal, and safe diagnostic tools to investigate the chemical and electrochemical properties of electrolysis systems is foreseen. This project combines Raman Spectroscopy (Raman) and Electrochemical Impedance Spectroscopy (EIS), to explore the chemical and electrochemical properties of electrolysis systems. By using both physical and data-driven modeling, it will be possible to identify important degradation parameters. To ensure that the diagnostic tools work effectively in various temperature ranges and across various electrolysis technologies, three technologies namely Alkaline Electrolysis (AEL), Proton Exchange Membrane Electrolysis (PEMEL), and Solid Oxide Electrolysis (SOEL) are addressed in this project, with a demonstration on alkaline electrolysers beyond 100 KW.

Consortium

Fraunhofer IWES

Coordinator

Air Liquide

UNIVERSITY OF TWENTE.

DUMAREY

HORIBA

etaflorence

stargate hydrogen

SIVONIC

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Publishable Summary

This Interim Exploitation Plan provides the assessment of how the knowledge, technologies, and methodologies generated by DELYCIOUS may create value beyond the lifetime of the project. The analysis identifies the project's 10 emerging innovation assets (Key Exploitable Results) and examines their potential contribution to future research, industrial applications, technology development, and service provision. It also considers the evolving policy landscape, highlighting the growing push for intelligent solutions capable of supporting predictive maintenance, performance optimization, and reliable operation of electrolyser at industrial scale. The report also stressed that the ongoing expansion of European hydrogen economy, together with increasing digitalization of industrial energy systems, creates favorable conditions for the future evaluation and uptake of DELYCIOUS results. During the second half of the project, exploitation activities will focus on further validating the identified innovations, engaging relevant industrial stakeholders, refining exploitation pathways, and preparing foundations for long-term impact. These activities will culminate in the Final Exploitation Plan, which will refine the strategy for maximizing the sustainable use and exploitation of DELYCIOUS results beyond the project's completion.

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