DELYCIOUS

Clean Hydrogen Partnership

Co-funded by the European Union

D4.1 EIS device implementation specification

by HORIBA

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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

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DUMAREY

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Publishable Summary

In preparation for the device integration in task 4.5 and device development in task 4.3 this deliverable identifies the critical design parameters as well as the hard- and software interfaces between the EIS device and the large-scale test bench. The critical integration interfaces are between current node and the main power supply lines and the safety interlock with the test bench. Software interfaces have already been developed ahead of time in task 4.2 and are used as part of the lab-scale tests at Air Liquide ICF.

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