PEACE

NEWSLETTER No. 3

on hydrogen production

May 2024

Content

1. Editorial

Preparation of the third edition of the PEACE quarterly Newsletter has been framed by two significant hydrogen-related events. Firstly, the closure of the extensive Clean Hydrogen Partnership call for hydrogen research proposals in mid-April, offering over € 113 million in funding, has generated considerable interest within the hydrogen community. A wide-ranging scope covering research and innovation activities across the entire hydrogen value chain has resulted in about 150 proposals submitted. For many of us, this has led to countless nights of refining our research proposals, drawing on our experiences, and leveraging the results of our preceding research endeavours. I extend my best wishes to all applicants of this call!

Secondly, the outcomes of the inaugural auction of the European Hydrogen Bank for renewable hydrogen production (more details in section 4) have indicated the emergence of a European hydrogen market. As researchers, it is important that we heed this signal and strive to contribute our expertise in hydrogen production technology to the European market, thereby supporting the EU Hydrogen Strategy and the targes outlined in the Green Deal.

Our PEACE ('Pressurized Efficient Alkaline EleCtrolysEr') project is progressing admirably towards demonstration of an innovative technology in high-pressure alkaline electrolysis for the cost-effective production of (green) hydrogen. This edition of the newsletter provides insights into the scientific advancements of the PEACE project and sheds light on project data management. I hope you find this issue an enjoyable read!

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Institute of Engineering Thermodynamics / Energy System Integration Department
@DLR_Energie

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 more than 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 PEACE website).

The section 2.1 presents the PEACE project progress since its start in June 2023. The following section 2.2, then, deeps down to the project’s report on data management and presents PEACE datasets that are generated throughout the project.

PEACE project team meeting in Stuttgart, Source: PEACE project

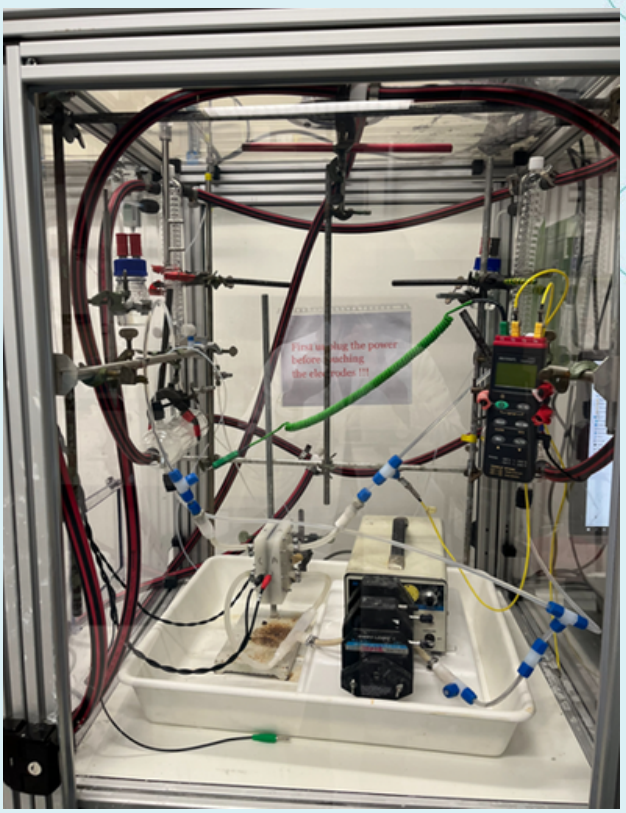
2.1 PEACE current developments

In late February 2024, the PEACE project team gathered at the DLR premises in Stuttgart, Germany, for the first in-person meeting. Under the gracious invitation of Dr. Fatemeh Sanaz Razmjooei, the Coordinator from the DLR Institute of Engineering Thermodynamics, we have reviewed the progress of our research & innovation activities, exchanged insights on ongoing developments, and discuss forthcoming steps.

DLR in Stuttgart, Source: DLR (CC BY-NC-ND 3.0)

During the initial year of project implementation, our focus primarily centered on advancing **electrolyser cell/ stack components**. Research teams from Eindhoven University of Technology (TU/e), the German Aerospace Center (DLR) and Materials Mates Italia (MMI) meticulously presented the ongoing activity for selection of the optimal cell/stack components based on their electrochemical performance and robustness. These discussion and optimization will be utilized for further optimization of final PEACE stack in the project's future tasks.

Meanwhile, MMI, in collaboration with colleagues from Brandenburg University of Technology Cottbus-Senftenberg (BTU), has been diligently engaged in designing the pressurized stack, along with the **enhancement of stack components designs**. Mechanical analysis results have been outlined, and initial plans for separators and bipolar plates have been drafted. Notably, the Italian team is ready for PEACE components prototyping following the acquisition of the gantry mill machine.



TU/e setup for PEACE components testing, Source: TU/e

Presently, ongoing testing of cell/stack components is underway, with initial findings being internally discussed. Additionally, collaborative efforts are also ongoing among PEACE team members to establish a unified testing protocol.

Concurrently, the BTU team has been actively involved in defining the **Balance of Plant** (BoP) for the PEACE high-pressure alkaline electrolysis (AEL) stack demonstrator. This demonstration system is set to be mounted and operated at the BTU premises in autumn 2025 in collaboration with MMI and DLR. A Piping and Instrumentation Diagram outlining modifications necessary to expand the current setup for a dual-stage pressure AEL system has been drafted. Equipment requirements for these modifications have been identified, and procurement processes are underway. Additionally, the PEACE AEL system will undergo **Hazard and Operability procedure analysis**, with the MMI team having developed a framework specifically tailored for the PEACE study.

Collaterally to the PEACE material research, significant strides have been made by DLR in **numerical simulations**, with two simulation scenarios established. Scenario 1 focuses on hydrogen production within a European ammonia plant, while Scenario 2 delves into hydrogen utilisation for methanol production, both incorporating upstream integration with wind and solar power. Operational strategies for both scenarios will be developed in subsequent stages of the project.

Furthermore, PEACE research in the world of algorithms is currently targeted at the DLR **modelling framework** known as “Transient Electrochemical Reactor Model for Process and Energy Systems (TEMPEST)”. This framework integrates data from all PEACE AEL stack components and BoP analyses to form a comprehensive PEACE electrolyser simulation model. This model will facilitate the establishment of operation strategies for the PEACE AEL demonstrator, with experimental results from the demonstrator’s operation (expected around 2025/2026) serving to validate and refine the model’s parameters.

Lastly, the **Life Cycle Assessment** (LCA), aligned with the ISO 14040/14044 guidelines, to evaluate the environmental benefits and drawbacks of the PEACE AEL technology has been initiated by the team at the Technical University of Denmark (DTU). A literature review and preliminary model of state-of-the-art technologies for AEL systems from an LCA perspective have been developed to identify pertinent data and components defining the technology, as well as to evaluate environmental impacts associated with benchmark technologies available in the market.

Within the PEACE LCA preparatory work, several topics have been identified for further project discussion, including analysis boundaries (cell scale vs. plant scale) and the (non)inclusion of various hydrogen production technologies (e.g., Proton Exchange Membrane electrolysis, Anion Exchange Membrane electrolysis, and Solid Oxid electrolysis).

2.2 PEACE Data Management Plan

PEACE is a research and innovation action project financed by the Clean Hydrogen Partnership under the EU Horizon Europe Programme. For all Horizon Europe projects, a data management plan (DMP) is a mandatory document (deliverable) that needs to be properly addressed already within the first 6 months of project implementation and regularly updated later on. Such a document should describe the ways in which data are collected, generated and/or processed throughout the life cycle of a research project. Furthermore, a DMP can serve as a guide for the project consortium through the processes of data storage, availability, accessibility, and re-use.

Horizon Europe obligations

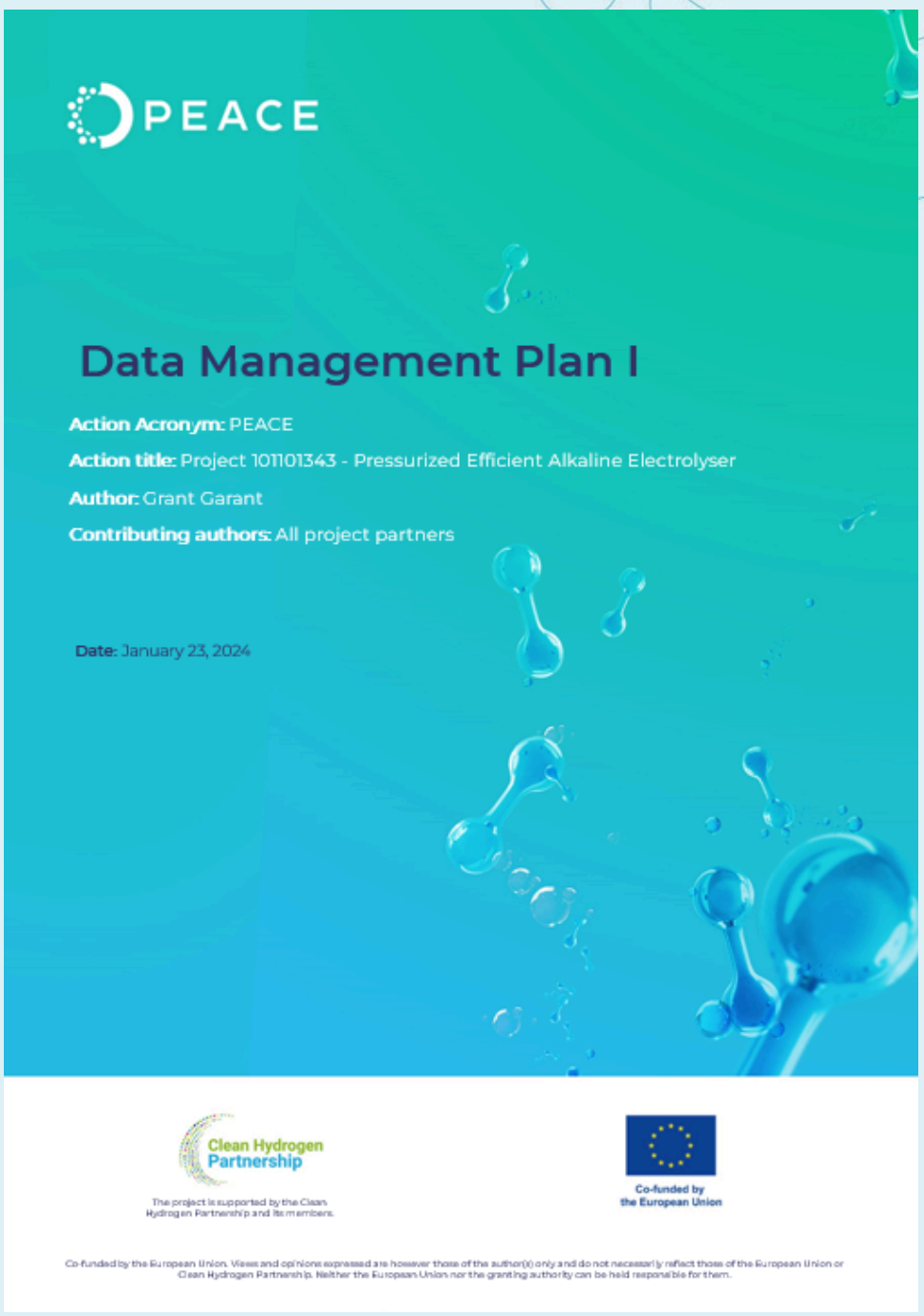
A DMP for a Horizon Europe-funded project stands on the guiding principles of the EU Open Science policy - an approach to the scientific process based on spreading knowledge as soon as it is available by using digital and collaborative technology. Briefly, the Open Science provisions contain a set of requirements and encouraged practices concerning research publications and research data.

Regarding research data management, an essential obligation for all Horizon Europe projects is that all digital research data generated throughout the project actions must be handled in line with the FAIR (Findable, Accessible, Interoperable, Reusable) principles. Additionally, research data should be **deposited in a trusted repository** as soon as possible. It is recommended that **open access** to the research data is ensured as soon as possible via the repository under a suitable licence (usually the Creative Commons Attribution International Public License - CC BY or Creative Commons Public Domain Dedication - CC0 are used). However, regarding the possible sensitivity of some research data, datasets may remain closed for justified reasons (duly explained in the DMP), if open access would be **against the legitimate interests** of the data owner (for example if commercial exploitation is foreseen), or **contrary to any other constraints**, particularly the EU competitive interests or the beneficiary's obligations under the Grant Agreement.

Whether data are open or closed, **open access to the metadata** (under CC0 license) of the project research data is presumed to be guaranteed. Metadata should contain basic **information** at least about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the **metadata must include persistent identifiers for related publications and other research outputs**.

PEACE datasets

The PEACE project team has produced a comprehensive, yet user-friendly, plan to effectively manage data within the PEACE project. This DMP (available at: https://www.h2peace.eu/public-media/results) is aimed at aiding the consortium in achieving efficient implementation of research objectives and additionally, facilitating effective communication and dissemination of project results.



PEACE Data Management Plan (public version), Source: PEACE

The consortium has identified seven broad datasets that will be used in the PEACE project. Their brief description can be found in Table 1. Moreover, thriteen other reserach outputs will be produced by the project - for more on these see the DMP version available at: https://www.h2peace.eu/public-media/results

Table 1 PEACE datasets

Dataset No.	Dat_1	Dat_2	Dat_3	Dat_4	Dat_5	Dat_6	Dat_7
Name	**Cell/stack component qualifications**	**Operation strategies and simulation**	**Cell/stack component qualifications**	**Dual-stage high-pressure alkaline electrolyser operation**	**Integration concept of HP-AEL in a chemical plant**	**Conventional H2 production via AEL**	**PEACE H2 production**
Owner	DLR	DLR	TU/e	BTU CS	HYCC BV	DTU	DTU
Description	Electrochemical testing of cells and short stack	TEMPEST simulation data on the stack behaviour in a system in transient conditions	Qualification of cell components	Experimental data from the demonstrator in operation	Process design data including sketches, mass & energy balances, cost estimates	The life cycle inventory of materials and energy necessary to produce H2 conventionally via electrolysis (benchmark for the PEACE data)	The life cycle inventory of materials and energy necessary to produce hydrogen via PEACE AEL
Type of data	Numeric, text, images	Numeric, text, images	Numeric	Numeric, text, images	Numeric, images, dtbs, models	Dtbs, models	Dtbs, models
Data format	Doc/docx, pdf, xls/xlsx, txt, jpg, tiff, png	Doc/docx, pdf, xls/xlsx, txt, jpg, tiff, png, mat-file	Xls/xlsx, sql, ids/idf	Xls/xlsx, pdf, csv, txt, jpg, png	Doc/docx, pdf, xls/xlsx, jpg, tiff	Xls/xlsx, pdf, txt	Xls/xlsx, pdf, txt
Repository	YES Zenodo	YES Zenodo	YES 4TU.Researchdata	YES Open Energy Platform	YES Zenodo	YES Supplement material of an OA article + DTU repository	YES Supplement material of an OA article + DTU repository
Open access	Partly	Partly	YES	YES	Partly	YES	YES
Reasons for closed data	Commercial exploitation	Commercial exploitation	---	---	Commercial exploitation + sensitive info on beneficiary	---	---
Metadata	YES	YES	YES	YES	YES	YES	YES

Source: PEACE Data Management Plan

PEACE datasets mainly consist of project-generated **numerical data** produced through direct measurements and simulations, except for the Life Cycle Inventory dataset (**Dat_6**). This benchmark dataset for the purpose of the Life Cycle Assessment (LCA) of the PEACE high-pressure AEL will be based on re-used data collected from literature, surveys, or simulations. For LCA purposes, this dataset will be analysed jointly with dataset **Dat_7** ("Peace H2 Production") which covers similar characteristics generated from PEACE experiments and simulations. These datasets could prove valuable to LCA practitioners in fields such as renewable energy, energy production, hydrogen production, or power-to-X technologies.

Direct measurement data represent the core of the dataset **Dat_1** ("Cell/stack component qualifications" of the German Aerospace Center - DLR) and **Dat_3** ("Cell/stack components qualification" of Technische Universiteit Eindhoven - TU/e), and **Dat_4** ("Dual-stage high-pressure alkaline electrolyser operation" of the Brandenburgische Technische Universität Cottbus Senftenberg - BTU) at the PEACE demonstrator stack level. Datasets **Dat_1** and **Dat_3** will aid identifying optimal cell and stack components to achieve the defined system efficiency targets. They can be further used by researchers validating models and businesses involved in electrolysis hydrogen production.

The BTU's **Dat_4** constitutes outcome experimental data from the PEACE high-pressure AEL demonstrator, confirming its performance and efficiency. These data might further serve electrolysis companies, research entities, or production safety organisations. Conversely, simulation data gathered in **Dat_2** ("Operation strategies and simulation" of DLR) will analyse the behaviour of the PEACE high-pressure AEL behaviour under transient conditions to formulate optimized operating strategies. These data might be a valuable resource for industries involved in electrolyser production, particularly water electrolysis and renewable energy, as well as for academics.

Lastly, the Hydrogen Chemistry Company (HYCC) will contribute with its dataset **Dat_5**, focusing on the integration of the PEACE high-pressure electrolyser within a chemical plant involving at least two downstream processes. This dataset encompasses numerical data, images, databases, and models. The design models will include heat integration, energy and mass balances, cost estimates, all with the aim to assessing and enhancing the impact of PEACE technologies. These data could prove highly valuable to companies and stakeholders interested in hydrogen production and/or use, as well as to researchers developing technologies who seek to assess impacts or establish design targets.

PEACE FAIR data (Findable-Accessible-Interoperable-Reuseable)

All research data generated by the PEACE project will be managed responsibly in accordance with the FAIR principles and Horizon Europe obligations. To ensure **findability** of PEACE data, all datasets will be assigned persistent identifier, preferably DOIs, through carefully selected trusted repositories. Metadata frameworks will accompany all datasets and will be openly accessible under the public domain dedication CC0.

Metadata will provide information about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe funding, grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata will include persistent identifiers for linked publications and other research outputs. Metadata will be stored within the repositories in JSON format and will be harvestable.
Simultaneously, PEACE datasets will employ common keywords such as hydrogen, alkaline electrolyser, and pressurization.

The **storage** of PEACE data will not be centralised, instead, the consortium will maintain the well-established storage practices of individual partners. For internal sharing of data, among the consortium, a project internal site (within the secure coordinator's server) will be used. PEACE datasets are intended to be deposited into trusted repositories as soon as possible and, at the latest, by the end of the project. If the given dataset underpins a scientific publication, it will be deposited no later than the time of publication. Some datasets will use **Zenodo repository**, a trusted open-source repository with metadata openly available under CC0 licence, as mandated by Horizon Europe. Datasets on Zenodo will receive DOIs and can be linked to related publications or datasets. Availability of the data is planned at least for 10 years, but it will presumably align with the general conditions of the repository. Moreover, the creation of a PEACE project Zenodo community is being considered, which would bring together PEACE Zenodo contributions in one location.

University partners Danmarks Tekniske Universitet (DTU) and Technische Universiteit Eindhoven (TU/e) will follow their usual practices and deposit their dataset (Dat_3, Dat_6, and Dat_7) within their respective trusted institutional repositories. DTU will use its university repository - **ScienceRepository** – which grants DOIs to all datasets and offers unlimited data storage. TU/e's repository, **4TU.Researchdata**, is dedicated to science, engineering and design, offering up to 100GB of free data upload per year, with granted DOIs and openly published metadata, as required by Horizon Europe. Dat_4 of the BTU will be deposited in a domain-specific repository, the **Open Energy Platform**, an open infrastructure for energy system research. Datasets are identifiable (by id), openly accessible with rich metadata published.

As for data **accessibility** (see Table 1), all PEACE data will be managed in line with the principle of "as open as possible, as closed as necessary". For most datasets, open access will be granted at the time of datasets publication. However, open access to Dat_1, Dat_2, and Dat_5, is currently perceived as against the beneficiary's legitimate interests (due to anticipated commercial exploitation). These sensitive datasets are deemed commercially valuable, and their immediate openness would undermine their exploitation potential. As a result, they will remain closed (or under embargoed access) for no longer than 5 years after the project ends. Nonetheless, as PEACE beneficiaries support the EC Open Science policy, a potential division of these sensitive datasets is assumed so as to leave parts of Dat_1, Dat_2, and Dat_5 openly accessible. However, the decision to keep certain PEACE data closed is subject to periodic review and may change.

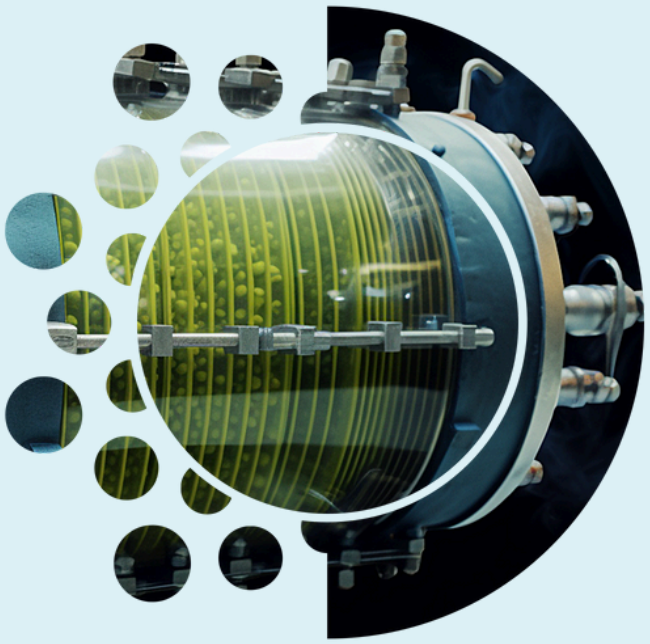
The **interoperability** of PEACE data will be enhanced by employing open data formats (such as doc, pdf, xls, csv, jpg), or standard language keywords. As the FAIR data policy aims to optimise the **re-use of data**, the PEACE consortium will use well-described (meta)data to ensure the replicability of datasets across different contexts. For non-self-explanatory data, various strategies will be implemented to facilitate data validation and re-use.

Lastly, PEACE datasets in open access will be **licensed** under the latest available version of a Creative Commons Attribution International Public Licence (CC BY) or Creative Commons Attribution Share-Alike (CC-BY-SA), requiring attribution of authorship. Metadata will be licensed under Creative Commons Public Domain Dedication (CC0).

The long-term **preservation** of PEACE datasets is guaranteed for at least 5 years after the end of the project, in line with the general conditions of the chosen repositories, which typically offer data retention for more than 10 years. Regarding ethical or legal issues affecting data sharing, it is important to note that no PEACE research datasets involve personal data. However, some partners express concerns about the potential conflict between open data sharing and their intellectual property rights, given the anticipation of commercial exploitation. Therefore, certain datasets will not be fully accessible, as indicated in Table 1.

Conclusion

The PEACE DMP represents a living document that will guide the project consortium through the entire data lifecycle while adhering to the principles of the EU Open Science policy. The current version of the DMP will be updated in November 2024 and at the end of the project (May 2026). All PEACE datasets will be managed in accordance with the FAIR data principles, ensuring their findability, accessibility, interoperability, and reusability. This approach aims to contribute to the successful realization of the PEACE objectives, thereby enriching the European realm of science and innovation.



3. Hydrogen News

Clean Hydrogen Partnership Projects repository

The Clean Hydrogen Partnership, a public-private partnership consisting of the European Commission, Hydrogen Europe and Hydrogen Europe Research, has launched an online **repository** of all its funded hydrogen-related projects. Basic facts on about 370 projects, closed or ongoing, are included, with a special site on project updates collecting projects' news and achievements. Don´t miss to check the PEACE project page at the repository!

https://www.clean-hydrogen.europa.eu/projects-dashboard/projects-repository_en

PEACE WP2 leader Thijs de Groot calls for more cooperation between power supply system design and electrolysers design

In a recent Featured Article of the Hydrogen Tech World, Thijs de Groot, Associate Professor in Electrochemical Engineering at the Technical University of Eindhoven and a distinguished member of the PEACE project team, advocates for closer **collaboration between electrical engineers** designing power supply systems **and electrochemical engineers** responsible for designing electrolyzers, In his article, De Groot highlights the significance of the power supply system in achieving cost reduction, as it accounts for a considerable portion of overall plant costs. He suggests adopting a systems perspective to optimize the design of the combined rectifier and electrolyzer, which can lead to cost savings in the power supply system without significantly compromising electrolyzer performance. De Groot also discusses the development of a combined rectifier-electrolyzer model, which integrates electrical and electrochemical models to assess efficiency losses and make informed design choices for hydrogen production plants. Overall, De Groot stresses the importance of bridging the gap between electrolyzer and power supply system design to unlock the full potential of green hydrogen production.

https://hydrogentechworld.com/it-is-time-to-bring-the-worlds-of-electrolyzers-and-power-supply-systems-together

Clean Hydrogen Partnership 2024-call closed with more than 150 proposals submitted

In mid-April, the **Clean Hydrogen Partnership call** for hydrogen research proposals, within the Horizon Europe programme has closed with more than **150 submitted proposals**. The research and innovation hydrogen-oriented proposals compete to distribute more than € 113 million. The call was divided to twenty topics covering hydrogen production, storage, distribution, heating, power and transport, as well as small-scale and large-scale Hydrogen Valleys. The attention of applicants has been focused mostly on renewable hydrogen production (57 proposals), especially on the topic of the development of innovative technologies for direct seawater electrolysis (23 proposals). A lot of attention has also been raised by the Hydrogen valley call (29 proposals) - especially the development and demonstration of a small-scale Hydrogen Valley (producing 500 tonnes of clean hydrogen per year with a new hydrogen production capacity) was largely addressed - 17 proposals will go through a tough competition to gain the Clean Hydrogen Partnership grant contribution of € 9 million. Results of the proposal evaluation process are to be communicated in July/August 2024.

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-jti-cleanh2-2024-01-05?order=DESC&pageNumber=1&pageSize=50&sortBy=startDate&keywords=HORIZON-JTI-CLEANH2-2024&isExactMatch=true&status=31094503&frameworkProgramme=43108390

Levelised Cost of Hydrogen Calculator

The European Hydrogen Observatory has launched a new **tool to estimate the cost of hydrogen production** in European countries by low temperature electrolysis. The calculator offers default values for 27 EU countries, incuding the UK and Norway, with a selection of four types of electricity sources (photovoltaics, onshore wind, offshore wind, wholesale). Alternatively, users are enabled to set their own values of key electrolysis system parameters.

https://observatory.clean-hydrogen.europa.eu/tools-reports/levelised-cost-hydrogen-calculator

European Hydrogen Bank auction allocates €720 million for renewable hydrogen production

At the very end of April 2024, the European Commission has allocated nearly €720 million to **seven renewable hydrogen projects** across Europe in the first competitive bidding process (auction) under the **European Hydrogen Bank**. Financed by the revenues from the EU Emissions Trading System (via the Innovation Fund), these projects aim to produce renewable hydrogen – for that, they will receive a subsidy, bridging the price gap between production costs and market prices for hydrogen.

The selected projects, chosen from 132 bids on Proton Exchange Membrane (PEM) or alkaline electrolysis technology or both, plan to produce 1.58 million tonnes of renewable hydrogen over ten years, avoiding over 10 million tonnes of CO2 emissions. The winning propositions come from 4 countries – three from Spain, two from Portugal, and one from Finland and Norway – suggesting that a competitive business arises not only in the southern EU countries, but also in the Nordic ones.

This initiative is a significant step towards decarbonizing European industries like steel, chemicals, maritime transport, and fertilizers which are assumed to use the hydrogen produced by the winning propositions. A second European Hydrogen Bank auction is previewed by year-end.

https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund/competitive-bidding_en

4. Hydrogen Events

Aarhus Power-to-X Symposium, 29-30 May, 2024, Aarhus (DK)

The last days of May were dedicated to the 3rd edition of the Symposium which was entitled “Making your PtX project happen” and covered both the mature innovative developments ready to be implemented today, and the early-stage insights that wouldshape the PtX market of tomorrow.
A distinguished member of the PEACE project team, dr. Thijs de Groot of the Eindhoven University of Technology, was presenting at the symposium on the improvements in performance, flexibility, and resilience of alkaline water electrolysis.
https://conferences.au.dk/aarhusptx

Hydrogen Online workshop, 5 June, 2024, online

Organised by Mission Hydrogen, this 24hours free online workshop is destined to share experience and insights on HOW to make hydrogen happen, with interesting keynote speakers.
https://www.hydrogen-online-workshop.com/

European Sustainable Energy Week, 11-13 June, 2024, Brussels (BE) and online

European Sustainable Energy Week (EUSEW), organised by the European Climate, Infrastructure and Environment Executive Agency (CINEA) and the Directorate-General for Energy, stands as Europe's largest annual event dedicated to renewables and efficient energy usage. The event serves as a platform for public authorities, private enterprises, NGOs, EU project collaborators, researchers, and consumers to collaborate on initiatives that propel Europe's energy transition towards net-zero competitiveness. It encompases a high-level Policy Conference, the EUSEW Awards, and the fifth European Youth Energy Day as well as the Energy Fair.
https://sustainable-energy-week.ec.europa.eu/

Hydrogen Tech World, Expo & Conference, 26-27 June, 2024, Essen (DE)

The 2nd edition of a conference and exhibition will host energy transition professionals, including equipment and component manufacturers, system developers, service providers from across the hydrogen value chain.
https://hydrogentechworld.com/conference

European Electrolyser and Fuel Cell Forum, 2-5 July, 2024, Lucerne (CHE)

The well renowned fuel cell & electrolyser conference in Lucerne adresses issues of science, engineering, materials, systems, applications and markets for all types of Solid Oxide Fuel Cells (SOFC) & Solid Oxide Electrolysers (SOE). It hosts an exhibition, tutorials as well as Sustainable Shipping Days and the Grid Service Market Symposium.
https://www.efcf.com/2024

5. Hydrogen Project Funding Opportunities

Development of next generation synthetic renewable fuel technologies (RIA)

Find out more details on the Horizon Europe call HORIZON-CL5-2024-D3-02-02 for a research and innovation action developing next generation technologies for the production of novel synthetic renewable liquid and gaseous fuels from CO2, and/or renewable carbon, nitrogen, hydrogen or their compounds and from renewable energy. The planned opening date of the call is September 17, 2024. It is expected that 3 projects will be selected for funding, with about €4 million EU contribution to each.

Deadline date: 21 Jan., 2025

PEACE

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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

GRANT GARANT

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Clean Hydrogen Partnership

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