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DELYCIOUS

Clean Hydrogen Partnership

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D10.4 Feedback and Results from Webinars and Events



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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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Executive Summary

Engagement in targeted events and dissemination activities represents a cornerstone of the DELYCIOUS project consortium's strategy to maximize the visibility, impact, and uptake of its innovative diagnostic tools for electrolysers. Once tangible technical progress and results become available, the project is committed to proactive yet targeted dissemination efforts, including a particular focus on technical audiences, including researchers, industry stakeholders, and policymakers. By the time of this reporting, the DELYCIOUS project has successfully:

- Organized one major dissemination webinar in collaboration with ELECTROLIFE Project (Enhance Knowledge on Comprehensive Electrolysers Technologies Degradation through Modeling, Testing and Lifetime Prevision, toward Industrial Implementation – ID: 101137802) – a fellow Clean Hydrogen Joint Undertaking project, attracting over 120 highly engaged participants from across electrolyser technologies and green hydrogen value chain.
- Participated in three external events organized by leading industry and research organizations, ensuring the project's insights reached relevant and impactful audiences.

Each activity was strategically planned to prioritize engagement quality over quantity, ensuring that the DELYCIOUS project is represented in the most relevant forums and that its insights are communicated to audience who can directly benefit from its advancements, whether in research, industrial applications, or policy development.

Key highlight on the Joint Dissemination Webinar with ELECTROLIFE project

The joint dissemination webinar, co-organized with ELECTROLIFE, stands as a flagship achievement of the project's dissemination efforts by the time of this reporting. This collaborative initiative not only amplified the visibility of both projects but also demonstrated the synergistic potential of EU-funded projects working in tandem. By pooling resources, expertise and networks, the webinar:

- Exceeded the registration and participants KPI, reaching a diverse and highly relevant audience.
- Strengthened cross-project collaboration, fostering meaningful exchanges between complementary initiatives under the Clean Hydrogen JU.
- Showcased the value of EU-funded research, highlighting how coordinated efforts can maximize impact and accelerate the transition to a sustainable hydrogen economy.

Overall, these actions underscore the project's commitment to leveraging partnerships to enhance dissemination outcomes, ensuring that DELYCIOUS contributes not only to its own objectives but also to the broader EU Green Deal and hydrogen strategy.

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Table of Contents

About DELYCIOUS 3
Executive Summary 4
1. Participation of DELYCIOUS in events 6
Event 1: Hydrogen Technology Expo 6
Event 2: Fourth Workshop on Integration of Local Energy Systems 6
Event 3: cH2ance Showcase Workshop: Testing, Inspection, Certification 7
2. Joint Dissemination Webinar “Advancing Online Diagnostics and Building Durable Electrolysis Systems for Europe’s Hydrogen Future” 8
2.1. Event Overview 8
2.2. Organization Details 8
2.3. Audience and Engagement 9
2.4. Technical Content Delivery 10
2.5. Key Outcomes and Impact 11

List of Tables

Table 1: Summary of registration report for the webinar, generated from Zoom Report 9

List of Figures

Figure 1: Professional backgrounds of webinar registrants 10

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1. Participation of DELYCIOUS in events

Event 1: Hydrogen Technology Expo

1. Event Overview
   - **Date**: 22 October 2025
   - **Location**: Hamburg, Germany
   - **Organizers:** TransGlobal Events
   - **Type of event:** Industry Expo
   - **Background information:** The event aims to accelerate the commercialisation of hydrogen as a mainstream clean energy provider. It brings together the entire hydrogen and fuel cell value chain to showcase advanced engineering solutions, low-carbon production technologies, and infrastructure. This provides a highly relevant background for SIVONIC to present the company and its innovation and engagement, including its contribution to the DELYCIOUS project.
2. Project Participation Details
   - **Project representative:** Akash Vijayan, SIVONIC
   - **Description**: Akash Vijayan engaged in several discussions with relevant industry stakeholders. As part of these interactions, SIVONIC's role within the DELYCIOUS project was introduced, highlighting the company's contribution in the field of advanced EIS-based diagnostics for electrolysers. DELYCIOUS project brochures were also effectively distributed and brief overview of the project objectives and expected impact was widely shared to interested participants.
3. Audience and Engagement
   - The aforementioned exchanges were held with representatives from approximately over 10 companies active across the electrolyser value chain, including suppliers, integrators, and operators.
4. Key Outcomes and Impact
   - **Dissemination achievement**: The project's goals and tools were communicated in form of informal exchanges and networking.

Event 2: Fourth Workshop on Integration of Local Energy Systems

1. Event Overview
   - **Date**: 04 November 2025
   - **Location**: Großer Westring 2, Bremerhaven, Germany
   - **Organizers:** Fraunhofer IWES
   - **Type of event:** Workshop
   - **Background information:** The workshop brought together industry professionals and researchers to discuss challenges and opportunities related to electrolyzer operation. A key topic was on profitability and strategies to enhance the competitiveness of green hydrogen

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production within energy markets. Also, a strong focus was on examining modelling and control of electrolyzers to ensure optimized performance, as well as grid integration.

2. Project Participation Details
   - **Role of DELYCIOUS**: Poster presentation
   - **Project representative:** Aline Luxa, Researcher, Fraunhofer IWES.
   - **Presentation title:** Introduction to DELYCIOUS – Diagnostic tools for ELectrolYsers: Cost-efficient, Innovative, Open, Universal and Safe
   - **Description**: The poster presentation was used to introduce workshop participants to the DELYCIOUS project and to highlight the relevance of diagnostic tools for profitable electrolyzer operation. Also, the opportunity was used to raise awareness for the project in the research community and industry.
3. Audience and Engagement
   - **Audience**: industry professionals, academic professionals
   - **Attendance**: 50 participants
4. Key Outcomes and Impact
   - **Dissemination achievement**: The project's goals and tools were communicated in form of a poster presentation.
   - **Networking opportunities**: An industry contact was made and there was a follow-up meeting to present more information on the project.
   - **Media coverage**: Distribution on LinkedIn.
   - **Follow-up actions:** Scheduled meeting with an interested industry contact.

Event 3: cH2ance Showcase Workshop: Testing, Inspection, Certification

1. Event Overview
   - **Date**: 04 February 2026
   - **Location**: HORIBA FuelCon GmbH, Otto-von-Guericke-Allee 20, 39179 Magdeburg-Barleben.
   - **Organizers:** HORIBA FuelCon GmbH
   - **Type of event:** Workshop
   - **Background information:** HZwo e.V. specializes in consulting on hydrogen technologies and funding opportunities as well as networking, collaboration opportunities and knowledge transfer between its members from academia and industry. The workshop was specifically targeted at testing solutions supporting the scale-up of series production for fuel cells and electrolysers. These testing solutions play a central role by reducing development time and ensuring quality standards are met.
2. Project Participation Details
   - **Role of DELYCIOUS**: Presentation
   - **Project representative:** Kurt Klauke, Product Manager SOFC/SOEC, HORIBA FuelCon GmbH, and Hannes Benecke, Managing Director (SIVONIC)
   - **Presentation title:** Introduction to DELYCIOUS – Diagnostic tools for ELectrolYsers: Cost-efficient, Innovative, Open, Universal and Safe (Kurt Klauke) and From Diagnostics to Advantage: High-performance EIS for Fuel Cells and Electrolysers (Hannes Benecke)

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- **Description**: A brief summary of the project's contribution through these presentations. The first presentation highlights that one of the central issues during scale-up is knowledge about the durability of the electrolyser system, which DELYCIOUS tackles by providing a platform capable of deriving a state of health from operating parameters using advanced sensors and system modeling. The second presentation also provided a brief overview of the project objective and impact, while highlighting SIVONIC's specific role in developing advanced diagnostic solutions. Overall, these contribution helped position DELYCIOUS within the broader context of industrial testing and performance optimization of hydrogen technologies.

3. Audience and Engagement
   - **Audience**: industry professionals and research group leaders within the Germany based HZwo e.V.
   - **Attendance**: ~20 attendees
4. Key Outcomes and Impact
   - **Dissemination achievement:** Increased awareness of the overall approach to the electrolyser management system as well as the specialized measurements Raman spectroscopy and EIS developed during DELYCIOUS.
   - **Networking opportunities:** A new industry contact was forwarded to the Raman development team to investigate future opportunities.

2. Joint Dissemination Webinar "Advancing Online Diagnostics and Building Durable Electrolysis Systems for Europe's Hydrogen Future"

2.1. Event Overview

- **Date and duration**: 29 January 2026 | 02 hours
- **Location**: Online via Zoom
- **Organizers:** Consortia of DELYCIOUS & ELECTROLIFE projects
- **Type of event:** Dissemination webinar
- **Background information:** Following the completion of the 1st year of project's implementation, DELYCIOUS consortium held the first dissemination webinar open for public attendance, in order to introduce about the project's mission and high-level objectives and workplan. The timing was strategic since the project partners were able to share some early, publishable insights generated from the project's activities that took place in the first year. To maximize impacts, the webinar was organized in collaboration with a sister CHP JU project, ELECTROLIFE.

2.2. Organization Details

- **Speakers and Panel:**
  - Alessandro Monteverde (Dr), Associate Professor – Politecnico di Torino
  - Aline Luxa, Researcher - Fraunhofer-Institut für Windenergiesysteme
  - Kurt Klauke, Product Manager SOFC/SOEC - HORIBA FuelCon GmbH

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- Giulia Raimondi (Dr), R&D Engineer, Hydrogen Team - Air Liquide
- Vincenzo Liso (Dr), Associate professor, Research Group Leader - Aalborg University
- Lutz Morawietz, Head of Algorithm Development - volytica diagnostics GmbH
- Anna Freiberg, Team Leader, Interface Engineering for Water Electrolysis - Helmholtz-Institut Erlangen-Nürnberg für Erneuerbare Energien

- **Facilitator**: Anika Kiecana (Dr) from Uniresearch B.V. - Dissemination Manager of ELECTRO-LIFE project.
- **Organization, dissemination, and reporting**: ETA Florence – Dissemination Manager of DELYCIOUS project.

2.3. Audience and Engagement

- **Registration**: 240

Table 1: Summary of registration report for the webinar, generated from Zoom Report.

Registration report (retrieved from Zoom)						
Report generated time: 01/29/2026 04:55:22PM						
Topic	ID	Scheduled Time	Duration (minutes)	No. Registrants	No. Cancelled registrants	No. Approved registrants
Webinar: Advancing Online Diagnostics and Building Durable Electrolysis Systems for Europe's Hydrogen Future.	879 5207 8328	01/29/2026 03:00:00PM	105	240	5	240

- **Actual attendance**: 122 (50.8% of registration rate).
- **Registrants' background analysis**:

The participant job titles presented in the chart were standardized and consolidated into broader professional categories to streamline the analysis and improve readability. For example, the **"Researcher / Research Associate / Research Fellow"** category includes titles such as *Researcher, Senior Researcher, Principal Researcher, Research Fellow, Research Associate, Research Scholar, Ricercatore,* and *Investigador*. Likewise, the **"PhD Student / Candidate / Scholar"** category combines titles including *PhD Student, PhD Candidate, PhD Fellow, PhD Scholar, Doktorand,* and *Estudiante de Doctorado*.

The **"Professor"** category includes *Professor, Associate Professor, Assistant Professor,* and specialized academic titles such as *Professor of Electrochemical Engineering*. *Master Student, Graduate, Intern,* and *University Bachelor Student* were standardized under **"Students & Early Career."** Management and leadership positions, including *Director, Technical Director, CEO, VP,*

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Product Manager, and *R&D Manager*, were consolidated into broader **"Management & Leadership"** categories. Similarly, engineering-related roles such as *Mechanical Engineer, Process Engineer, Hydrogen Engineer, R&D Engineer,* and *Technical Specialists* were grouped under **"Engineer / Technical Specialist."**

Overall, the collected stakeholder data demonstrates that DELYCIOUS has established a strong foundation within the research and industrial hydrogen communities.

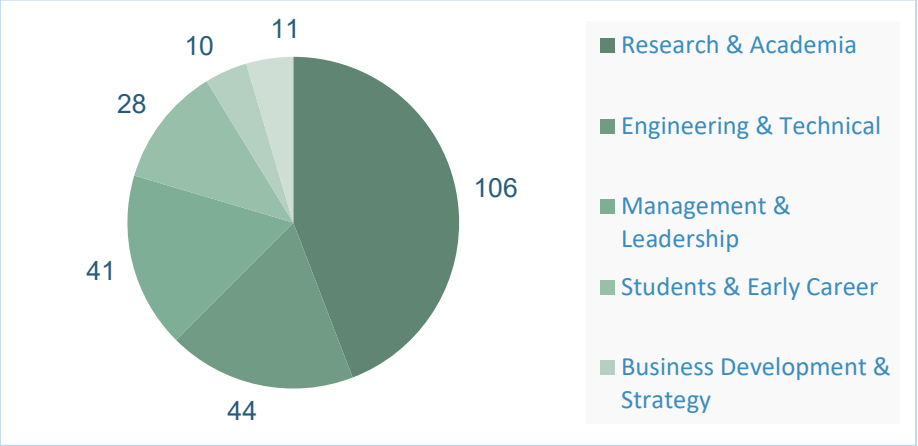


Figure 1: Professional background of webinar registrants

2.4. Technical Content Delivery

The session opened with introductory remarks by Aline Luxa and Alessandro Hugo Monteverde Videla, who presented the objectives, missions, core technologies, and consortium structures of both DELYCIOUS and ELECTROLIFE, highlighting their alignment with Europe's hydrogen and climate goals.

The webinar continued with a keynote presentation by Anna T. S. Freiberg, Team Leader for Interface Engineering for Water Electrolysis at Forschungszentrum Jülich GmbH, who outlined the synergies between the two projects. Her presentation emphasized how joint efforts aim to accelerate the decarbonisation of European industry by overcoming current limitations in electrolysis technologies and enabling cost-efficient green hydrogen production.

A central focus of the session was the complementary research approaches of the two projects. ELECTROLIFE concentrates on experimental investigations of component degradation mechanisms across five electrolysis technologies, including ex-situ analysis of stressor impacts and short-stack degradation and lifetime studies. In parallel, DELYCIOUS focuses on performance degradation analysis in three electrolysis technologies and the large-scale demonstration of monitoring and diagnostic tools on a > 100 KW alkaline electrolyser (AEL).

Together, the projects address both predictive lifetime diagnostics and operational optimisation. While ELECTROLIFE advances degradation modelling to support durability prediction, DELYCIOUS is developing an Energy Management System (EMS) and a monitoring and diagnostic platform to enhance real-time monitoring and system performance optimisation. These

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complementary outcomes contribute directly to improving the reliability, efficiency, and scalability of electrolyser systems across Europe.

A key highlight of the webinar was the "Technical Deep-dive" session delivered by experts driving the technological excellence of both projects. These presentations offered participants a detailed view into the tools, methodologies, and innovations shaping the future of durable and cost-effective electrolysis systems.

Vicenzo Liso (Associate Professor), Research Group Leader at Aalborg University presented ELECTROLIFE's approach to degradation modelling and lifetime prediction in water electrolysis, addressing the realities of hydrogen production costs and existing data gaps. His sharing covered the development of mechanistic degradation models for both low- and high-temperature electrolysis technologies, which provides valuable insights into predictive diagnostics and long-term system performance.

The discussion was followed by Lutz Morawietz, Head of Algorithm Development at volytica diagnostics GmbH who demonstrated how diagnostic tools are applied step by step within the ELECTROLIFE framework. His sharing illustrates practical pathways from data acquisition and standardisation to actionable performance insights for electrolyser operators and developers.

Complementing these perspectives, Kurt Klauke, Product Manager SOFC/SOEC at HORIBA FuelCon GmbH shared insights into advanced diagnostic hardware concepts integrated directly into electrolyser test stations within the scope of DELYCIOUS project. His presentation highlighted the combination of Raman spectroscopy and electrochemical impedance spectroscopy (EIS) devices to enable state-of-health analysis as well as calculating and recommending optimized operating parameters.

The webinar concluded with a 30-minute panel discussion, featuring a lively and interactive exchange between the speakers and the audience. Participants engaged actively in real time, submitting questions that were addressed directly by the experts, reflecting strong interest in both projects and their technical approaches.

Dr. Giulia Raimondi, R&D Engineer in the Hydrogen Team at Air Liquide and Technical Manager of the DELYCIOUS project, joined the panel to respond to audience questions. Giulia provided valuable insights into the role of monitoring and diagnostics in enabling predictive maintenance, reducing electrolyser downtime, and improving overall system reliability, alongside other key technical considerations.

2.5. Key Outcomes and Impact

- **Dissemination post-event**: Full summary with full recording and all speakers' presentation slides are disseminated widely on DELYCIOUS project's website and LinkedIn. The content contained within presentation only include information available for public dissemination. Participants were informed about the recording of the webinar.
- **Knowledge exchange & EU-funded projects collaboration**: The webinar fostered valuable exchanges between research and industry, highlighting key challenges and opportunities

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in advancing durable electrolysis systems. It also strengthens cross-collaboration and increased visibility of DELYCIOUS innovations within the hydrogen community in Europe and beyond. Full archive of Q&A during the event can be viewed here.

- **Follow-up post-event:** The consortium received private questions and requests sending to LinkedIn account and project's email, showcasing continued audiences' continued interest post-webinar and potential future engagements.

Thank you for hosting the informative session regarding the two EU projects. I would like to clarify a question from the session that may have been misunderstood.bRegarding the current operation of water electrolysers, I am interested in the specific improvements identified through modelling or experimental demonstrations when introducing the control strategies developed in these projects. While I appreciate the complexity of this inquiry, I assume that a benchmark or baseline will be used to demonstrate the efficacy of these new strategies when the project outcomes are finalised. Could you please seek further clarification on this from the presenters? I look forward to your response.

-Y. R. sent to LinkedIn message -



Good morning,
First of all, I would like to thank the whole team behind yesterday's webinar for the valuable information that was shared.
I would also like to ask whether it would be possible to access the recorded video, as I was unable to attend the entire webinar due to scheduling constraints and meetings.
Thank you again.
Kind regards,

- *S. B. sent to DELYCIOUS project email -*

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