PEACE

NEWSLETTER No. 11

on hydrogen production

October 2026

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1. Editorial

Welcome to the 11th edition of the PEACE newsletter.

As the PEACE project moves closer to its completion at the end of 2026, the focus is increasingly shifting from development to **results, validation and the legacy of the project**. In recent months, the consortium has reached several important targets, including the preparation of the **50 kW high-pressure alkaline electrolysis demonstrator**, the achievement of **1 A cm^{-2} at below 1.8 V under pressurised conditions**, or the completion of the project's **Life Cycle Assessment**.

In this issue, we take a closer look at these results and at the knowledge generated throughout the project. You will also discover how PEACE is **sharing its expertise** with other European hydrogen projects and the wider research and industrial community.

Beyond PEACE, we bring you selected **news** from the rapidly developing hydrogen sector, upcoming **events** and new **funding opportunities** supporting the further deployment of renewable hydrogen technologies. As we enter the final stage of the project, we are proud to share not only what PEACE has achieved, but also the knowledge and innovations that we hope will contribute to the future development of efficient and sustainable hydrogen production.

Thank you for following the PEACE journey. We hope you enjoy this issue and continue with us as we take the final steps towards completing the project and sharing its legacy with the hydrogen community.

Dr. Fatemeh Razmjooei, PEACE project coordinator
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2. About PEACE

"Pressurized Efficient Alkaline EleCtrolysEr" (PEACE) project is a research and innovation activity funded under the EU Horizon Europe programme by the Clean Hydrogen Partnership and coordinated by the German Aerospace Center (DLR). The PEACE project will deliver **high-pressure alkaline electrolysis** (AEL) technology which will substantially **reduce hydrogen production costs**. We will propose a new concept of hydrogen production with **two-stage pressurization** that will be demonstrated on an AEL system of 50 kW capable of operating at pressures exceeding 50 bar. The integration of advanced components, innovative design, and optimized operation strategies will be explored through modelling and experimental testing, ultimately aiming to demonstrate a system with impressive efficiency characteristics (see more on the PEACE website).

Project members: German Aerospace Center (DLR); Materials Mates Italia (MMI); Eindhoven University of Technology (TU/e); Brandenburgische Technische Universität Cottbus Senftenberg (BTU); GRANT Garant (GG); The Hydrogen Chemistry Company (HyCC); Technical University of Denmark (DTU)

PEACE Project Team (February 2026), Source: PEACE project (CC-BY-NC-ND 4.0)

2.1 ENVIRONMENTAL FOOTPRINTS OF THE PEACE HIGH-PRESSURE ALKALINE ELECTROLYSIS

PEACE research team, under the lead of the **Technical University of Denmark/DTU**, has just completed **Life-Cycle Assessment (LCA)** of the PEACE high-pressure alkaline electrolysis concept, providing insights into the environmental performance of the technology and the factors that have the greatest influence on its footprint.

The assessment compared the **PEACE concept for direct hydrogen production at 90 bar** with conventional alkaline electrolysis at 1 and 30 bar, followed by compression to 90 bar. It considered the complete life cycle of the systems across **16 environmental impact categories and five electricity supply scenarios** (find out more about the methodology: *Life-Cycle Assessment. Assessing the environmental performance of high-pressure electrolysis*).

Life cycle of the PEACE concept considered for LCA, Source: PEACE project (CC-BY-NC-ND 4.0)

One of the clearest findings is the dominant role of **electricity supply**. The LCA shows that electricity is the main contributor to the climate-change impact of hydrogen production, highlighting the importance of combining efficient electrolysis technologies with low-carbon electricity sources.

The assessment also indicates the potential benefits of **direct high-pressure hydrogen production**. The PEACE 90-bar concept shows around **9–10% lower climate-change impact** than the 1-bar reference and around **3–4% lower** than the 30-bar reference, mainly by avoiding downstream compression.

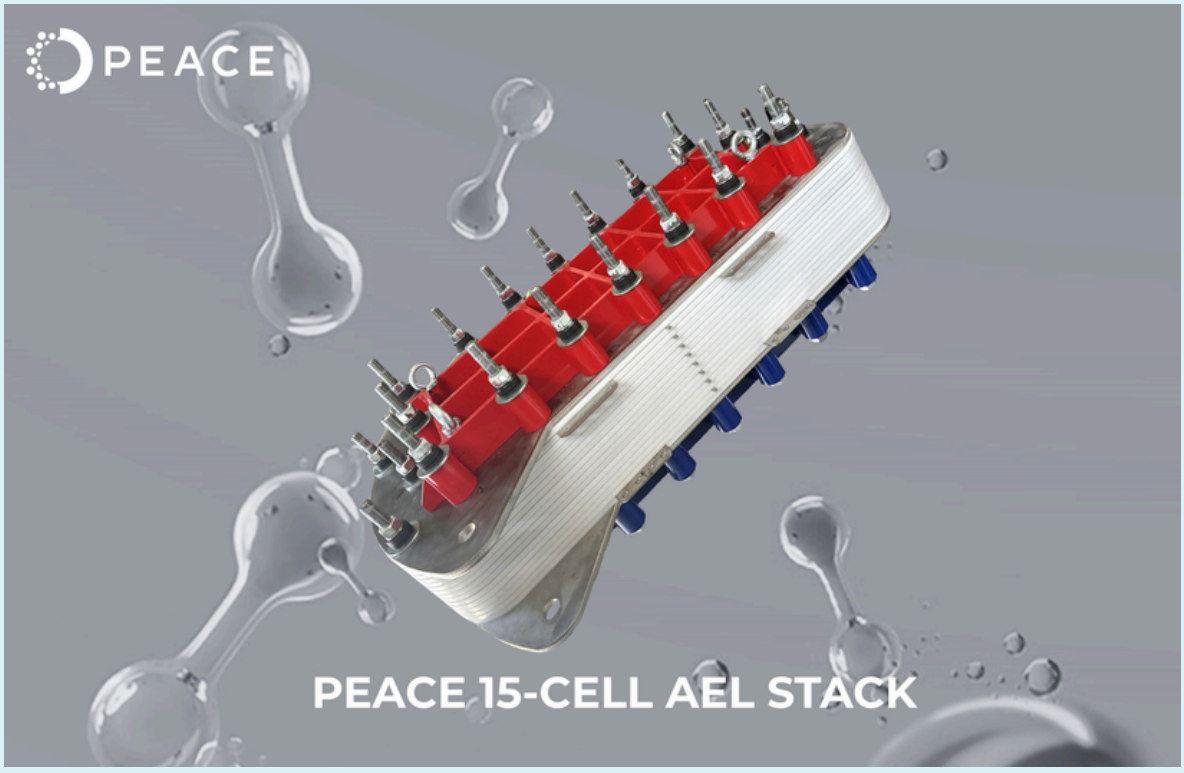
The LCA provides an additional environmental perspective for the PEACE technology development, helping to identify opportunities for further optimisation related to energy efficiency, material use and recycling.

Find out more about the PEACE LCA and its results: *Environmental footprints of high-pressure alkaline electrolysis*

2.2 OUTCOMES OF THE 7th PEACE PROJECT MEETING

At the end of September, the PEACE project held its **7th all-hands meeting** to review the latest achievements and define the final steps towards demonstrating high-pressure alkaline electrolysis technology.

The project is now focusing on the **installation of its 50 kW alkaline electrolysis demonstrator** (joined activity of **Material Mates Italia/MMI** and the **Brandenburg University of Technology Cottbus - Senftenberg/BTU**), designed to operate at pressures above 50 bar. The 15-cell demonstrator stack is ready for installation at the hydrogen test site of BTU.



PEACE AEL stack, Source: PEACE project
(CC-BY-NC-ND 4.0)

Meanwhile, the team has achieved the targeted cell performance of **1 A cm^{-2} below 1.8 V with a 100 cm² cell under pressurised conditions** (joined activity of **German Aerospace Center/DLR** and **Eindhoven University of Technology/TU/e**), while the **TEMPEST modelling framework** continues to support validation under dynamic operating conditions (by **DLR**).

The meeting also highlighted progress in **industrial integration and sustainability.** PEACE process simulations assessed the use of high-pressure hydrogen in applications such as methanol and ammonia synthesis (by **The Hydrogen Chemistry Company/HyCC** joined by **DLR**). The recently finalised life cycle assessment, see section 2.1, was presented to the consortium.

Finally, a dedicated knowledge-sharing session with the **EXSOTHyC project** (see more in section 2.3) was hosted during the meeting.

Find out more details: *7th PEACE project meeting*.

2.3 PEACE & EXSOTHyC: SHARING ALKALINE ELECTROLYSIS KNOW-HOW

On 24 September 2026, **PEACE** and the **EXSOTHyC project** met for an online knowledge-sharing session, bringing together two Horizon Europe projects working on different approaches to advancing **alkaline water electrolysis**.

The session provided a valuable project-to-project exchange on research results, technical challenges and perspectives for making hydrogen production **more efficient and cost-effective.** With both projects approaching their final stages, the meeting offered an excellent opportunity to exchange lessons learned and to look ahead to the further development and uptake of alkaline electrolysis technologies.

Find out more on the topics discussed during the session: *PEACE & EXOSTHyC Knowledge Sharing Session*

2.4 NEW INSIGHTS INTO BUBBLE DYNAMICS IN ALKALINE ELECTROLYSIS

A new peer-reviewed publication from the PEACE project provides fresh insights into **how hydrogen and oxygen bubbles behave** inside alkaline water electrolysers.

PEACE project researchers **Saksham Pandey** and **Thijs de Groot** from the Department of Chemical Engineering and Chemistry at **Eindhoven University of Technology/TU/e**, with co-authors, used **high-speed imaging** to study bubble behaviour under conditions relevant to industrial alkaline electrolysis.

The study shows that **oxygen bubbles tend to remain attached** to the electrode and grow through coalescence, while h**ydrogen bubbles form smaller bubbles that glide** along the electrode surface. Importantly, bubble dynamics were found to be strongly influenced by current density, providing new insights into bubble-related losses at higher operating currents.

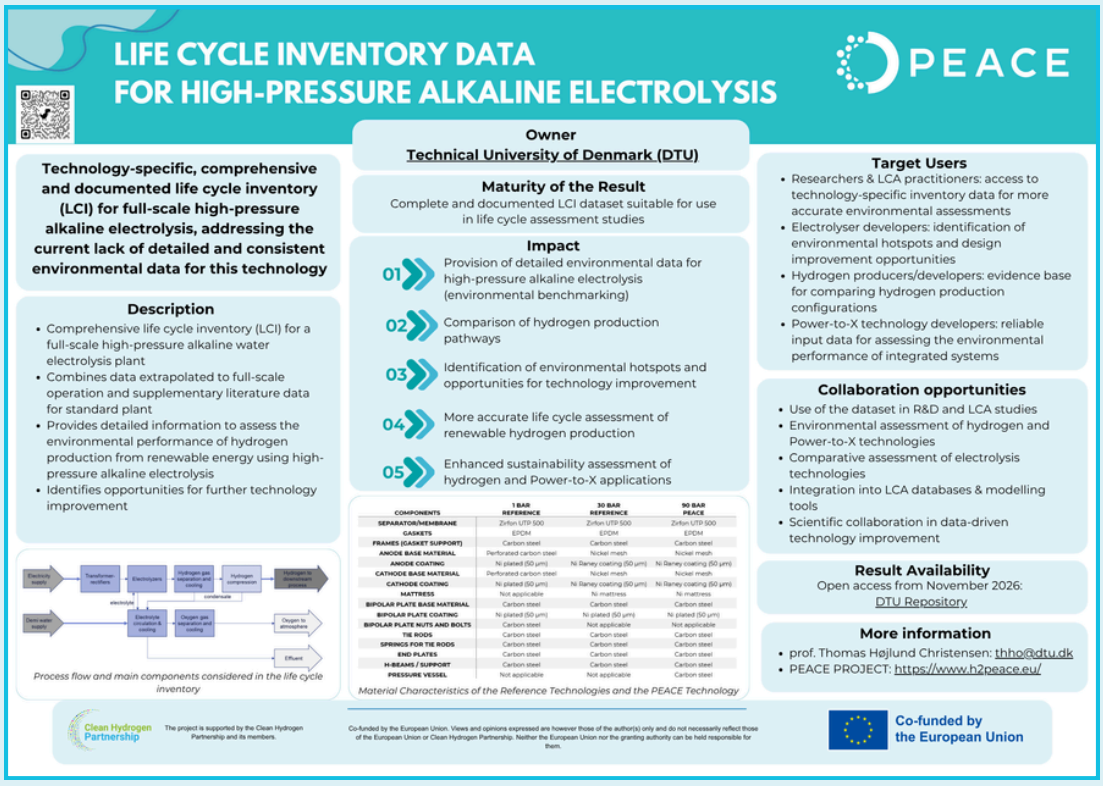
These findings can support the **development of electrode and cell designs that reduce bubble-induced resistance** and enable more efficient, high-current-density operation.

Read more on the published results: *PEACE project sheds new light on bubble dynamics in alkaline water electrolysis*

2.5 FROM PEACE PRESENTATION TO PEACE LEGACY

As the PEACE project approaches its final months, the **project website** is evolving too - shifting its focus from presenting the project and its activities towards **showcasing the results, innovations and knowledge that PEACE will leave behind**.

The website structure and content have recently been updated to give greater visibility to the project's **main results and exploitable outcomes**. A dedicated **Results** section now provides space for the PEACE key exploitable results, and will be supported by a series of concise **Innovation Briefs** highlighting the technologies, methods and knowledge developed by the consortium.



Innovation Brief on Life Cycle Inventory Data, Source: PEACE project (CC-BY-NC-ND 4.0)

PEACE´s scientific outcomes are presented in the **peer-reviewed publications section**, with direct links to the open access papers in leading electrochemistry journals.

The website is also being expanded with a dedicated **Datasets** page, providing direct access to research datasets generated by the project and deposited in trusted repositories. The **PEACE Zenodo community** serves as a project information hub, bringing together datasets and other research outputs.

Together, these updates mark an important transition for PEACE: from communicating what the project is doing to communicating **what the project has achieved and what it can contribute** beyond the project lifetime.

Let´s explore the PEACE website and discover what PEACE can bring to the hydrogen community: *https://www.h2peace.eu/public-media*

2.6 PEACE BUSY AFTER THE SUMMER BREAK

The PEACE project has had a busy start to the autumn, with project researchers and experts presenting the latest work on high-pressure alkaline electrolysis at events across Europe.

From the Beskid Mountains to Capri

The autumn event series started at the **International Energy and Environment Conference**, in the Beskid Mountains of Czechia, where PEACE Coordinator **Dr Fatemeh Razmjooei** (DLR) presented approaches to improving the operational flexibility, efficiency and reliability of alkaline water electrolyzers under fluctuating operating conditions. Her presentation was complemented by a poster from **Hans Wiggenhauser** (DLR) on the transient simulation of pressurized alkaline electrolysis, using the TEMPEST modelling framework (see more: *PEACE Project at International Energy and Environment Conference: 7-9 September 2026*).

A week later, PEACE moved to Capri, Italy, for the **European Fuel Cells and Hydrogen Piero Lunghi Conference 2026**. **Dr Fatemeh Razmjooei** (DLR) highlighted how advanced alkaline electrolysers can move beyond the limits of conventional systems by combining improved stack components, smarter operating strategies, and transient modelling. **Kamal Ghotia** (DLR) presented a poster on the dynamic operation of pressurised alkaline electrolysers, highlighting the effects of pressure and electrolyte flow management on gas purity and operational stability (see more: *PEACE Project at European Fuel Cells and Hydrogen Piero Lunghi Conference 2026: 15-17 September 2026*).

PEACE project displayed on conferences across Europe in automn 2026, Source: PEACE Project (CC-BY-NC-ND 4.0)

PEACE perspective in Milan and Porto

In mid-September, PEACE was also represented at the **Italian Electrochemistry Days (GEI2026)** in Milan through our partner **Materials Mates Italia** (MMI). The PEACE September tour then continued at **Renewable Energy Grid Integration Week** in Porto, Portugal, where **Hans Wiggenhauser** (DLR) presented the experimental validation of the TEMPEST transient model for PEACE's high-pressure alkaline electrolysis system (see more: *PEACE Project at Renewable Energy Grid Integration Week: 30 September 2026*).

And the last stop: Dresden

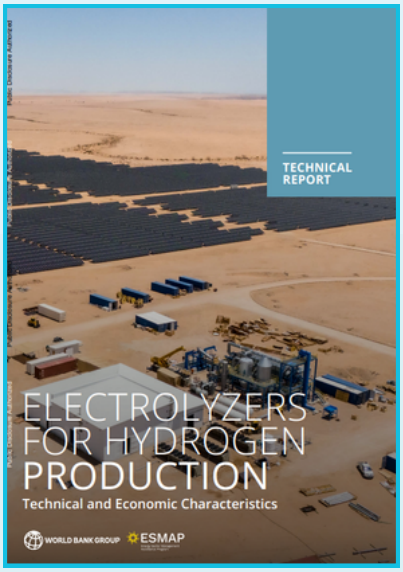
The PEACE autumn knowledge-sharing continued in Dresden, Germany, where **Thijs de Groot** (TU/e) shared his alkaline electrolysis (AEL) know-how while debunking common myths in alkaline electrolysis at the **9th Industry Workshop on Advanced Alkaline-based Electrolysis** (see more: *Thijs de Groot speaking at 9th Industry Workshop Advanced Alkaline-based Electrolysis (AEL/AEMEL): 8 October 2026*).

These events have provided the PEACE consortium with opportunities to present research results while exchanging knowledge with researchers, industry representatives and other hydrogen stakeholders. **Innovation is meant to be shared!**

3. Hydrogen News

3.1 TWO HYDROGEN-FOCUSED PUBLICATIONS NOT TO BE MISSED

Recently, two important global publications have provided valuable insights into the current state and future development of the hydrogen sector.



The **World Bank's Electrolyzers for Hydrogen Production: Technical and Economic Characteristics** offers a comprehensive global assessment of electrolyzer technologies, covering their technical performance, costs, deployment and market perspectives. Among its key findings, **alkaline electrolysis currently accounts for the largest share of installed electrolyzer capacity**, while significant cost-reduction potential lies in balance-of-plant, construction and system integration.
Explore the report

The **Hydrogen Council's Global Hydrogen Compass 2026** takes a broader look at the development of the global clean hydrogen industry. It reports a continued growth of the sector with **USD 130 billion in committed investment** across more than **570 projects**, while highlighting the growing importance of **energy security, resilience and industrial growth** alongside decarbonisation as drivers of hydrogen deployment.
Explore the report

3.2 INDUSTRY CALLS TO MAINTAIN EU RENEWABLE HYDROGEN TARGETS

A leaked **copy of the European Commission's Impact Assessment for the revision of the EU Renewable Energy Directive (RED III)** reportedly indicates a potentially significant change in the treatment of renewable fuels of non-biological origin (RFNBOs). The leaked document suggests that **removing the RFNBO obligation from both the transport and industry targets** is being considered.

In response, the European hydrogen industry is calling on EU policymakers to **maintain the binding RFNBO targets**, arguing that they provide an important foundation for the development of Europe's renewable hydrogen market.

In a recent statement, **Hydrogen Europe and industry stakeholders** stressed that weakening the targets could undermine investment certainty and slow the development of the European hydrogen value chain. The debate highlights the importance of a **stable and predictable regulatory framework** for scaling up renewable hydrogen production and use in Europe.

Source of the news

4. Hydrogen Events

Florence Electrolyser Conference, 2-3 December 2026, Florence (IT)

The Florence Electrolyser Conference 2026 will bring together industry experts, researchers and technology developers to discuss the latest developments in **large-scale electrolysis and its industrial application**. As the 10th edition of the established Berlin Electrolyser Conference Series, the event will focus on advanced electrolyser systems and components, manufacturing challenges and techno-economic aspects shaping the future of industrial electrolysis.

Event link

ENDURE Sister Projects Workshop, 04 December 2026, Brussels (BE)

A one-day Sister Projects Workshop, organised by the **ENDURE project**, will bring together participants from **EU-funded projects working on water electrolysis** at the Clean Hydrogen Partnership premises in Brussels. The event will combine **project presentations with interactive round-table discussions** on shared challenges and aims to provide a broader overview of progress in water electrolysis research and innovation across Europe.

Event link

5. Hydrogen Project Funding Opportunities

International Hydrogen Projects – Module 1 and 2 (Germany)

Germany has launched a third call for project proposals under its funding scheme for international hydrogen projects, supporting the **development of renewable hydrogen and hydrogen derivative production facilities** outside the European Economic Area and Switzerland**,** with the aim of future supply to Germany. Under **Module 1**, German companies and research institutions can receive funding of up to €30 million **for investment and preparatory activities**, while **Module 2** supports **accompanying research at technology readiness levels 1–3**. Projects are expected to demonstrate strong German and European value added and potential import routes to Germany.

Submission deadline: 17 December 2026

Hydrogen Cities

A forthcoming Coordination and Support action (CSA) (**HORIZON-MISS-2027-04-CIT-02**) aims to **accelerate the adoption of renewable hydrogen in cities.** Creation of twinning partnerships between experienced Hydrogen Valleys and cities seeking to decarbonise hard-to-abate sectors such as industry, heavy transport, aviation, and maritime activities will be supported (grant amount expected: €5 million).

Through tailored mentoring, feasibility studies, implementation roadmaps, and knowledge exchange, the initiative will **help cities develop practical hydrogen strategies** while fostering collaboration between local authorities, industry, researchers, and citizens. The call creates new opportunities for cities and industrial stakeholders to collaborate on deploying renewable hydrogen solutions, helping translate successful Hydrogen Valley experiences into practical decarbonisation projects.

Opening date: 9 February 2027
Submission deadline: 7 October 2027

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"Pressurized Efficient Alkaline EleCtrolysEr" (PEACE) is a research and innovation project funded under the EU **Horizon Europe programme** by the **Clean Hydrogen Partnership.**

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HyCC

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Clean Hydrogen Partnership

The project is supported by the Clean Hydrogen Partnership and its members.

Co-funded by the European Union

Co-funded by the European Union. Views and opininons expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Clean Hydrogen Partnership. Neither the European Union nor the granting authority can be held responsible for them.