



Plan for the Exploitation and Dissemination of Results (PEDR)

Action Acronym: PEACE

Action title: Project 101101343 - Pressurized Efficient Alkaline Electrolyser

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Consortium

Beneficiary name	Short name
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Materials Mates Italia SRL (IT)	MMI
Technische Universiteit Eindhoven (NL)	TU/e
Brandenburgische Technische Universität Cottbus Senftenberg (DE)	BTU CS
Grant Garant sro (CZ)	GG
HyCC B.V. (NL)	HYCC
Danmarks Tekniske Universitet (DK)	DTU

List of abbreviations

Abbreviation	Definition
AEL	Alkaline electrolysis
BoP	Balance of Plant
CC BY	Creative Commons Attribution International Public Licence
CC BY-NC	Creative Commons Attribution-NonCommercial
CC BY-ND	Creative Commons Attribution NoDerivs
CC0	Creative Commons Public Domain Dedication
C&D&E	Communication, Dissemination, Exploitation
CHP	Clean Hydrogen Partnership
D	Deliverable
DMP	Data Management Plan
DoA	Description of Action
EB	Executive Board
EU	European Union
FMEA	Failure Mode and Effects Analysis
HAZOP	Hazard and Operability Analysis
HP	High-pressure
KER	Key Exploitable Result
KPI	Key Performance Indicator
LCA	Life Cycle Assessment
M	Month
PEDR	Plan for the Exploitation and Dissemination of Results
PH	PEDR Phase
R&I	Research and Innovation
WP	Working Package

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1. Executive Summary

This document outlines the Plan for the Exploitation and Dissemination of Results (PEDR) of the PEACE project – a research and innovation action funded by the Clean Hydrogen Partnership (CHP) under the Horizon Europe programme. The PEACE project is coordinated by Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR). The main objective of the project is to reduce the levelized cost of hydrogen via the development of an innovative high-pressure alkaline electrolysis technology for hydrogen production.

This report is based on an original PEACE deliverable that was submitted to the granting authority in November 2023 with a sensitive dissemination level. The current version represents a public version of the deliverable and it is produced for public use. It represents a strategic guidance document explaining in detail how the consortium will promote the research and innovation action and its results towards multiple audiences.

The report summarises the relevant rules and obligations to be followed by the project members (e.g., the European Commission/Clean Hydrogen Partnership visibility, prior notice protocol for results dissemination, open access obligations).

As a coherent plan, PEDR introduces its main target groups (i.e., research communities, European institutions, industry and business, and the general public and media) and tools to be used to reach the audience (website, social media profiles, visual identity, publications, etc.).

The PEACE PEDR consists of the Communication Plan, the Dissemination Plan, and the Exploitation Plan and is to be implemented in three distinct phases with respect to different types of outcomes - Project awareness phase, Components dissemination phase, and Demonstrator dissemination and exploitation phase.

The Communication Plan's target is to deliver the key messages to multiple audience. PEACE communication will take place mostly in the online sphere, building on the website and social media communication.

The Dissemination Plan presents the main research results to be used for dissemination and defines their dissemination channels (namely scientific publications and other relevant channels). Moreover, the key exploitable results, as were defined within the internal project survey, are presented in the Exploitation Plan, to be elaborated upon in the latter versions of the PEDR (in the 15th and 26th month of project implementation).

2. PEACE Project Summary

The PEACE project represents a challenging research and innovation action in the field of hydrogen production, using the alkaline electrolysis (AEL) technologies. AEL technologies are known for their low investment costs and excellent scalability. The PEACE project aims to further improve the levelized cost of hydrogen produced by AEL. Therefore, efforts are focused on enhancing efficiency, maximizing current densities, and enabling better integration with downstream processes. By carefully designing a high-pressure stack and system, the performance and overall efficiency of the AEL process will be significantly improved, eliminating the need for additional compression for downstream processes. This, in turn, reduces the capital and operational expenses associated with hydrogen compressors, which are a substantial part of electrolysis systems' cost.

Within the PEACE project, a demonstrator of an AEL system exceeding 50 kW, capable of operating at pressures of up to 90 bars, will be designed and developed. This is achieved through a novel concept involving two-stage pressurization: by applying up to 60 bar hydraulic pressure using a pressure vessel in which a stack operates at additional 30 bar, resulting in up to 90 bar gas pressure. 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: 70% lower heating value at a current density of 1 A/cm². The successful implementation of this technology promises a significant reduction in the cost of green hydrogen production.

The PEACE project scientific objectives are reinforced by a strong focus on sustainability and circularity aspects, as well as dedicated outreach activities. The consortium comprises two SMEs, four research and development centres with established expertise in alkaline stack, system, and Life Cycle Assessment (LCA), and one of the largest hydrogen production and utilization companies globally. This collaboration ensures a comprehensive approach to achieving the project's goals.

Finally, the project aims to propose use cases and the concept of an integrated plant. By combining all these developments, the goal is to achieve a technological breakthrough with a clear commercial perspective, positioning Europe as a leader in highly pressurized AEL technology within the next three years.

3. About PEACE PEDR

PEACE is a research and innovation action project funded by the Clean Hydrogen Partnership (CHP) under the Horizon Europe programme. Over the course of its 36-month implementation, the consortium will effectively communicate about the project and actively disseminate project results in order to boost their further exploitation. These activities need to be carefully planned to get the highest outcomes. Therefore, PEACE PEDR represents a strategic document explaining how the consortium will coherently promote the research and innovation action and its results towards multiple audiences.

Following the EC definitions, within the PEDR, by “communication” we mean to take measures in order to inform the target groups about the project and its activities, about project’s further use and benefits. “Dissemination” actions are defined as public disclosure of the results by appropriate means (e.g. publications, conference presentations). By “exploitation” we mean the use of results in further research/innovation activities or results’ commercial exploitation.

PEACE PEDR is produced by the partner GG within the Working package (WP) 6. PEDR aids the consortium in achieving efficient implementation of research objectives. Its main goals are to:

- Ensure project’s outreach towards general public and other target groups
- Ensure project results dissemination
- Ensure future exploitation and commercialization of the results

PEACE PEDR is a living document that will be continuously updated and expanded as necessary, with regular updates planned for August 2024 and July 2025.

Beside setting the targets and introducing the project’s pathways of the communication, dissemination and exploitation policy, PEDR will serve the consortium as a practical guidebook on Communication, Dissemination, and Exploitation (C&D&E) issues, including the visibility rules (Chapter 4).

Chapter 5 defines the main target groups to be reached by the C&D&E activities of the project. C&D&E tools that will be used to fulfill the goals of the PEDR are presented in Chapter 6. Distinct phases of the PEDR are further described in Chapter 7.

PEDR as a strategy is composed of three parts – the Communication Plan (Chapter 8), the Dissemination Plan (Chapter 9) and the Exploitation Plan (Chapter 10). The Communication Plan of the project sets the key communication messages and objectives. The Dissemination Plan introduces the principal dissemination results and actions. The Exploitation Plan identifies the main exploitable results for which exploitation strategies will be outlined in later versions of the PEDR. Chapter 9 and 10 are based on information provided by PEACE partners within an internal project survey. They are followed by PEDR conclusions.

Implementation of the PEACE PEDR tailored actions and activities belongs to responsibilities of all project partners. The Communication Plan will be mostly put into practice by the WP6 leader (GG). Whereas dissemination and exploitation actions are to be taken by all project partners, following the agreed Plan under the guidance of the partner GG. GG also informs

the consortium about the EC obligations in the area of C&D&E and prepares PEDR updates. At the partner level, the Executive Board (EB) members, who represent each partner, are responsible for addressing C&D&E issues within their teams and serve as the primary points of contact for GG in related matters. In terms of scientific content of communication/dissemination actions, the relevant WP leaders are to be approached.

4. PEACE Communication, Dissemination and Exploitation Rules

4.1. Partners' responsibility towards project promotion

In line with the Grant Agreement, **all consortium partners ought to promote PEACE action** and its results. PEDR document elaborates upon these obligations and presents a coherent communication, dissemination and exploitation strategy with explicit description of each partner responsibilities. To sum up all partners are asked to:

- Communicate their activities through the WP6 leader
- Disseminate their results with the view to their further exploitation
- Contribute to project communication tools (newsletter, web articles, social media posts)
- Inform the WP6 leader about events they will participate at (regular screening is held by GG) and keeping track of their events attendance (archiving presentations, posters, abstracts, photos or any other materials at the internal project team site)
- Inform the WP6 leader about publications they will produce (regular screening is held by GG) and follow EC obligations in this respect
- Inform the WP6 leader about direct communication/networking activities they have (regular screening is held by GG) and keep track of these forms of communication

Partners are also expected to **re-share PEACE posts** (produced by GG) and using **project hashtag** (#peaceh2) on X and LinkedIn, and to include **project name and EU visibility points** in their presentations and publications (see Section 4.2.).

Furthermore, if partners' C&D&E activity is expected to have a **major media impact**, the relevant partner must inform beforehand the Coordinator whose obligation is to further **notify the granting authority**.

4.2. Communication rules

- **PEACE internal communication**

The **focal point** of PEACE internal communication is the **Project Coordinator** (DLR) who is responsible for up-to-date and accurate communication within the consortium on project's status, deliverables and milestones. The Coordinator serves as an intermediary between WP leaders, who keep the Coordinator informed about the implementation of their WPs. For the purpose of internal communication and documents storage, a **project team site** (SharePoint) under the DLR server, has been created and access has been granted to all project members.

The PEACE kick-off meeting was held online in July 2024, with all consortium members participating. To support an effective communication among PEACE team members, regular online meetings of each WPs take place. Minutes of these meetings are archived within the internal project team site. The above-mentioned tasks of internal communication are being carried out under WP1 "Coordination and Project Management".

Internal communication on issues related to the PEDR, is being managed by the **WP6 leader** (GG). Partner GG approaches other PEACE partners and collects information on partners'

actions in the field of direct networking, publications, and events to come/events attended. Moreover, GG asks partners for inputs with the view of PEACE newsletters (quarterly) and press releases (biannually) preparation, if needed. All project news on the website and social media accounts issued by GG are being approved by the Coordinator. Lastly, GG supports partners in their dissemination and exploitation actions.

- **Use of project's graphic identity and EC/CHP visibility**

A common **graphic identity** has been defined for the PEACE project, including project logo and Microsoft Word and Microsoft PowerPoint templates (for more information see the report named Project website and PR). All communication and dissemination outcomes should include the name (acronym) of the project and logo (if possible).

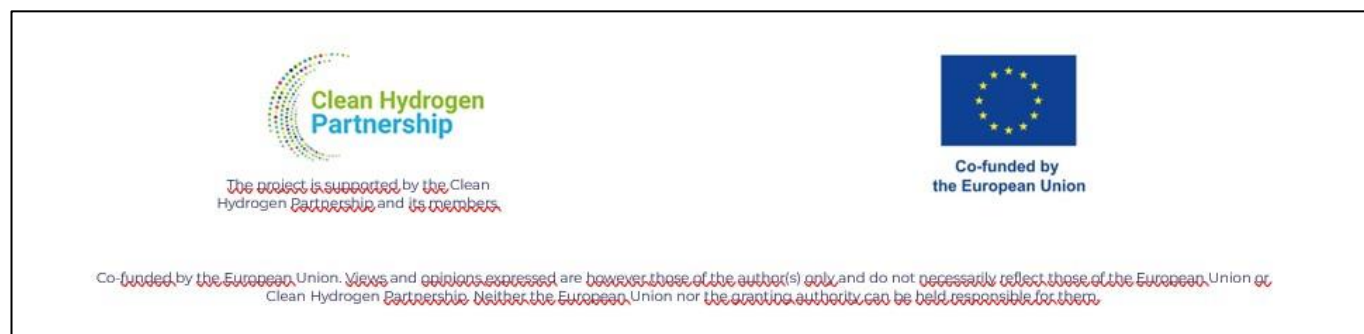
Importantly, and in line with the Grant Agreement obligations, the PEACE communication and dissemination materials will have to **acknowledge the funding of both the Clean Hydrogen Partnership (CHP) and the European Union (EU)**. The EU support must be acknowledged by the European flag (emblem) and funding statement: Co-Funded by the European Union. The Joint Undertaking's (CHP) special logo must be displayed alongside, followed by the prescribed text: *"The project is supported by the Clean Hydrogen Partnership and its members."* (as defined in Visual Identity Guidelines of the Clean Hydrogen Partnership).

Moreover, any communication or dissemination activity will have to indicate the following disclaimer: *"Funded by the European Union. Views and opinions 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."*

For all C&D&E outcomes, it is recommended to consult the CHP Visual Identity Guidelines – the document can be downloaded at the internal project team site under the WP6 folder.

Obligatory visual identity items of the EU and the CHP (see Fig. 1) are stored in the form of a ready-to-paste image for project use at the project's internal team site.

Fig. 1 Obligatory visual identity items



4.3. Dissemination rules

- Prior notice protocol

Dissemination of results by PEACE partners is bounded by a prior notice protocol. The consortium agreement stipulates that at least **30 calendar days before any results publication**, the partner intending to publish shall inform all PEACE partners about its publication intentions. It has been agreed that information about the planned publication is sent **via email to all EB members**, and should include name of authors, title of the publication, form of the publication, journal title, abstract, and brief description of results that will be disseminated.

Objections to the planned publication shall be made by written notice (e-mail) to the Coordinator and to partner intending to publish **within 15 calendar days after receipt** of the notice. If no objection is made within the time limit stated above, the publication is permitted.

The prior notice protocol is to be applied to all partners and all results publications. Compliance with the prior notice protocol belongs to the responsibilities of each consortium partner.

- Open Access to scientific publications

Simultaneously with the prior notice protocol obligation, **the author** is to choose the right **publication venue enabling open access** to the publication. It must be stressed that only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement under the PEACE project.

Following the EC guidelines, if the publication is to be a **peer-reviewed** one, then open access **must be ensured**. It means that at latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a **trusted repository** for scientific publications and immediate **open access is provided** to the deposited publication via the repository. PEACE partners are recommended to choose trusted repositories via the OpenAIRE portal (<https://explore.openaire.eu/>) – preferably Zenodo repository is to be used where a PEACE project community is considered to be established. All peer-reviewed open access publications should be published under the latest available version of the Creative Commons Attribution International Public Licence (**CC BY**) or a licence with equivalent rights. As prescribed by the EC rules, for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g., CC BY-NC, CC BY-ND). The deposited publication must involve information about any research output/tool/instruments needed to validate the conclusions of the given scientific publication (i.e., detailed description of the research output/tool/instrument, how to access it, any dependencies on commercial products, potential version/type, potential parameters, etc.). Authors themselves are responsible for the choice of the publication venue and for the timely deposit of the publication within the repository and in accordance with the above-mentioned open access publication rules.

Metadata of PEACE deposited publications will be in line with the FAIR principles¹. It 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. The authors of publications are responsible for proper metadata deposit in a trusted repository.

To sum up, the partner GG provides assistance to PEACE partners while publishing project results. However, authors themselves are responsible for the choice of the publication venue and the timely deposit of the publication and its metadata within the repository and in accordance with the above-mentioned open access publication rules.

- **Open access to research data**

All consortium partners must manage responsibly the digital research data generated in the action in line with the FAIR principles. They should also ensure **open access to research data via a trusted repository** (Zenodo or partners' university repositories are to be recommended) under the principle 'as open as possible, as closed as necessary'. **Metadata** must be open under CC0 or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles and provide information about the licensing terms and persistent identifiers, amongst others. Research data management obligations within the PEACE project are described in more detail within the PEACE Data Management Plan (see D1.2).

4.4. Exploitation rules

- **Obligation to exploit the result**

The exploitation of results belongs to basic responsibilities of each result owners. A results ownership list will be delivered within the final periodic report. Based on the GA, the follow-up of **exploitation activities after the project end** is an obligation. Beneficiaries must up to four years after the end of the project use their best efforts to exploit their results – either directly, or indirectly by another entity (through transfer or licensing). If the results are not exploited within one year after the end of the action, the beneficiaries must use the **Horizon Results Platform** to find interested parties to exploit the results.

¹ FAIR data policy principles are defined as: Findable, Accessible, Interoperable, Reusable.

5. PEDR Target Groups

Communication, dissemination and exploitation activities defined within the PEACE PEDR are destined to **four** broadly defined **target groups**. These groups are described below and, based on their SWOT analysis, different tools and messages will be chosen to reach them.

- **Research communities** (including university students, research audience and complementary innovation projects)

Strengths	Weaknesses
<ul style="list-style-type: none"> - High level of expertise and understanding - Potential for collaboration - Exploration of synergies with complementary projects - Pool of talent 	<ul style="list-style-type: none"> - Direct competition - Competing commitments (lack of time to follow other projects) - Lower reachability by social media campaign
Opportunities	Threats
<ul style="list-style-type: none"> - Knowledge transfer - Resource sharing - Incorporation of the PEACE knowledge to academic curricula 	<ul style="list-style-type: none"> - IP concerns of possible collaboration with external projects - Limited funding opportunities

This PEACE target group consists of researchers, scientists, academics and university students interested in the topic of hydrogen production and electrolysis. Furthermore, hydrogen-oriented research and innovation (R&I) projects will be addressed as well. This group of PEACE readers/followers will get appropriate information on the project itself and its results by newsletters, social media (LinkedIn), and more specifically through scientific publications and conferences. University students will be addressed through lectures of PEACE academic partners.

- **European institutions** (including hydrogen-oriented networks)

Strengths	Weaknesses
<ul style="list-style-type: none"> - Key stakeholders for shaping policies - Provision of funding opportunities - Extensive networks to amplify the dissemination of the project 	<ul style="list-style-type: none"> - Bureaucratic burden on processes
Opportunities	Threats
<ul style="list-style-type: none"> - Strategic partnership - Increased visibility of the project - Shaping regulatory environment 	<ul style="list-style-type: none"> - Competing priorities - Budget constraints limiting the availability of funding

PEACE will approach the following European institutions and initiatives/networks: Clean Hydrogen Partnership, DG Research & Innovation, DG Energy, DG Environment, Hydrogen Europe, European Clean Hydrogen Alliance in order to promote the development and get the support for hydrogen technologies, including their policy implications and environmental benefits. The communication channels used will be website, social media and press releases. Moreover, some issues of PEACE communication will be specifically targeted at the EU institutions (see more in Chapter 8.2).

- **Industry and business**

Strengths	Weaknesses
<ul style="list-style-type: none"> - Commercial exploitation opportunities - New ways of funding through private sector - Acceleration of market adoption 	<ul style="list-style-type: none"> - Confidentiality concerns - Misalignment of interests – short-term commercial interest of business vs. long-term research goals
Opportunities	Threats
<ul style="list-style-type: none"> - Technology transfer - Joint product development - Market influence 	<ul style="list-style-type: none"> - Market competition - Regulatory barriers

This PEACE target group includes professionals and stakeholders interested in the hydrogen production (e.g. producers of electrolyzers) and, on the other hand, the hydrogen users (namely the chemical industry). The project will communicate benefits of the consortium composition, its technological advancements and key exploitable results. Newsletters, social media, events participation and direct communication/networking will be the key communication channels.

- **Public and media**

Strengths	Weaknesses
<ul style="list-style-type: none"> - Growing interest in sustainable energy solutions - Wide reach of media - Media coverage can increase credibility of the project - Educative role of media (topic awareness) 	<ul style="list-style-type: none"> - Misinterpretation or oversimplification - Limited knowledge on the subject
Opportunities	Threats
<ul style="list-style-type: none"> - Stimulation of the support for the green hydrogen economy - Media coverage may foster further collaborations - Media coverage and public support may influence policy of hydrogen production technologies 	<ul style="list-style-type: none"> - Lack of control over the information spread - Competing priorities in the public debate

The PEACE project feels that it is essential to gain public support for the necessary industrial changes that ensure the Green Deal fulfilment. Therefore, raising public awareness on green hydrogen production is an important step on this way. With the arising PEACE results, more attention will be paid to the PEACE benefits to society.

The PEACE project will approach the public directly (website, social media) and indirectly through media (press releases). The public possibly interested in the PEACE project activities consists of citizens concerned with ecological issues, innovative technologies or renewable energy.

6. PEDR Tools

The PEACE PEDR will be using a variety of C&D&E tools in order to deliver the main communication messages (see Chapter 8) and key project results (Chapter 9 and 10) to target groups defined in Chapter 5.

6.1. Visual identity

The project branding enables the consortium to promote PEACE actions and results in a uniform manner. PEACE visual identity consists of **project logo**, **typography recommendations**, Microsoft **Word template** (for PEACE deliverables), and **PowerPoint template** (for presentations). All these visual identity items are presented in detail within the PEACE report on [Project website and PR](#) and stored at the PEACE internal team site, available to all consortium members.

- a) **PEACE logo** (see Fig. 2)

Fig. 2 PEACE logo



- b) **Typography** recommendations are summarised within an internal document accompanying the logo provision
- c) Microsoft **Word template** for PEACE deliverables (see below its title page and page 2)

Fig. 3 PEACE deliverable template

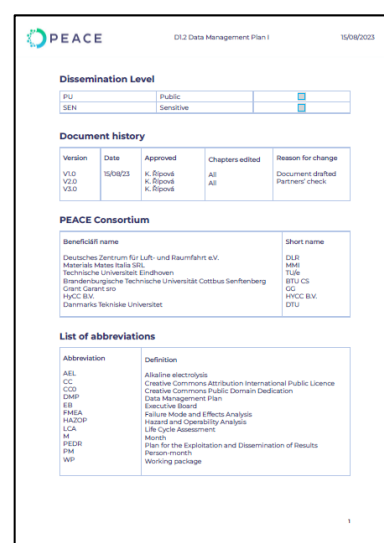
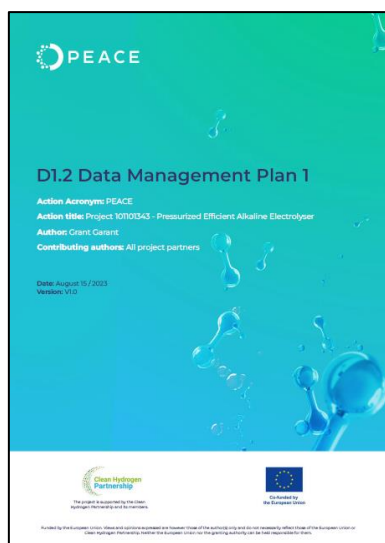
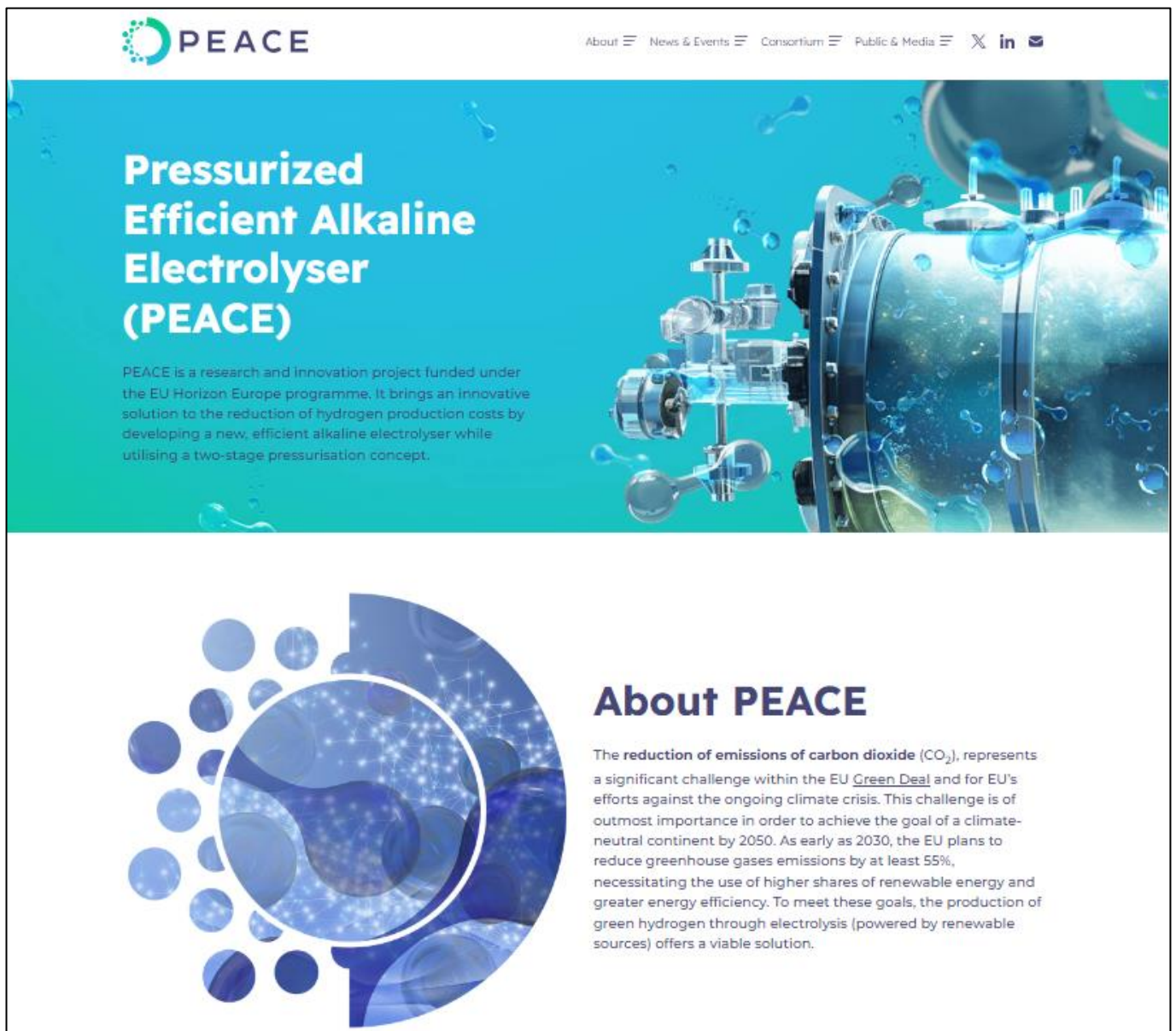


Fig. 4 PEACE PowerPoint presentation template



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Fig. 5 PEACE website homepage



6.3. Info-flyer

A project info-flyer has been created by the partner GG. A trifold flyer with basic facts about the PEACE project is prepared in a ready-to-be-printed format. It can be downloaded directly from the PEACE website and is stored at the PEACE internal team site. The flyer is presented in detail in the report on project website and PR.

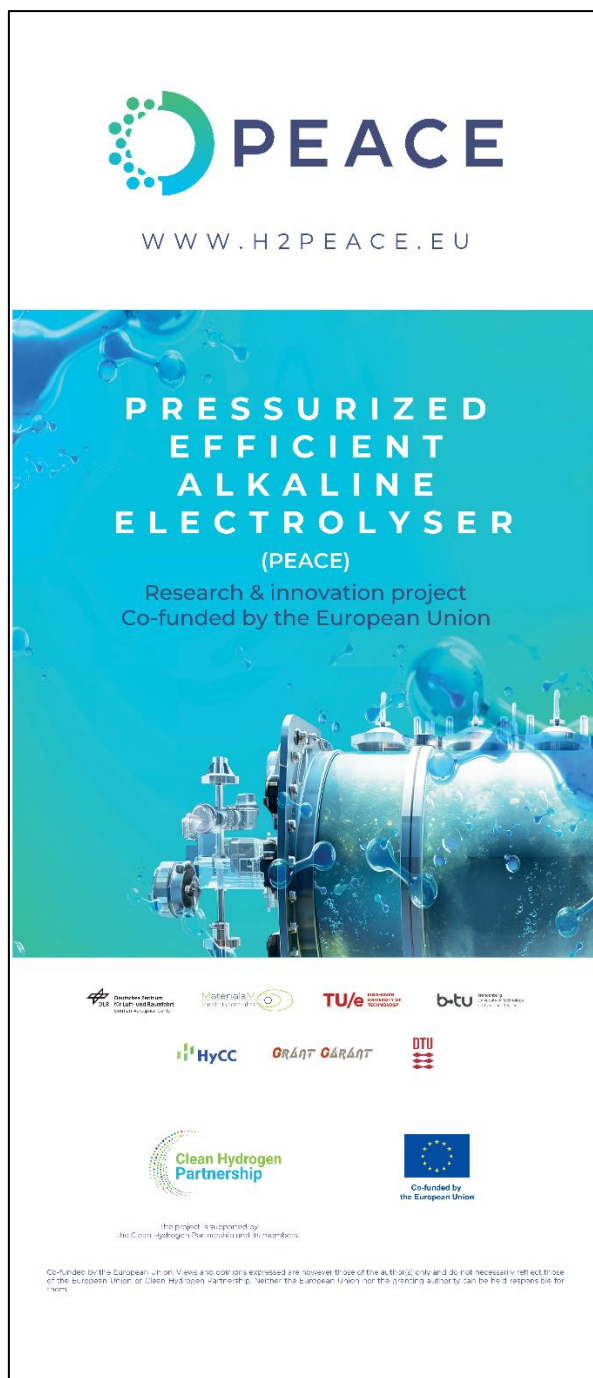
Fig. 6 PEACE info-flyer



6.4. Roll up banner

A project roll up banner was produced by GG (see Fig. 7). It represents an item of the project promotion kit. It is prepared in a ready-to-be-printed format and is destined for PEACE promotion at events and conferences. The banner is available for download to consortium members at the PEACE internal team site.

Fig. 7 PEACE roll up banner

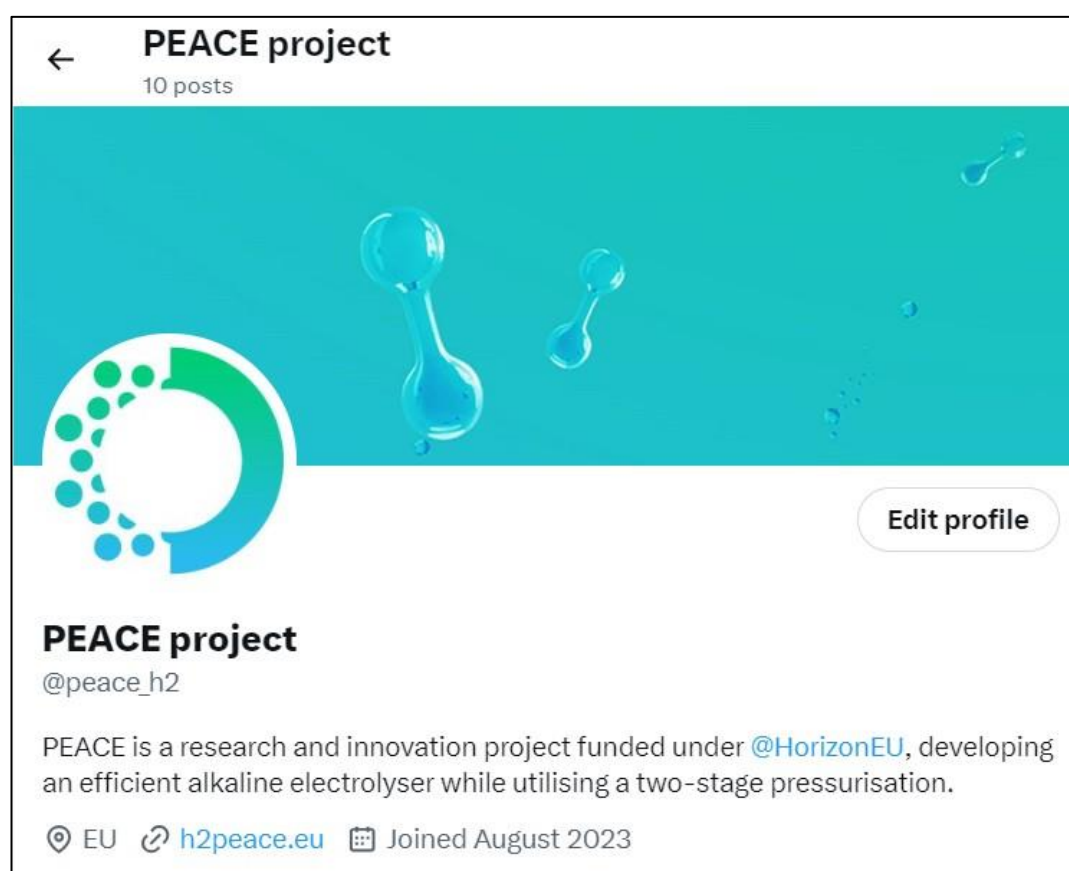


6.5. Social Media accounts

Social media are valuable communication channel for the PEACE project. Regular posting by the WP6 leader (after Coordinator's approval) is envisaged. PEACE consortium agreed to use two project social media accounts – one on X, and one on LinkedIn. Both are using the hashtag: #peaceh2

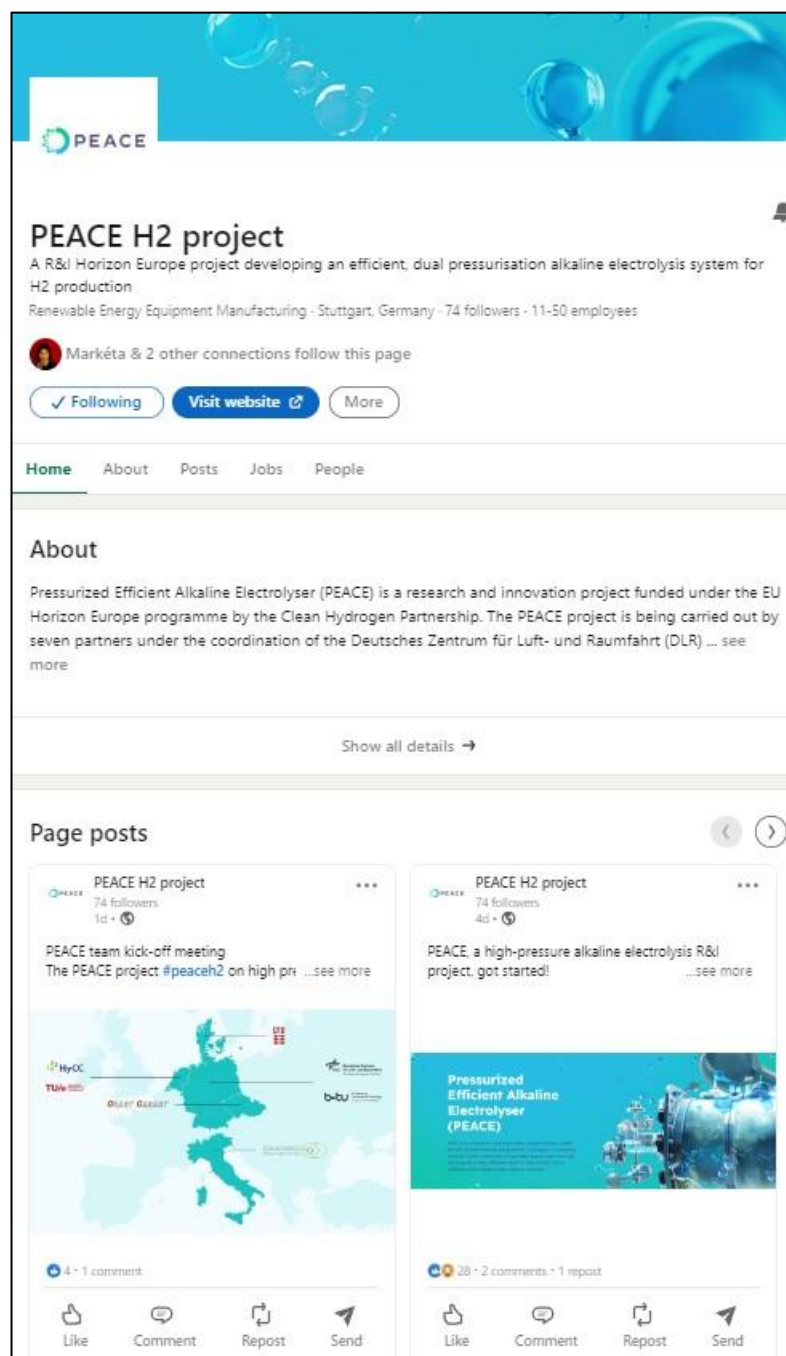
WP6 leader (GG) has established PEACE project account on X (https://twitter.com/peace_h2, username: @peace_h2) and is responsible for posting messages related to the PEACE project. All posts are to be approved by the Coordinator. X posts will be mainly used to deliver the key messages to the public and media.

Fig. 8 PEACE X account



Simultaneously, PEACE project account is run on LinkedIn (<https://www.linkedin.com/company/h2peace/>, @PEACE H2 project) by the WP6 leader. Posts are targeted more towards scientific and industrial community.

Fig. 9 PEACE LinkedIn account



More details on PEACE social media accounts are to be found within the [report on project website and other promotional items](#).

6.6. Newsletter

PEACE project information will flow to multiple audience through its quarterly newsletter. **Twelve newsletter issues** are planned to reach our readers by email (subscription form

available on the project website: <https://www.h2peace.eu/newsletter>), through social media posting and through the downloadable website version. All consortium partners are assumed to distribute the newsletter within their institutional and professional networks. PEACE newsletter will be produced by the partner GG based on inputs from relevant consortium partners (upon demand of GG). PEACE newsletter will mainly present information about the project and its results, including an editorial of the Coordinator, accompanied by news within the world of hydrogen production and consumption, and by hydrogen-related upcoming events. Final section of the newsletter will be dedicated to prospective funding opportunities for hydrogen project proposals, to stimulate potential collaboration among PEACE consortium and other entities.

Approximative plan of issues assumes (the list is indicative and subject to change):

- No. 1 “PEACE project at a glance”
- No. 2 “Meet the PEACE”
- No. 3 “PEACE DMP”
- No. 4 “PEACE PEDR”
- No. 5 News of the PEACE research
- No. 6 PEACE industry-research cooperation + networking projects (targeted on European institutions)
- No. 7 designing cell and stack components – people and places
- No. 8 Special issue on results - Cell and stack components design, short-stack assembly and testing, BoP definition, Annual data reporting for the Clean Hydrogen JU 2
- No. 9 PoC demonstrator assembling and preparation before operation + Clean Hydrogen Partnership presentation
- No. 10 Special issue on results – PoC stack ready, HAZOP, FMEA analysis, test protocols definition
- No. 11 Simulation model
- No. 12 Special issue on results – LCA, optimized operation strategy, process design for downstream integration, Annual data reporting for the Clean Hydrogen JU 3, way forward.

6.7. Press releases

Project press releases will be produced by the WP6 leader, based on inputs from relevant consortium partners (upon demand of GG). About **six press releases** is assumed to be circulated.

6.8. Scientific publications

Dissemination of the project results will be performed directly by individual consortium partners through scientific publications. PEACE project will deliver ten scientific publications. Currently it is presumed that **seven** publications will take form of a **peer-reviewed article** in open access – the journals to be considered: Energy & Environmental Science, Joule, ChemElectroChem, ACS Applied Energy Materials, Electrochimica Acta, AIChE Journal, Chemical Engineering Research and Design, Journal of Power Sources, International Journal of Hydrogen Energy, The International Journal of Life Cycle Assessment (or any other respectable journal with project topic relevance).

Moreover, **two** publications will be published as **conference proceedings**, and **one thesis/dissertation** will be produced under the PEACE project.

6.9. Events/exhibitions

PEACE consortium members will actively promote the project and its results on scientific events and exhibitions. These social events will be also used for direct communication and bilateral meetings with relevant stakeholders and for networking within the research community. It is assumed that, at least, twelve events attendance will be achieved, mostly in the second half of the project implementation (2025/2026) due to results availability. The following **events** are assumed to be attended: European Hydrogen Week, Hydrogen Dialogue, Hannover Messe, World Hydrogen Summit, SETAC, Annual International Society of Electrochemistry Meeting, World Hydrogen Energy Conference, International Conference on Electrolysis, European Fuel Cell Forum (or any other respectable conference/event/workshop with relevance to the project).

On the other hand, the Coordinator (DLR) will organize two PEACE project workshops. One will be internal consortium workshop summarising results of the ongoing project. The second workshop (M35/M36) will be open for external scientific audience (about 30 attendees are expected) and will serve as the project main dissemination outcome, presenting all PEACE results.

6.10. University lectures

Enrichment of university curricula with PEACE results is expected. Partner TU/e will use its capacity as a university lecturer and will actively incorporate new PEACE knowledge within the Electrochemical Engineering MSc source of its education curriculum. Simultaneously, partner MMI will incorporate its PEACE know-how within its course on hydrogen technology at University of Modena and Reggio Emilia.

6.11. Other C&D&E tools

Simultaneously, the PEACE project might be using other supporting C&D&E tools. First, **social media profiles of PEACE team members** might come into play. PEACE members are expected to share project communication items prepared by the WP6 leader. However, their personal activity on social networks with respect to the PEACE project can be assumed.

Second, PEACE team members join actively **hydrogen industry associations** (e.g. Hydrogen Europe) and their long-term effort has been targeted to promote hydrogen as an enabler of

a zero-emission society. Their active engagement with leading stakeholders in the hydrogen sector represents a valuable contribution for PEACE promotion. The PEACE project imprints within their professional links and networks are expected and even policy position papers might be directly influenced by PEACE outcomes.

Third, **media appearance** of PEACE leading researchers might be envisaged.

7. Phases of the PEDR

Following the development of PEACE research and innovation activities and especially the production of PEACE results, the PEDR will be divided to three distinct phases (PH).

I. Project Awareness phase (M1-M20, June 2023 – January 2025) will be centered on rich project communication and the construction of the pool of followers. The aim is to raise the interest about the project and its expected outcomes among the stakeholders. Visual elements of the PEDR will be established and get operational. PEACE will start gaining the audience through the implementation of the communication plan (see further), including cooperation with other relevant R&I platforms. Furthermore, project communication will gain inputs from deliverables that will be produced within this period. Especially, at the end of PH I, first scientific results on cell and stack components are presumed to be issued.

II. Components dissemination phase (M21-M30, February 2025 – November 2025) will encompass communication as well as dissemination activities as the project will generate scientific results mostly in the area of the PEACE stack components. At the end of the period, the PEACE AEL demonstrator will be finished which will open the way for testing its behaviour in PH III. The aim of the PH II is to enrich the communication channels with first results - boosting the interest for PEACE dissemination activities (publications and conference presentations).

III. Demonstrator dissemination and exploitation phase (M31-M36, December 2025 – May 2026) will be mostly dedicated to rich dissemination activities in the field of PEACE AEL demonstrator simulations, optimization of components and of the operation strategy for the demonstrator. PEACE LCA as well as the PEACE stack integration with downstream processing will represent further principal outcomes to be used for dissemination and exploitation.

8. Communication Plan

The objective of communication measures is to reach out to society and show the impact and benefits of PEACE by addressing and providing possible solutions to propelling global carbon neutrality by accelerating the European hydrogen industry. Communication measures will inform about and promote the project and its results to multiple audiences. The target groups will be reached with a recognisable, clear and effective messages on the project's vision, its achievements and with a view to support the interest in hydrogen technologies. Partner GG is responsible for implementation of the communication plan. GG will address the target groups with key messages. The background scientific material, if needed, will be supplied by relevant partners.

8.1. Objectives and key messages

The communication strategy of the PEACE project has set its objectives in four areas of interest:

I. Topic awareness raising: The PEACE project aims to communicate the benefits of high-pressure alkaline electrolysis in terms of clean energy, climate change mitigation, and energy transition. PEACE objective is to raise awareness about the role of hydrogen in the process of decarbonisation and about benefits provided by the PEACE innovative technology.

Key messages to be communicated:

- Hydrogen role in decarbonisation (Green Deal relevance)
- Green hydrogen production by AEL
- Subsequent use of hydrogen produced by HP AEL

II. Project awareness raising: PEACE will communicate essential information on the R&I action, including WHAT, WHY, and HOW is being worked upon, WHO is working on the project and WHO funds it. The aim here is to promote PEACE project unique characteristics, its actors and development of project activities implementation. Inseparably, PEACE main results will be communicated in a user-friendly way to reach non-scientific audience.

Key messages to be communicated:

- PEACE actors
- PEACE HP AEL benefits
- PEACE HP AEL innovations in hydrogen production (stack components, dual-stage pressurization concept, BoP optimization, demonstrator simulation results)
- PEACE LCA
- PEACE integration concept with downstream chemical plants
- PEACE reduction of the levelized costs of hydrogen

III. Promoting EC and Clean Hydrogen Partnership funding of R&I: PEACE will promote the EC and Clean Hydrogen Partnership funding of green hydrogen technologies and the added value brought by combining private funds with the EC support.

Key messages to be communicated:

- EC/Clean Hydrogen Partnership support of hydrogen production

IV. Promoting research and business collaboration, including the promotion of networking and new opportunities for collaboration: Promoting fruitful cooperation in research and innovation activities between research circles and business entities belongs to one of the areas of interest of PEACE communication. PEACE will promote networking which offers new opportunities for further research outputs production.

Key messages to be communicated:

- Benefits of collaboration between industry and research
- Identification of topics for further research cooperation

8.2. Communication of key messages to different target groups

PEACE communication strategy will be differentiated on the basis of the target group characteristics of the SWOT analysis (Chapter 5). For each of the four target groups, different key messages will be delivered by diverse communication tools.

1. Research communities

PEACE communication towards researchers will be centred upon:

- PEACE HP AEL innovations in hydrogen production (stack components, dual-stage pressurization concept, BoP optimization, demonstrator simulation results)
- PEACE LCA
- EC/CHP support of hydrogen production
- Benefits of collaboration between industry and research Identification of topics for further research cooperation

The scientific community (including university students and R&I projects) will be served messages focused on project's added values in terms of methodology and technology, and on PEACE team's further aims to stimulate possible future cooperation. The role of EU/CHP in project funding will be highlighted. PEACE will use X posts, and more so **LinkedIn posts**. However, such scientific posts will be produced especially in PH III.

Moreover, the PEACE project will generate **newsletters** - with three special issues (No 8, 10, 12) dedicated to main scientific results which aim specifically on research community.

Otherwise, information on PEACE project will be communicated during scientific **events** attended by PEACE researchers (in PH II and III). To a lesser extent, university lectures held by PEACE members (e.g., TU/e) will be used.

2. European institutions

PEACE key messages to this group will focus on:

- Subsequent use of hydrogen produced by HP AEL
- PEACE HP AEL benefits
- PEACE integration concept with downstream chemical plants
- PEACE LCA
- Benefits of collaboration between industry and research

PEACE communication towards European institutions will emphasise project's objectives and results and the PEACE approach of industrial partners direct involvement in the innovation development. To reach the stakeholders in question PEACE will use its **social media** posts, **newsletters** and **press releases** (similar as for research communities and media/public group). However, certain pieces of communication will be specifically targeted at EU institutions (e.g., one press release on LCA results, newsletter No. 6 on industry-research cooperation and networking projects). Moreover, the key messages will be communicated directly during PEACE members' attendance at various scientific events.

3. Industry and business

Industry and business stakeholders will be communicated the given key messages:

- PEACE HP AEL innovations in hydrogen production (stack components, dual-stage pressurization concept, BoP optimization, demonstrator simulation results)
- PEACE reduction of the levelized costs of hydrogen
- PEACE LCA
- PEACE integration concept with downstream chemical plants
- EC/CHP support of hydrogen production
- Benefits of collaboration between industry and research

PEACE business audience is presumed to involve, on one hand, producers of electrolyzers, and on the other, hydrogen users in chemical industry. Potential PEACE business partners will be targeted mostly in PH II and III – at a stage where (exploitable) results will be produced. Towards this group, PEACE shall promote the advantageous collaboration of research and business funded by the EU/CHP to stimulate possible further cooperation. More specifically, PEACE communication will concentrate on key exploitable results presented in **newsletters** and on the **website**. Importantly, during industry **events and the final workshop** the consortium will actively engage in discussions with a number of original equipment manufacturers and Engineering, Procurement and Construction Partners that have the potential to further scale up the technology and bring it to the market.

4. General public and media

Communication towards public and media will focus namely on the following messages:

- Hydrogen role in decarbonisation (Green Deal relevance)
- Green hydrogen production by AEL

- PEACE actors
- PEACE HP AEL benefits
- EC/CHP support of hydrogen production
- Benefits of collaboration between industry and research

PEACE communication towards this group will concentrate more on basic facts with a focus on the topic in general. The emphasis will be put on explanation of WHY is PEACE work important, what are the benefits it will bring, and the role of the EC/CHP in R&I funding. To reach the audience, PEACE **website** will be used. Besides information on the project structure and consortium, a special “Public and media section” is outlined (<https://www.h2peace.eu/public-media>) where targeted information is stored. A project flyer will be produced and enabled for download there (PH I). Short articles on the hydrogen role in decarbonisation, on green hydrogen production by AEL and on PEACE benefits will be posted (PH I). All major PEACE results will be informed upon (mostly in PH III) through the website by the WP6 leader (based on inputs from relevant partners). Special website articles (news) on the role of EC and CHP in hydrogen production and on the positive outcomes of the PEACE industry-research cooperation will be posted in PH II. The “News & Events” section of the website (<https://www.h2peace.eu/news-events>) will encompass all invitations for events where PEACE researchers might be directly met (mostly PH II and III).

X posts will be used to deliver the key messages to the public and media. Regular posting will be conducted to ensure fresh and interesting information flow. In PH II and III, basics of project results will be communicated through this channel.

Topic specific **press releases** (distributed throughout all three phases), elaborating on recent project development, will serve as communication channels for the media.

Furthermore, the public/media group will be targeted during PEACE presence at fairs/exhibitions where distribution of **flyers** is assumed.

8.3. Summary of the communication plan

The following figure clearly summarizes the main communication tools and their timing vis-à-vis the outlined target groups.

Fig. 10 Summary of the communication plan

Target Group	Tools	Timing
Public and media	Website	M6-M36
	X	M6-M36
	Flyer	mostly PH II and III
	Press releases	M6-M36
	Project posters	mostly PH II and III
	Newsletter	M6-M36
Research communities	LinkedIn	M6-M36 (mostly PH I)
	Newsletter	M6-M36
	Events participation	mostly PH II and III
	Direct communication	mostly PH II and III
	Website	M6-M36

EU institutions	Flyer	mostly PH II and III
	X	M6-M36 (mostly PH I)
	University lectures	mostly PH II and III
	X	M6-M36 (mostly PH I)
	LinkedIn	M6-M36 (mostly PH I)
	Newsletter	M6-M36
	Direct communication	mostly PH II and III
	Press releases	M6-M36
	Website	M6-M36
	Flyer	mostly PH II and III
Industry and business	Project posters	mostly PH II and III
	Website	M6-M36
	Newsletter	M6-M36
	Events participation	mostly PH II and III
	Direct communication	mostly PH II and III
	X	M6-M36
	Flyer	mostly PH II and III
	LinkedIn	M6-M36
	Project posters	mostly PH II and III

9. Dissemination Plan

The objective of the PEACE dissemination plan is to maximise project impact on the society by promoting PEACE results and their use. Dissemination measures will spread project results to defined target groups. Implementation of the dissemination plan is monitored by WP6 leader. Dissemination of results as such (in line with the EC obligations as mentioned in Chapter 4), belongs to responsibilities of each PEACE partner who produces the result. However, as the PEACE newsletter and press releases are concerned, both will be prepared by the partner GG based on inputs of relevant WP leaders.

9.1. PEACE results for dissemination

For the dissemination purposes, main PEACE project results have been identified, along with their authors, within an internal project survey:

- High performance stack components (TU/e, MMI, DLR)
- Findings on a stack design and BoP optimization (BTU CS, MMI)
- Safety concepts for high pressure operation – HAZOP, FMEA (DLR, MMI, BTU CS)
- A demonstrator of > 50 kW AEL as PoC capable of operation at 70% LHV at 1 A/cm² up to 90 bar (BTU CS, DLR, MMI)
- Performance and durability assessment data of HP-AEL system demonstrator (BTU CS, DLR)
- Simulation algorithms for optimizing the HP-AEL operational strategies (DLR)
- Integration concept in chemical industry (HYCC)
- LCA - potential environmental impacts and benefits of the technology (DTU)
- Test protocols for cold start, dynamic operation, warm standby, shut down (DLR)

The above-mentioned results are planned to be disseminated to various targets groups, using different dissemination channels as summarised in Fig. 11.

Fig. 11 Results and their dissemination

PEACE result	Authors	Dissemination action (number of actions)	Target group
High performance stack components	DLR	Peer-reviewed article (1)	Research communities
		Conference presentation (2)	Research communities, industry and business, European institutions
	MMI	Integration within education courses (1)	Research communities
	TU/e	Thesis ² (1)	Research communities
		Peer-reviewed articles (2)	Research communities
		Conference presentation (2)	Research communities, industry and business, European institutions

² A PEACE project thesis will be worked upon at TU/e, however, it is assumed to be delivered after the project end as it is assigned for a 4-years PhD program, starting in M4.

PEACE result	Authors	Dissemination action (number of actions)	Target group
		Integration within education courses (1)	Research communities
Stack design and BoP optimization	MMI	Conference presentation (1)	Research communities, industry and business, European institutions
	BTU CS	Peer-reviewed article (2)	Research communities
		Conference presentation (2)	Research communities, industry and business, European institutions
Safety concepts	DLR	Conference presentation (1)	Research communities, industry and business, European institutions
	MMI	Conference proceedings (1)	Research communities, industry and business, European institutions
		White paper for ETB test stations customers (1)	Research communities, industry and business
	BTU CS	-	-
Demonstrator in operation	DLR	Peer-reviewed article (1)	Research communities
		Conference presentation (2)	Research communities, industry and business, European institutions
	MMI	Peer-reviewed article (1)	Research communities
	BTU CS	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities, industry and business, European institutions
Performance and durability assessment data of HP-AEL system demonstrator	DLR	Conference presentation (1)	Research communities, industry and business, European institutions
	BTU CS	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities, industry and business, European institutions
Simulation algorithms	DLR	Peer-reviewed article (1)	Research communities
		Conference presentation (2)	Research communities, industry and business, European institutions
Integration concept	HYCC	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities, industry and business, European institutions
LCA	DTU	Thesis (1)	Research communities
		Peer-reviewed article (1)	Research communities
		Conference proceedings (1)	Research communities, industry and business, European institutions

PEACE result	Authors	Dissemination action (number of actions)	Target group
		Conference presentation (1)	Research communities, industry and business, European institutions
Test protocols for cold start, dynamic operation, warm standby, shut down	DLR	Peer-reviewed article (1)	Research communities

Beside the dissemination actions taken directly by authors of research results, the WP6 leader (GG) will disseminate the PEACE results within project **press releases** and the **newsletter**, to reach as well the audience from public and media. Lastly, it needs to be stressed that all the above-mentioned results will be disseminated through the **PEACE final workshop** that will be held by the Coordinator (DLR) in M35/M36. About 30 participants across all target groups are expected to take part.

10. Exploitation Plan

The objective of the exploitation plan is to turn PEACE R&I actions into concrete value and impact for society. The technology developed in the PEACE project has the potential to significantly reduce levelized costs of hydrogen, thus stimulating the demand for hydrogen and hydrogen economy. The PEACE project will undertake commercial and scientific exploitation pathways to succeed and to fulfil its grant obligations as stated in the Grant Agreement. Currently, it is presumed that PEACE partners will exploit the results directly themselves. However, the use of Horizon Results Platform will be considered. The responsibility of the results exploitation lies on individual partners. The WP6 leader will aid partners with their particular exploitation strategies and monitor their efforts for project continuous reporting and PEDR updates.

By **commercial exploitation**, the PEACE industrial partners (HYCC, MMI) will widen their commercial product portfolio. The project will support patenting effort of its members. PEACE project will pave the way for a subsequent fast PEACE technology TRL raising.

Scientific exploitation is presumed through PEACE scientific partners (DLR, TU/e and BTU CS). Results gained out of the PEACE project are planned to be developed further by subsequent R&I activities. PEACE consortium partners intend to increase their results' TRL in following projects whilst building on the current consortium composition. Alongside, new collaborative relations initiated within the PEACE project (in the academic and industry world) will be used for further research activities. Furthermore, with active dissemination of project results among partners' university students, new scientific knowledge and concepts will be formulated.

In Fig. 12 the PEACE project key exploitable results (KER) are presented, based on internal survey of PEACE consortium partners. For each KER, its author(s) have outlined their notion of the KER's exploitation in a 3-years' time after the project end. Regarding the current early stage of project implementation, exploitation plans for each KER will be more developed in the updated version of the PEDR (in M15 and M26).

Fig. 12 Key exploitable results

KER (principal author/ co-authors; TRL at the end of the project)	Description	Target groups
KER1 - Qualification and selection of cell and stack components for high-pressure, high-performance electrolysis (DLR/ MMI, TU/e, BTU CS; 5)	Qualification and selection of the cell and stack components based on their performance and life time under various operational conditions.	Research partners, industry, community
KER2 - Test protocols for dynamic operation (DLR; 4)	During the project new test protocols are defined to test AEL under dynamic operation to obtain insights on the durability, efficiency and gas	Research partners, industry, community

	purity of the stacks under dynamic operation.	
KER3 - Increased human resources capacity (DLR/ BTU CS, HYCC; not relevant)	The learning of the project will allow to strengthen the human resources capacity on cell design, simulations, stack scale-up, pressurized operations and project management.	Researchers
KER4 - Extension of the modelling database (DLR/ BTU CS; 3)	Extension of the modelling database for HP electrolyser, double-shell layout and further components.	Research partners, industry, community
KER5 - Layouts for integrated plants (DLR/ HYCC; 4)	Detailed plant layout for AEL and downstream integration for industrial applications.	Research partners, industry, community
KER6 - Validated simulation model for pressurized electrolyser operation (DLR/ MMI, BTU CS; 5)	A model of the pressurized stack response is going to be developed and validated.	Research partners, industry, community
KER7 - Stack components design (MMI/ DLR, BTU CS; N/A)	New products - parts and stacks	Research labs
KER8 - HAZOP / FMEA ANALYSIS (MMI/ BTU CS; N/A)	Report/know-how is presumed to be exploited.	Industry and research labs, industry applications
KER9 - Improved small-scale cell for alkaline water electrolysis (TU/e; 5)	Small-scale electrolysis cell that is used within the PEACE project to evaluate electrodes and membrane performance.	Research institutes, university students
KER10 - Testing service for high pressure AEL components (BTU CS/ DLR, MMI; N/A)	Testing service for high pressure AEL components.	Components manufacturers, electrolyser manufacturers
KER11 - Life cycle inventory data (DTU/ DLR, MMI, BTU CS; N/A)	Data inventory on mass balances, energy balances, materials and energy requirements to run the PEACE technology.	Life Cycle Impact Assessment practitioners

11. Conclusions

The present report on the PEDR has been produced by the WP6 leader (GG) to outline the communication, dissemination and exploitation actions of a research and innovation project during its 36 months of implementation in the area of hydrogen electrolysis production. The overall objective is to aid to the achievement of project research targets and to boost project impact on society, and more specifically on the defined target groups (i.e., general public and media, research communities, European institutions, and industry and business).

Beside setting the targets and planning the project's C&D&E pathways, PEDR is made to serve the consortium as a practical guidebook on C&D&E issues, summarising basic rules to follow and presenting partners' obligations with respect to PEDR actions in the frame of Horizon Europe programme setting. PEACE PEDR is an evolving document and will be updated in M15 and M26.

To deliver the key messages and results to its audience, PEACE is using a wide variety of tools, starting with an elaborated visual identity (logo, Word and PowerPoint templates) that is well manifested at PEACE project website. The website together with PEACE profile on X and LinkedIn represents the main pillar of communication. These tools are supported by flyers, roll up banners, press releases and a newsletter. Scientific publications represent an important dissemination tool. Project promotion and results dissemination will also take oral forms – by events attendance (conferences, workshops, exhibitions) and university lecturing.

The PEACE PEDR strategy has three distinct parts. Communication Plan sets the project communication objectives and key messages to be transferred to multiple audience. Four types of objectives have been delineated – topic and project awareness raising, EC and Clean Hydrogen Partnership funding for R&I project promoting, and lastly, research and business collaboration promoting. PEACE communication will be multifaceted with respect to various target groups, using different tools to reach them. Communication KPIs have been set, mostly in the online communication sphere.

Second, Dissemination Plan introduces the principal project results and the ways of its dissemination - the main dissemination tool being the publications, along with events participation.

Third, Exploitation Plan identifies the main exploitable results, based on internal data of the project survey. Several key exploitable results for scientific and commercial exploitation have been identified at this early stage of project implementation. In the a PEDR update, the KER will be elaborated upon to get their particular exploitation strategies.

The PEACE PEDR will be implemented in three distinct phases with respect to different types of outcomes – i.e., Project Awareness phase, Components dissemination phase, and Demonstrator dissemination and exploitation phase.

As PEACE is a collaborative research and innovation project, all its success lies in good collaboration of consortium members.

12. References

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