

**COLDSPARK® DRIVEN ENERGY AND COST-EFFICIENT METHANE CRACKING FOR HYDROGEN PRODUCTION**

## **D7.5. Communication and dissemination final report**

COLDSPARK® project partner	EUROPROJECT
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<b>Deliverable title</b>	<b>Plan for Dissemination, Exploitation and Communication</b>
<b>Work Package number and title</b>	WP7: Exploitation, Communication and Dissemination activities
<b>Deliverable number</b>	D7.5.
<b>Description</b>	<p>This report presents an overview of the communication and dissemination activities carried out throughout the lifetime of the ColdSpark® project. Its main objective is to summarise the actions implemented to increase its visibility, engage relevant stakeholders, and promote the project’s results, while assessing their effectiveness against the predefined Key Performance Indicators (KPIs). The report provides a comprehensive account of how the project’s strategic dissemination, exploitation and communication plans produced and submitted in the lifetime of the project (D7.1, D7.2 and D7.3) were executed and to what extent it contributed to achieving ColdSpark®’s outreach and impact goals.</p> <p>A post-project Dissemination, Exploitation, and Communication Plan (D7.4) submitted together with this report explains how these actions will be carried out beyond the project end.</p>
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**Document Approval**

Name	Role	Action	Date
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**Nature of the deliverable**

R	Document, report (excluding the periodic and final reports)	<input checked="" type="checkbox"/>
DEM	Demonstrator, pilot, prototype, plan designs	<input type="checkbox"/>
DEC	Websites, patent filing, press & media actions, videos, etc.	<input type="checkbox"/>
DATA	Data sets, microdata, etc.	<input type="checkbox"/>
DMP	Data management plan	<input type="checkbox"/>
Ethics	Deliverables related to ethics issues.	<input type="checkbox"/>

<b>SECURITY</b>	Deliverables related to security issues	<input type="checkbox"/>
<b>Other</b>	Software, technical diagrams, algorithms, models, etc.	<input type="checkbox"/>

### Dissemination level

<b>PU</b>	Public — fully open (automatically posted online on the Project Results platforms)	<input checked="" type="checkbox"/>
<b>SEN</b>	Sensitive — limited under the conditions of the Grant Agreement	<input type="checkbox"/>

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This report forms part of the deliverables from the project ColdSpark® which has received funding from the European Union’s Horizon Europe Research and Innovation Programme under Grant Agreement No. 101069931.

The ColdSpark® project will validate a novel non-thermal plasma technology to produce hydrogen at an industrial scale from methane, with a process energy efficiency of 79%, achieving a conversion rate of 85% aiming at zero CO<sub>2</sub> emissions. This will be achieved by designing an industrial-relevant reactor that leverages the best features of the non-thermal plasma technologies, gliding arc and corona discharge, to ensure high efficiency and scalability. The innovation addresses for the first time the critical step of matching the reactor with a pulsed power supply. It enables a perfect fine-tuning of the cracking process parameters, to find the right electron density and energy distribution in the plasma reactor, to maximize energy efficiency. The up- and downstream gas management will be optimised to further contribute to the system’s compatibility with the existing infrastructure. The project will develop and test a novel plasma reactor at lab scale and validate it in conjunction with the power supply at a large scale, pursuing the industry’s most power-efficient generation of hydrogen alongside high-value carbon. The technology will assess its application for both, natural gas and biomethane producers. A low energy cost (< 15 kWh/kg H<sub>2</sub> produced) without the need for catalysts and water, makes the proposed solution the most cost-competitive, environment-friendly, and less complex to implement. The reactor design and modularity bring lower CAPEX and OPEX and make it easily scalable and flexible. The project gathers the expertise of a mix of academic, research, and industrial partners from five countries, which bring both outstanding research and topic competence, as well as knowledge and access to the solution for end-user industries.

ColdSpark® is built on a strong consortium of 7 partners from Norway, Spain, Bulgaria, Germany, and the UK with SEID AS as a Coordinator.

More information about the project can be found at: <http://www.ColdSpark.eu/>

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## EXECUTIVE SUMMARY

The Final Communication and Dissemination Report build upon the strategic framework established through the successive versions of the Plans for Dissemination, Exploitation and Communication (D7.1, D7.2, and D7.3) developed during the ColdSpark<sup>®</sup> project and submitted respectively in M6, M12, and M24. While the plans mentioned above focused on defining and implementing the overall communication, dissemination and exploitation strategy, this final report provides an integrated overview and assessment of the actions undertaken during the project's lifetime and evaluates their overall impact.

The ColdSpark<sup>®</sup> communication and dissemination strategy has been dynamic and adaptive, as planned in the project's Grant Agreement. It made possible its evolving alongside the project's scientific and technological progress with frequent adjustments corresponding to the actual development of the project results. The primary goal of the ColdSpark<sup>®</sup> DEC plans was to ensure effective visibility of project's vision and results. Communication and dissemination activities have been implemented with the dual aim of raising awareness among target audiences and creating conditions for knowledge transfer, stakeholder engagement, and long-term impact ensuring the exploitation of the project results during and after its lifetime.

To reach this objective, a coherent visual identity and a consistent communication narrative were established at a very early stage of the project to strengthen recognition and credibility. High-quality digital content, publications, and tailored messages agreed upon among the project partners supported the dissemination of results to scientific, industrial, and policy audiences and informed the general public about the opportunities provided by the development of the cold methane splitting technology. A multichannel approach, including the project website, social media, newsletters, digital and print publications, was used to provide continuous visibility and engagement, ensuring transparency and open access to non-confidential information and project results.

The performance and reach of all activities were systematically monitored using Key Performance Indicators (KPIs) defined in the Grant Agreement and refined in the iteratively developed DEC Plans. The final evaluation available in the end of this report confirms that the project has effectively achieved its objectives in terms of visibility, audience engagement, and contribution to the wider hydrogen and carbon production innovation landscape. The implemented activities successfully conveyed the project's value proposition and established ColdSpark as a reference initiative in the emerging field of methane conversion.

This report focuses specifically on the communication and dissemination dimensions of the project. It is complemented by three additional deliverables submitted in parallel (M42) and should be read in relation to them:

- **D7.4 Plan for Dissemination, Exploitation and Communication (M42)**, providing a framework for sustaining visibility and outreach beyond the project's lifetime.
- **D7.6 Exploitation plan (Common business plan)**, detailing the market potential and future uptake of project results;
- **D7.7 Report on synergies with relevant initiatives, projects and programmes**, summarising collaboration and knowledge exchange with related project, initiatives and partners; and

Together, these documents represent a coherent and integrated approach to ensuring ColdSpark®’s continuity, legacy, and impact. Thus, the purpose of this final report is not only to evaluate what has been achieved but also to provide a concluding reflection on how the project’s communication and dissemination efforts have contributed to preparing the ground for further exploitation, collaboration, and sustainable visibility and continuity of the stage of development of the ColdSpark® technology achieved within this project.

## ABBREVIATIONS

Abbreviation	Definition
GA	Grant Agreement
CA	Consortium Agreement
EC	European Commission
DEC	Dissemination, Exploitation and Communication
M	Month
KER	Key Exploitation Result
KPI	Key Performance Indicator

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## Introduction

The communication and dissemination activities of the ColdSpark® project have played a central role in ensuring that its innovative approach to methane splitting has been visible, and relevant to the scientific community, industrial stakeholders, policymakers, and the wider public. Through a structured and continuously evolving strategy, the consortium has aimed to maximise awareness and understanding of ColdSpark®'s achievements, while fostering collaboration and setting the stage for future exploitation and market uptake of its results.

The overarching objectives of the communication and dissemination work in ColdSpark® were defined in line with the project's Grant Agreement and served as the foundation for all activities under Work Package 7. These objectives included the following actions tailored to each phase of the project implementation:

- develop and maintain a **strategic plan for communication, dissemination, and stakeholder engagement** both within and beyond the consortium, ensuring coherent messaging and coordinated action;
- implement and continuously enhance **communication tools and channels** to support effective stakeholder engagement and visibility of project outcomes;
- **disseminate the project's main activities, progress, and findings** through appropriate and diversified means, fostering awareness and knowledge uptake among scientific, industrial, and policy audiences; and
- support **synergy-building and exploitation efforts** by preparing a dedicated Synergy Report and contributing to the overall exploitation strategy, ensuring that ColdSpark® results are positioned for long-term impact and uptake.

Communication and dissemination activities were implemented throughout the full duration of the project and adjusted in line with its technical progress. The approach targeted multiple audiences including industry, research, academia, policy, and civil society and relied on tailored messages developed and further adapted in each version of the Plan for Dissemination, Exploitation and Communication (D7.1, D7.2, and D7.3) to convey ColdSpark®'s technological and environmental impact.

In line with the European Commission's guidance, **communication** in ColdSpark® focused on promoting the project's mission, progress, and achievements to a wide range of audiences beyond the project's direct stakeholders to demonstrate the value of EU-funded research to society and specifically, the potential of cold methane splitting as a technical pathway for clean hydrogen and valuable carbon production. In contrast, **dissemination** activities were directed towards specific professional audiences such as researchers, industrial actors, and policymakers, ensuring that the project's validated results and knowledge outputs were made accessible to those who could further use, replicate, or build upon them for research, innovation, or policy purposes.

This Final Communication and Dissemination Report present an overview and evaluation of communication and dissemination actions carried out under Work Package 7. It provides evidence of how the communication and dissemination strategy, as defined in the series of DEC Plans (D7.1–D7.3), has been

implemented, monitored, and adapted to achieve maximum impact. The report also reflects on the efficiency of internal coordination, the quality and coherence of communication materials, and the effectiveness of outreach activities against the Key Performance Indicators (KPIs) defined in the earlier plans.

While this document focuses exclusively on the communication and dissemination dimensions, complementary deliverables provide a broader view of ColdSpark®'s overall impact framework. These deliverables include D7.1 – D7.4 Plans for Dissemination, Exploitation and Communication (M6, M12, M24, M42), as well as D7.6 Exploitation plan (Common business plan) and D7.7 Report on synergies with relevant initiatives, projects and programmes. Together, these documents ensure continuity between communication, dissemination, exploitation, and synergy actions, forming an integrated approach to sustaining ColdSpark®'s legacy beyond its 42-month implementation period.

This report is structured as follows:

- An outline of the **overall strategy and guiding principles** that shaped the implementation of communication and dissemination activities.
- An **overview of the communication and dissemination actions** carried out during the project, including the tools and channels employed.
- An **evaluation of the performance** and impact of these activities, based on the project KPIs.
- **Conclusions and lessons learned**, offering recommendations to inform future initiatives.

This deliverable constitutes both a comprehensive record of ColdSpark®'s communication and dissemination activities and a critical reflection on these efforts to advancing the visibility of sustainable hydrogen technologies. It provides an assessment of the successes achieved and the challenges encountered during implementation, ensuring transparency and accountability. Furthermore, it aims to share transferable lessons and recommendations that may serve as a reference for future Horizon Europe projects undertaking communication and dissemination activities in comparable scientific and technological fields.

## Communication and Dissemination Strategy Overview

### Strategic Purposes of Communication and Dissemination Activities within ColdSpark® Project

From the outset of the ColdSpark® project, communication and dissemination were recognised by the consortium as fundamental obligations under Horizon Europe and as key instruments for ensuring visibility, transparency, and long-term impact of publicly funded research. These activities were coordinated by Europroject (EP) as a communication and dissemination leader in the project, continuously prioritised by the project coordinator and actively supported by all partners.

At an early stage of project implementation, essential tools, templates, and procedures were proposed by EP, as the partner responsible for leading communication and dissemination, and jointly agreed upon by

the consortium. This ensured a coherent and coordinated approach across all partners. In line with the European Commission's guidance, communication activities were designed to inform and engage broad audiences about the project's mission, progress, and contribution to the green transition, while dissemination activities focused on sharing scientific and technical results with stakeholders capable of applying, replicating, or further developing them in research, innovation, and policy contexts.

Within Work Package 7, "Exploitation, Communication and Dissemination Activities," it was a key priority to ensure that the project's knowledge and achievements not only reached diverse audiences but also generated tangible pathways toward industrial uptake and exploitation. The overarching objective was to build awareness, foster stakeholder engagement, and contribute to the long-term sustainability and visibility of ColdSpark®'s innovative results.

To reach this objective, an iterative approach was adopted. It allowed a continuous refinement of the communication, dissemination, and exploitation activities throughout the project's duration. This adaptive process took into account stakeholder feedback and insights gathered from various interactions, including direct engagement during events, conferences, and bilateral exchanges but also well-structured mechanisms for sharing this knowledge among project partners and coordination of all communication and dissemination efforts within the consortium. Partners' inputs proved extremely valuable for aligning messages, adjusting tools, and ensuring the continued relevance of all communication and dissemination actions and their alignment with both audience expectations and actual technical achievements within the project.

The systematic exchange of experiences and observations from events that was a topic in each of the consortium's monthly Technical Committee Meetings contributed significantly to shaping coherent, accurate, and impactful messaging. This internal dialogue ensured that all communication and dissemination outputs reflected a shared understanding of the project's progress, achievements, and strategic objectives at consortium level.

Based on the continuous internal dialogue among all project partners, the ColdSpark®'s communication and dissemination strategy evolved through a series of structured deliverables, each serving as a living document adapted to the project's progress and external developments:

- D7.1. Plan for Dissemination, Exploitation and Communication (M6)

D7.1 was submitted at an early stage of the project (M6) and established the overall strategic framework for communication, dissemination, and exploitation activities. It defined the key objectives, project's visual identity, target audiences, core messages, communication channels, and management responsibilities, thereby laying the foundation for coherent and coordinated outreach to project stakeholders on the side of all partners.

At this initial stage, the overarching strategic objective for communication, dissemination, and exploitation was articulated as follows:

*“Maximising the project’s visibility by reaching the key audience and target groups defined in the project, supporting the engagement of stakeholder groups, raising the project awareness to the wider public, and promoting the results, outcomes and impact of the project.”*

- D7.2. Plan for Dissemination, Exploitation and Communication (M12)

This deliverable represented the first opportunity to revise and strengthen the planning of dissemination, exploitation, and communication activities based on the initial implementation experience and feedback shared among all project partners. This update reinforced coordination across work packages, improved the clarity of internal approval and reporting procedures. Particular emphasis was placed on enhancing the visibility of ColdSpark®’s mission and technological potential within relevant stakeholder communities. At this stage, the strategic objective for communication, dissemination, and exploitation was refined as follows to reflect the project’s progress:

*“Maximising the project’s visibility by reaching the key audience and promoting project results and impact while maintaining a balance between confidentiality and impactful dissemination and laying a strong foundation for future exploitation.”*

- D7.3. Plan for Dissemination, Exploitation and Communication (M24)

D7.3. further refined the strategic orientation of the project’s outreach activities in line with ColdSpark®’s technical progress and the evolving interests of its stakeholder community. This deliverable further developed a comprehensive Key Performance Indicator (KPI) framework to track the systematic monitoring of communication and dissemination performance and to assess progress against measurable targets. It also reinforced the interlinkages between communication, exploitation, and synergy activities, placing particular emphasis on aligning dissemination efforts with the emerging exploitation pathways of the project’s achievements.

At this stage, the strategic objective for communication, dissemination, and exploitation was updated to reflect this integrated and impact-oriented approach:

*“Efficiently maximise the visibility of the project by disseminating impactful results, fostering extensive networking with key stakeholders, while placing significant emphasis on the strategic exploitation.”*

- D7.4. Plan for Dissemination, Exploitation and Communication (M42)

The last version of the DEC is to be submitted at the end of the project and serves as a comprehensive roadmap for post-project communication and long-term visibility. Building on the experience gained and lessons learned throughout implementation, this deliverable aims to provide practical guidance for sustaining the project’s outreach and ensuring that ColdSpark®’s results continue to be shared, referenced, and utilised after the project’s conclusion. Its main objective is to secure the long-term alignment of communication and dissemination activities at partner level with the exploitation pathways defined for the

continued development and market uptake of the ColdSpark® methane-splitting technology by the leading technical partners.

As this short overview shows, the ColdSpark® communication and dissemination strategy has been planned at the very beginning as a dynamic, adaptive, and impact-oriented framework, ensuring that the project's technological achievements are effectively translated into a language understandable for the respective project audience to achieve societal awareness, stakeholder engagement, and industrial relevance. The current deliverable's objective is to provide both accountability for the actions implemented during the project and a strategic foundation based on the lessons learned during the project's duration for maintaining and expanding ColdSpark®'s visibility beyond its lifetime.

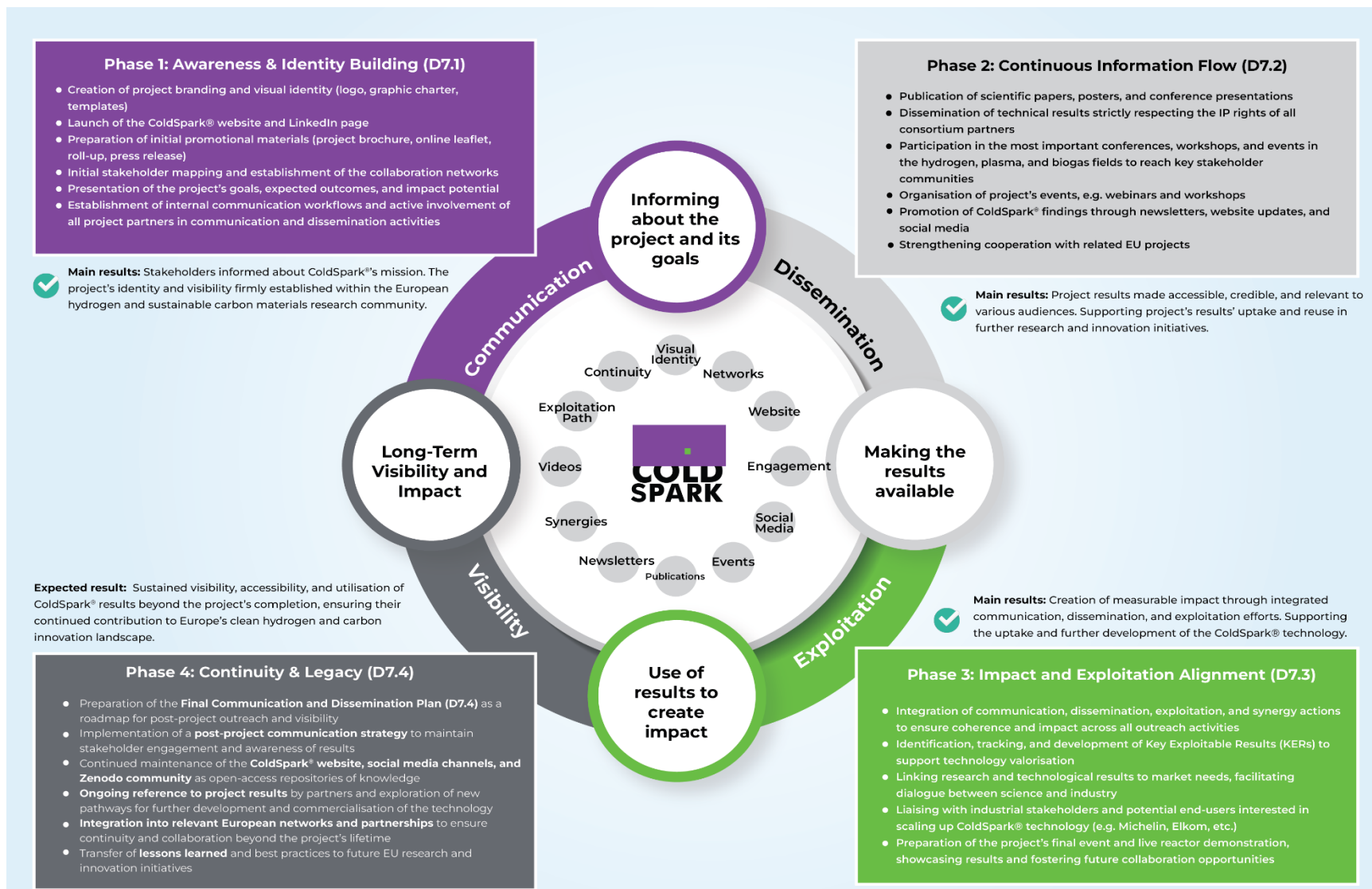


Figure 1. Phases in the implementation of the ColdSpark® project Communication, Dissemination and Exploitation activities

## Integration with Exploitation and Synergy Actions

The detailed outcomes of the exploitation and synergy activities are presented separately in D7.6. Exploitation Plan (Common Business Plan) and D7.7. Report on Synergies with Relevant Initiatives, Projects and Programmes. Even though the detailed reporting of these activities is not included in the current report in order not to duplicate the content of the deliverables above, throughout the project implementation, the communication and dissemination activities were continuously and strategically aligned with both exploitation planning and synergy-building efforts. This integrated approach ensured coherence across all outreach actions and maximised the overall visibility, relevance, and impact of the project's results. Thus, communication and dissemination extended far beyond awareness-raising and knowledge-sharing to actively support the exploitation and long-term uptake of the ColdSpark® technology, fostering continuity and strengthening the project's contribution to Europe's clean energy transition.

## Communication and Dissemination Target Audiences and Stakeholder Engagement

The segmentation of ColdSpark®'s target audiences evolved progressively throughout the project and was updated in the DEC Plan iterations (D7.1 – D7.4), mirroring the advancement of its technological development, the growing maturity of its results, and the consortium's increasing focus on exploitation and long-term impact. Early communication efforts were primarily aimed at raising awareness and building visibility for the project's objectives within the hydrogen innovation communities. As the technology advanced from concept validation to pilot-scale demonstrations, the emphasis shifted toward targeted engagement with stakeholders capable of applying, supporting, or amplifying the project's results. In the context of the growing market demand for high-quality carbon materials and the policy framework established under the European Critical Raw Materials Act, engagement with carbon-demanding industrial stakeholders gained increasing importance throughout the project's implementation. This development required the careful tailoring of communication messages to address their specific interests, emphasising the technological scalability, and market relevance of the ColdSpark® technology.

Each iteration of the Dissemination, Exploitation and Communication Plan (D7.1, D7.2, D7.3 and D7.4) reflected the required transition in the interaction with the project target audiences. The initial plan (D7.1) defined broad audience categories and established a common understanding among partners of who ColdSpark® should reach and why. The updated plan (D7.2) incorporated insights gained from the first communication activities and early stakeholder interactions, refining audience segmentation to prioritise groups with higher potential for collaboration, influence, or exploitation. By the time of the revised plan (D7.3), the segmentation had become more sophisticated and impact-oriented, aligning communication objectives with the emerging exploitation strategy. D7.4 submitted at the end of the project, provides further guidance to partners on sharing ColdSpark® results beyond the project's end.

Stakeholder Group	Representatives	Evolution of key communication and dissemination objectives
Industry	Natural gas, biomethane, hydrogen and carbon-based industries; chemical, steel, and energy sectors; technology developers	<p><b>D7.1:</b> Introduce ColdSpark® as an innovative, plasma-based low-carbon technology contributing to industrial decarbonisation.</p> <p><b>D7.2:</b> Communicate early progress and demonstrate potential for integration into existing industrial processes; highlight the value of clean hydrogen and eCarbon® products.</p> <p><b>D7.3:</b> Engage industrial stakeholders in assessing scalability, investment opportunities, and exploitation pathways for ColdSpark® technology.</p> <p><b>D7.4:</b> Maintain communication with key industrial partners and multipliers through targeted updates, co-branding opportunities, and event participation; promote continued collaboration on upscaling, investment, and market deployment.</p>
Research & Academia	Universities, research institutes, R&D organisations, scientific networks	<p><b>D7.1:</b> Raise awareness of the scientific foundations and technological novelty of non-thermal plasma methane splitting.</p> <p><b>D7.2:</b> Share preliminary experimental results, encourage scientific exchange, joint publications, and open-access data contributions.</p> <p><b>D7.3:</b> Promote ColdSpark® as a validated reference case for sustainable hydrogen production and carbon valorisation; encourage collaboration on upscaling and further research.</p> <p><b>D7.4:</b> Ensure continuous knowledge sharing via open-access publications, Zenodo community updates, and collaboration in follow-up projects; integrating ColdSpark® outputs into educational and training materials by the university partners within the consortium and maintain the scientific visibility of the cold methane splitting technology developed through participation in events and academic collaborations.</p>

<p><b>Policy &amp; Decision-Makers</b></p>	<p>European and national policymakers, energy and environment ministries, energy agencies, standardisation and regulatory bodies</p>	<p><b>D7.1:</b> Highlight ColdSpark®’s contribution to EU climate and energy strategies and to the development of low-carbon industrial value chains.</p> <p><b>D7.2:</b> Provide policy-relevant evidence supporting Europe’s strategic autonomy and energy transition.</p> <p><b>D7.3:</b> Demonstrate ColdSpark®’s relevance for implementing the European Green Deal and industrial decarbonisation policies, underlining its zero-direct-emission process and market potential.</p> <p><b>D7.4:</b> Ensure long-term visibility of ColdSpark® results in policy contexts by maintaining links with EU initiatives.</p>
<p><b>Networks &amp; Initiatives</b></p>	<p>Hydrogen Europe, European Biogas Association (EBA), Clean Hydrogen Partnership, CCUS and circular-carbon networks, Horizon Europe clusters</p>	<p><b>D7.1:</b> Establish initial contacts and position ColdSpark® within the European hydrogen and CCUS community.</p> <p><b>D7.2:</b> Strengthen cooperation, mutual visibility, and cross-promotion of results with complementary initiatives.</p> <p><b>D7.3:</b> Integrate ColdSpark® results into joint communication and clustering activities, expanding the project’s policy reach and impact through synergy actions.</p> <p><b>D7.4:</b> Maintain participation in cluster initiatives and European research networks; disseminate lessons learned and promote ColdSpark® as a model for cross-sectoral collaboration.</p>
<p><b>General Public &amp; Media</b></p>	<p>Citizens, journalists, NGOs, educational and professional organisations</p>	<p><b>D7.1:</b> Communicate the project’s purpose and expected environmental benefits in accessible, non-technical language; emphasise EU support for innovation.</p> <p><b>D7.2:</b> Share visible progress, milestones, and real-world relevance through engaging visual and digital content.</p> <p><b>D7.3:</b> Present tangible outcomes and societal benefits of clean hydrogen and eCarbon® production,</p>

		<p>demonstrating the added value of EU-funded research for climate neutrality and sustainable industry.</p> <p><b>D7.4:</b> Continue public visibility through website and social-media maintenance, accessible summaries, and multimedia storytelling; highlight ColdSpark®'s legacy as part of Europe's transition toward climate-neutral industry.</p>
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**Table 1. Evolution of key communication and dissemination objectives per stakeholder group and its representatives**

## Risk Management and Mitigation in the Implementation of Communication and Dissemination Activities

Throughout the implementation of the ColdSpark® project, potential risks related to communication and dissemination were continuously monitored and reviewed to ensure that visibility, stakeholder engagement, and impact generation were not compromised. EP as WP7 leader and all partners applied proactive and adaptive management, ensuring that emerging risks are identified at an early stage and mitigation measures are applied for the risks already added to the risk register.

In line with Horizon Europe best practices, WP7 adopted a preventive and responsive approach to risk management. The key risks identified at proposal and Grant Agreement stages (R9–R16) were continuously monitored, revisited during each reporting periods and complemented with emerging risks linked to technological development, scheduling, and stakeholder dynamics.

Mitigation measures focused on:

- maintaining stakeholder engagement despite changing external conditions,
- providing tailored communication to stakeholder groups gaining importance for the project further development and exploitation, e.g. carbon-intensive industries,
- safeguarding intellectual property while ensuring openness,
- adapting dissemination timing to technical progress,
- preserving coherence of messaging across partners.

The systematic monitoring and mitigation of these risks ensured that ColdSpark®'s communication and dissemination activities remained coherent, consistent, and compliant with EU visibility rules throughout the project's lifetime. The lessons learned from WP7 risk management particularly in stakeholder targeting, internal coordination, and adaptive scheduling feed directly into D7.4, which aims to provide a roadmap for sustaining communication, visibility, and exploitation alignment beyond the end of the project. D7.4 provides a list of post-project communication and dissemination risks to be considered in the implementation of such activities beyond the project's end.

Risk ID	Description	Mitigation Measures During Project	Relevance & actions beyond the project's lifetime
R9 — Low stakeholder engagement	Limited participation of key industrial or policy actors in project communication and exploitation activities.	Targeted outreach via relevant industry events, webinars, and digital campaigns; consistent storytelling and visibility through LinkedIn and website.	Maintain stakeholder mailing list; continue engagement through project website and LinkedIn after project end; highlight exploitation milestones.
R10 — IP-related constraints	Possible delay or restriction in dissemination due to protection of intellectual property.	Internal approval workflow managed with IEC; implementation of the principle “as open as possible, as closed as necessary.”	Align with the procedures in D7.6 Exploitation plan (Common business plan) and coordinate future media or policy references with the respective KER owners.
R11 — Internal coordination challenges	Fragmented messaging among partners due to varying communication capacities.	Shared templates, editorial calendar, and regular coordination meetings led by WP7.	The task for coordinating all post-project messaging belongs to EP and SEID. Contact points per partner for legacy communication will be maintained as planned in D7.4.
R12 — Weak outreach effectiveness	Communication not reaching expected target audiences or failing to achieve KPIs.	Periodic KPI review; improved content design (videos, visuals); synergy actions with TITAN and STORMING; audience segmentation updates.	Keep KPI monitoring as described in D7.4 for 4 years after the project's end.
R13 — Delays in technology validation	Delayed results affect the timing of dissemination campaigns.	Adaptive scheduling; publishing non-confidential progress and contextual materials while awaiting validation.	Future updates aligned with exploitation results.

<b>R14 — Limited market readiness / low industrial interest</b>	Insufficient alignment between ColdSpark® results and market expectations.	Targeted communication to carbon-demanding industries; clearer economic and environmental value messages.	Maintain tailored industrial messaging and promote ColdSpark® as part of future investment and scaling opportunities.
<b>R15 — External events or health restrictions</b>	Event cancellations or travel restrictions (COVID-19).	Use of hybrid/online formats and flexible dissemination planning.	At this point the risk is not considered as relevant.

**Table 2. Critical Risks connected to the implementation of the communication, dissemination and exploitation activities within the lifetime of the ColdSpark® project and beyond**

## Implementation of Communication and Dissemination Activities

### Communication Activities Implementation

#### Project Visual Identity

##### ColdSpark Logo

The ColdSpark® logo was designed by the project coordinator SEID AS in collaboration with EP during the project’s preparatory phase, following consultation with all consortium partners. It was officially presented and approved during the Kick-off Meeting, and since then has become the most important element of the project’s visual identity. It presents a modern, clean design, ensuring recognisability across both digital and print materials.

From the very start of the project, the logo was perceived as a unifying symbol representing innovation, scientific excellence from all internal and external stakeholders. In view of the continued development and exploitation of the technology by SEID AS, as the main holder of the intellectual property rights, and its planned market deployment through a dedicated spin-off, the ColdSpark® logo was intentionally designed to retain visual coherence with SEID’s corporate identity. This alignment reinforces brand continuity, signalling both the project’s technological lineage and its pathway from research to commercialisation. It also represents visually the fact that the power supply as a key prerequisite for the successful development of the project builds upon the 28 years of SEID experience.

In the process of the project’s implementation, the ColdSpark® logo became an integral part of its branding strategy, used consistently across all communication tools, including presentations, brochures, newsletters, videos, banners, event materials, scientific posters, etc. Its recognisable design ensured visual coherence throughout the project’s outreach activities and enhanced brand identity among stakeholders in the hydrogen and carbon innovation communities. After the first year of project implementation, the logo

evolved from a mere identifier to a distinctive brand mark associated with the project's technological achievements and exploitation potential.

In the framework of D7.4, the ColdSpark® logo will remain a central visual element for post-project communication and dissemination. Partners will continue to use it when presenting project results, publications, and collaborations related to the ColdSpark® technology. Its continued use will contribute to maintaining **brand continuity, recognisability, and credibility** in both research and industrial contexts and support the further development of the technology to higher TRLs.

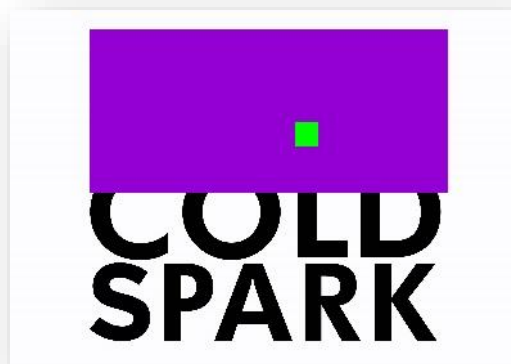


Figure 2. ColdSpark® Logo

### Graphic charter

The visual identity of the ColdSpark® project was developed to ensure consistency, recognisability, and professionalism across all communication and dissemination materials and actions. Its design aimed to reflect the technological precision, environmental relevance, and European dimension of the project. The chosen colour palette, layout structure, and typography were intended to communicate both scientific credibility and modern innovation, appealing equally to researchers, industry stakeholders, policymakers, and the general public.

To guarantee coherent visual communication, a complete graphic charter was established early in the project, as documented in D7.1 – Initial DEC Plan. It defined logo usage rules, font hierarchy, colour codes, and layout standards for all official templates.

During the project implementation the visual identity and the templates developed at the very beginning of the project were used for social media visuals, event invitations, press releases, video branding elements, promotional materials and were important element in strengthening ColdSpark®'s recognisable branding in all internal and external communications.

In the post-project phase described in D7.4, the visual identity will remain an essential tool for maintaining continuity. The logo, colour scheme, and templates will continue to be used for all future communications related to the ColdSpark® technology, including publications, follow-up projects, and dissemination by the planned spin-off. This will ensure long-term brand recognition, strengthen the visibility of the technology in

the clean hydrogen and carbon markets, and demonstrate the continuity from EU-funded research to industrial application.

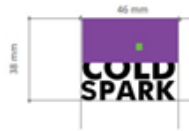
The ColdSpark® institutional colour palette was designed to balance scientific precision with visual dynamism and boldness, ensuring clear recognisability across both digital and print media. The scheme includes seven complementary tones, combining green as an accent for sustainability and innovation, black and dark grey to convey technological depth and credibility, and lighter grey gradients. A distinctive violet serves as a highlight colour, symbolising creativity and energy that defines the project's identity. The palette has been consistently applied across all communication materials, from the website and social media visuals to printed brochures, ensuring continuity, accessibility, and professional design integrity.

Typography was selected for its clarity and adaptability. A sans-serif typeface was chosen to ensure optimal readability across digital and print formats, maintaining a balance between technical precision and aesthetics. In all materials, titles were styled in bold violet and green to emphasise key messages, while supporting text used a lighter tone to preserve visual harmony and legibility.



## Logo

### Construction of the logo



What if the logo needs to be smaller than 20px?

If the logo needs to be used in small format - under 20px - it remains the same.



### Protection zone:



### What you cannot do with this logo



Distortion



Rotation



Put the logo in a box



Change colors and font

### Allowed variations

No color deviation is allowed except for white logotype on black color background.



## Colors

### Institutional palette

For Graphics, Design & typography

	RGB: 0 255 1 CMYK: 63 0 100 0 # 00FF01
	RGB: 0 0 0 CMYK: 100 100 100 100 # 000000
	RGB: 102 106 110 CMYK: 61 61 66 17 # 666666
	RGB: 162 166 170 CMYK: 39 39 39 0 # 999999
	RGB: 210 210 210 CMYK: 17 17 17 0 # CCCCCC
	RGB: 255 255 255 CMYK: 0 0 0 0 # FFFFFFFF
	RGB: 148 0 212 CMYK: 69 96 0 0 # 9400D4 RAL: 4000

### Usage for specific publication & dissemination material

Type of communication	Placement of logo/ publication for use
Website and social media account	Indicate where the logo/logo should be used if the website/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo
Brochures, information leaflet, factsheet, scientific poster	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo
Report and internal project publications	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo
Power point or other graphical presentation	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo
Video and animation	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo

### Public works

When	What	How
Before / during the works	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo
After the works	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo	Indicate where the logo/logo should be used if the logo/logo is not visible on the website/logo or if the logo/logo is not visible on the website/logo

## How to display the acknowledgement of EU funding?

### Display the EU emblem

Funded by the European Union

Supported by the European Union

Members of the European Union and other countries are available in the following list (see download center for most members of the European Union): [http://ec.europa.eu/eu-emb/emb/emb\\_en.cfm](#)

### Disclaimer

Please use the following disclaimer whenever using the funding logo:

“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 the European Climate, Infrastructure and Investment Executive Agency (ECIIA). Neither the European Union nor the granting authority can be held responsible for them.”

ECIIA and 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 the European Climate, Infrastructure and Investment Executive Agency (ECIIA). Neither the European Union nor the granting authority can be held responsible for them.

On the project website, the following disclaimer including the grant agreement number will be used:

“This project has received funding from the European Union’s Horizon Europe research and innovation programme under grant agreement No. 101019719. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Investment Executive Agency (ECIIA). Neither the European Union nor the granting authority can be held responsible for them.”

## Stationary

### Word document - Title page

### Word document - headletter

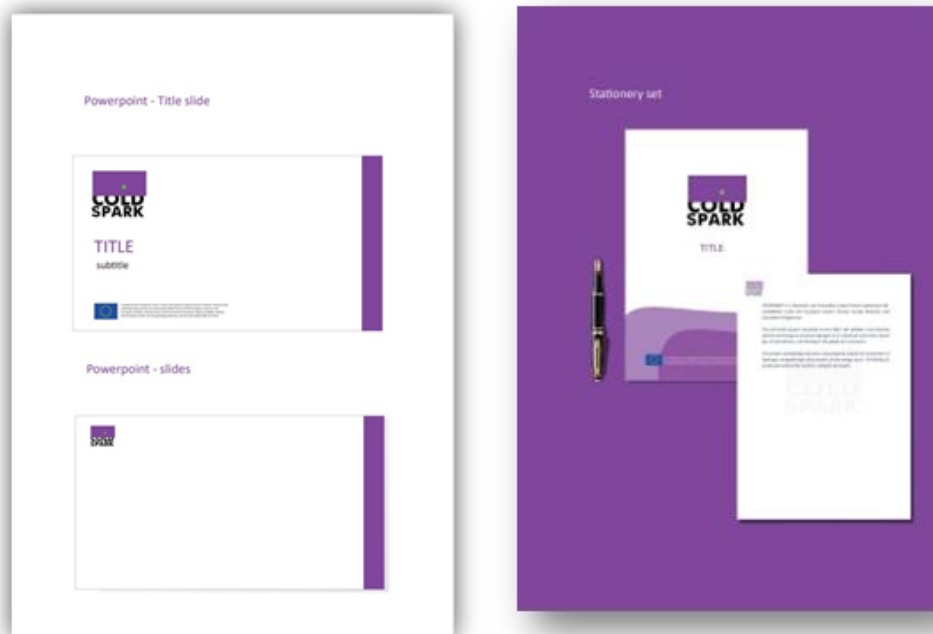


Figure 3. ColdSpark® Graphic Charter

## Templates

All communication templates (including deliverable, presentation, minutes, agenda, press release, etc.) were developed by Europroject at the start of the project in line with the graphic charter and visual identity guidelines established in D7.1. The templates were approved by the project coordinator and accepted and by all project partners. The templates were designed to ensure visual coherence, recognisability, and consistency across all ColdSpark® communication materials. As the established design proved both functional and visually effective, no significant updates were required during the project’s lifetime, and all partners continued to use the original templates for internal and external communication throughout the project.

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## Project Website

### Purpose Structure, and Design

The ColdSpark® website ([www.coldspark.eu](http://www.coldspark.eu)) served as the central communication tool of the project. It was planned and continuously updated as a dynamic webpage aiming to ensure visibility, transparency, and accessibility of the project’s progress and results to all stakeholder groups. It was developed by Europroject in close collaboration with the coordinator SEID AS, and officially launched in Month 3 of the project.

The main objectives behind the creation of the website were to:

- provide **clear and accessible information** about the ColdSpark® project, its objectives, technology, and results.
- present the project's **timeline, major milestones, and industrial relevance**, linking laboratory achievements to real-world deployment and exploitation pathways.
- highlight ColdSpark®'s **strategic contribution to Europe's clean hydrogen and carbon innovation agenda** and alignment with EU climate goals.
- facilitate **open access to project outputs** including publications, deliverables, news, and events.
- support **stakeholder engagement** through links to relevant EU initiatives, partner websites, and sectoral events.
- ensure **compliance with Horizon Europe visibility requirements**

The website layout followed the graphic charter developed in D7.1 DEC Plan, ensuring consistency with the project's visual identity. The ColdSpark® website is designed as a user-friendly, visually coherent platform **structured around the following sections:**

- Home – an overview of the project's mission, objectives, expected impacts, timeline and most important updates.
- In the Lab – showcases experimental work, laboratory testing, and research progress.
- Out of the Lab – highlights pilot-scale validation, demonstration activities, and technology applications.
- News & Events – divided into News and Events subsections, covering updates, dissemination activities, and consortium participation in various events during which the project was presented.
- Resources – a repository for various online and print communication materials, publications, videos, etc.
- Team – presents all project partners with institutional profiles and links to their websites.
- Contact – provides general contact details and a form for stakeholder inquiries.

The website's architecture was purposefully designed to address the needs of diverse stakeholder groups identified in the project's target-audience mapping. The "In the Lab" section provides technical depth and transparency and is appealing to the scientific community, including researchers and engineers interested in ColdSpark®'s non-thermal plasma processes. The "Out of the Lab" section bridges science and application, appealing to industry representatives, investors, and potential adopters. The "News & Events" and "Resources" sections are intended for general audiences and everyone interested in the project's latest developments. Meanwhile, the "Team" page supports networking and credibility by highlighting the consortium's expertise, which is essential for building partnerships and fostering future collaborations. This structure of the website carefully planned and developed at the very beginning of the project ensures that each stakeholder group can find content aligned with its level of its interest and technical background.

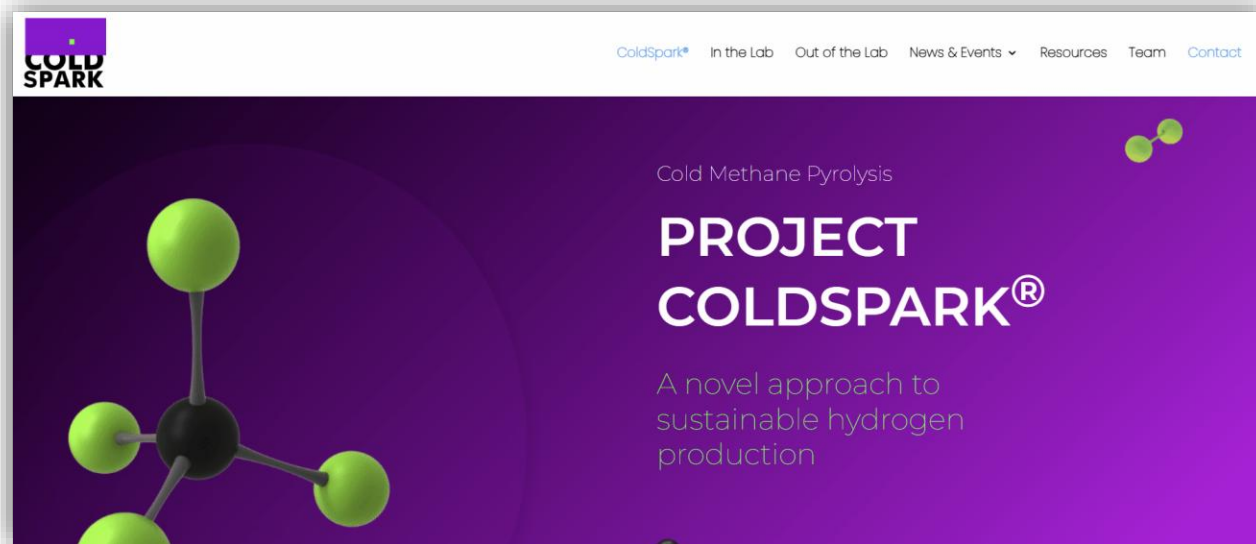


Figure 4. ColdSpark® Project Website Architecture

### Implementation and Performance

The following table summarises the main website analytics indicators for the ColdSpark® project during the full implementation period (June 2022 – November 2025). Data were extracted from Google Analytics and reflect the cumulative performance of [www.coldspark.eu](http://www.coldspark.eu).

Category	Indicator	Value	Impact
User Reach	Total Users	12,246	Broad awareness among target audiences across Europe and beyond
	Total Sessions	≈ 17,000	Steady user activity throughout the project lifetime
	Page Views	≈ 28,000	Consistent content engagement registered through different subpages views
Engagement	Average Engagement Time	1 min 14 s	Active exploration of the project information provided on the website
	Average Pages per Session	2.4	Depth of content interaction

<b>Audience Geography</b>	Top 5 Countries	USA (19 %), Norway (11 %), Netherlands (10 %), Germany (7 %), UK (6 %); Total Countries Reached >100	Reflects both consortium footprint and global interest in the methane splitting technology; global visibility and outreach
<b>User Behaviour</b>	Events	> 83,000	Active exploration of project materials and pages
	File Downloads & Submissions	=6371 (beginning of November 2025)	Indicates strong interest in deliverables, publications and promotional materials uploaded to the website
<b>Peak Activity</b>	Event Correlations		Peaks correspond to major dissemination milestones

Table 3. ColdSpark® Website Analytics Overview (June 2022 – beginning of November 2025)



Figure 5. ColdSpark® Website Global Reach and Users per country, November 2025

The project website will remain active for at least two years after the project’s completion and may subsequently serve as the official website for the planned spin-off company, which is expected to continue the development and commercialisation of the ColdSpark® technology. This continuity will ensure that the website’s cumulative impact extends well beyond the project’s duration, further amplifying the visibility, accessibility, and long-term exploitation of ColdSpark® results.

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## Partners' Websites

Information about the ColdSpark® project was also regularly shared and cross-linked through the partners' institutional websites, further amplifying the project's online visibility and outreach. Each project partner contributed to dissemination by publishing project news and event announcements, thus ensuring that the project's updates reached wider professional audiences within their network, thus strengthening and reinforcing the ColdSpark®'s visibility.

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## Social media

From the very beginning, the Dissemination, Exploitation, and Communication Plan (D7.1, M6) identified [LinkedIn](#) as the project's sole social media channel. This strategic decision, based on the Social Network Honeycomb Framework, reflected LinkedIn's strong performance in the areas of identity, relationships, and reputation, which are factors essential for a B2B-oriented, industrial hydrogen and carbon production technology project.

The objectives defined for LinkedIn were to:

- increase awareness and visibility of the project in a cost-effective manner;
- raise interest in ColdSpark®'s technology among expert and non-expert audiences;
- support interaction and feedback with key stakeholder groups allowing questions and discussions;
- promote project activities, knowledge, and results;
- enhance the project's visibility;
- reinforce ColdSpark® professional image.

Subsequent updates of the DEC Plan (D7.2 and D7.3, submitted respectively in M12 and M24) reaffirmed this approach and positioned LinkedIn as a central social media and a tool that can be successfully used during and beyond the project's lifetime.

The LinkedIn page was integrated with the project website, featuring a LinkedIn icon in the footer to encourage visitor engagement. A live feed linking the website's [News section](#) directly to the ColdSpark® LinkedIn account allowed wider promotion of the content created. This ensured cross-channel visibility and consistent communication across the project's digital tools.

During the first year of the project implementation, the focus of LinkedIn activity was on awareness, visibility and introducing partners, the technology concept and the project's objectives. As the project results started to emerge, LinkedIn was used more actively to promote first technical outcomes, events and promotional activities, and to support exploitation. During all reporting periods, the LinkedIn page shows regular activity with positive follower growth and engagement.

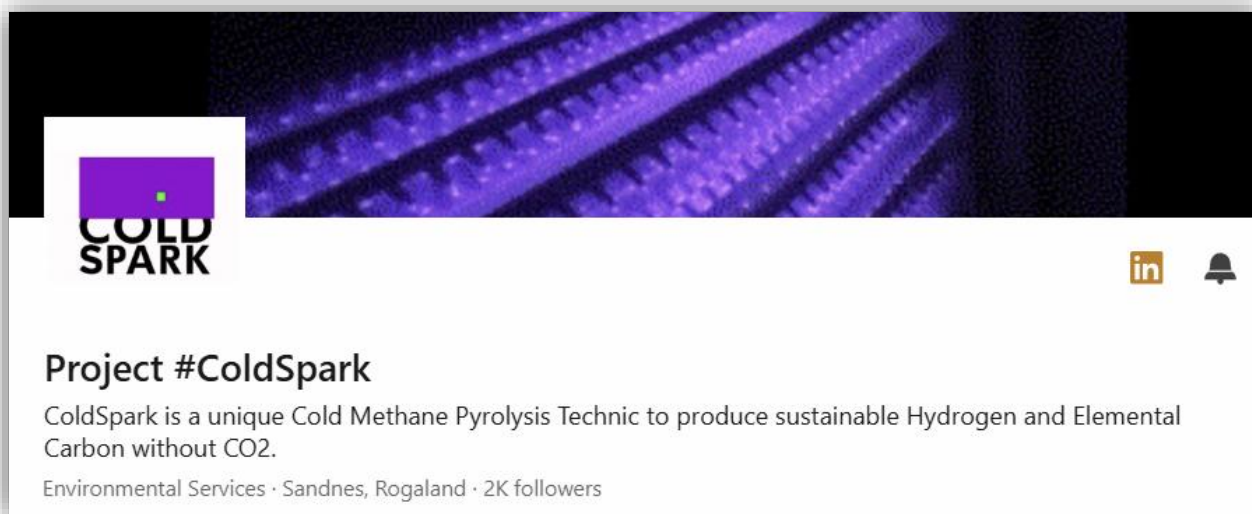


Figure 6. ColdSpark® Project LinkedIn Page, November 2025

#### Growth and dynamics of the ColdSpark LinkedIn audience

There is a clear upward trajectory in ColdSpark®’s LinkedIn presence, reflecting consistent audience growth and increasing engagement throughout the project’s duration. By the end of the first year of implementation (May 2023), the ColdSpark® LinkedIn page had **360 followers**, alongside a steady rise in search appearances and post impressions. At the end of the second year (May 2024), the audience had more than doubled to over **800 followers**. By November 2025, the account has more than **2,000 followers**, confirming sustained and organic community expansion.

Several growth spikes align with key project campaigns and events, indicating a campaign-driven audience dynamic where continuous organic growth is reinforced by marked peaks during targeted outreach or event promotion. Active engagement from consortium partners and cross-reposting, following the guidance outlined in the DEC Plan, further amplified visibility and reach.

The evolution of ColdSpark®’s LinkedIn community demonstrates the project’s success in building a high-quality, professionally relevant audience within the targeted industrial, research, and policy domains essential for future exploitation. This is proven by the audience characteristics available through the LinkedIn analytics option.

The **geographic distribution** of ColdSpark®’s LinkedIn followers confirms that the project’s social media strategy successfully reached both its core European regions and the key international hydrogen, carbon and energy markets identified.

- The LinkedIn page shows a strong presence in **Norway**, reflecting the coordinator’s location and the site of demonstration activities, including Greater Stavanger Region, Greater Oslo Region, Greater Bergen Region, Drammen, and Kristiansand Regions.

- **Major European innovation hubs** were also well represented, aligning with ColdSpark®’s EU-level outreach objectives, including France, Belgium & the Netherlands, Germany, but also users from Northern and Southern Europe.

**Beyond Europe**, ColdSpark® achieved a significant global reach across strategic industrial and energy regions. This is particularly important, as it demonstrates growing global interest in the technology and highlights the broad potential for its exploitation both within and beyond Europe. The project’s LinkedIn account shows a great interest in the ColdSpark® technology from:

- **India:** high interest is registered from followers across multiple big cities including Delhi, Mumbai, etc.
- **North America:** there is engagement in key energy and innovation hubs such as Houston, New York, Boston, Denver, and smaller numbers from other cities, including ones across Canada (Calgary, Edmonton, Montreal, Vancouver, Toronto).
- **Emerging and industrial economies:** there is a strong follower base from Brazil, Turkey, Iran, Egypt, South Africa, China, South Korea, Indonesia, Singapore, and Australia, as well as the Middle East (Makkah and Eastern Regions).

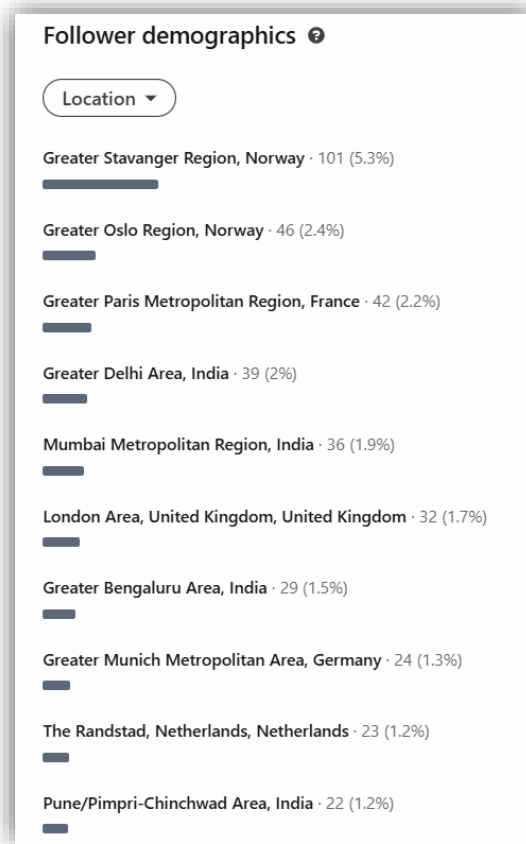
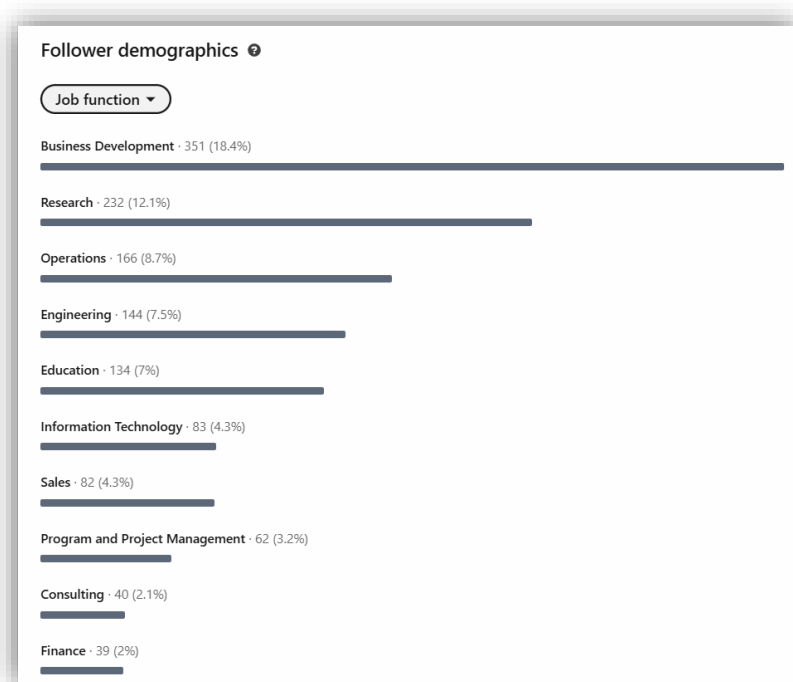


Figure 7. ColdSpark® Project LinkedIn Page Followers Demographics by Location (first 10), November 2025

This broad landscape reflects ColdSpark®’s strategic audience targeting including natural gas and biomethane producers, hydrogen and industrial gas suppliers, carbon-based industries, and public authorities across Europe and globally. The geographic distribution of ColdSpark® LinkedIn page above shows high interest from various regions where the technology can be realistically deployed and supports future exploitation and international collaboration opportunities.

The **job function** analysis of ColdSpark®’s LinkedIn followers confirm a highly relevant professional audience built over the project’s entire duration and shows interest from groups that can engage with the further development of the technology. The largest groups include Business Development (343), Research (230), Engineering (143), Operations (164), and Information Technology (81), complemented by clusters in Education (131), Sales (83), and Project Management (61). This mix reflects the ideal balance of expertise needed to move an industrial technology from research to market.



**Figure 8. ColdSpark® Project LinkedIn Page Followers Demographics by Job Function, November 2025**

In terms of seniority, most followers are **Senior** (549) or **Entry-level** (424), ensuring engagement from both experienced professionals and younger specialists. Importantly, the page also attracts decision-makers — Directors (178), Vice Presidents (108), CXOs (121), Managers (108), and Owners (80) representing profiles directly involved in investment, partnership, and strategic technology adoption.

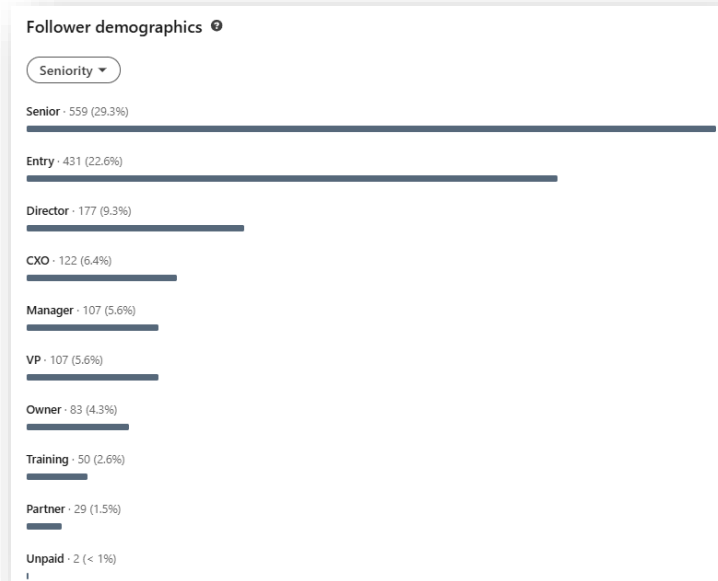


Figure 9. ColdSpark® Project LinkedIn Page Followers Demographics by Seniority, November 2025

Follower **industry data** confirms that ColdSpark®’s LinkedIn page successfully reached its intended target groups. The audience is dominated by professionals from research and higher education, the energy and industrial sectors, and engineering and machinery manufacturing. This composition demonstrates that the page effectively engaged industry-relevant stakeholders, as defined across all DEC plan iterations.

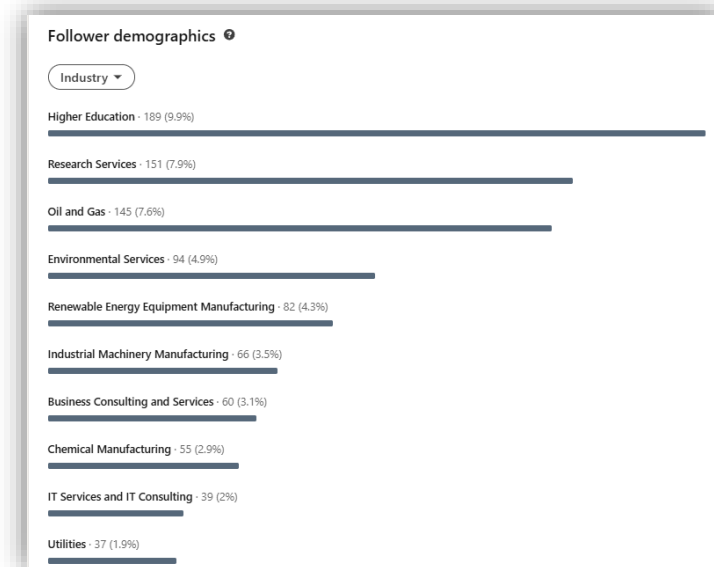
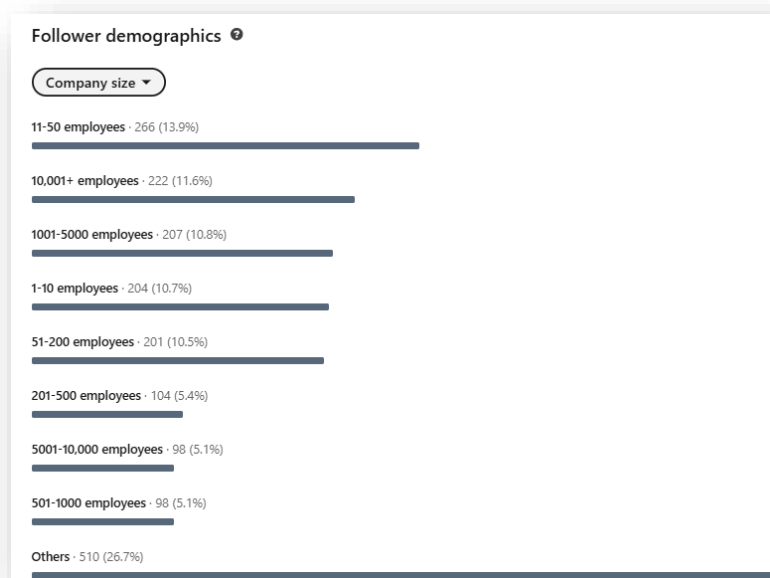


Figure 10. ColdSpark® Project LinkedIn Page Followers Demographics by Industry, November 2025

The **company size distribution** reinforces this strategic balance. The majority of followers are from SMEs (up to 200 employees)—representing potential early adopters and innovation partners—while a significant share originates from large corporations (over 1,000 employees) with the capacity for technology scale-up and market deployment. This combination directly supports ColdSpark®’s exploitation objectives.



**Figure 11. ColdSpark® Project LinkedIn Page Followers Demographics by Industry, November 2025**

Overall, these results confirm that ColdSpark®’s LinkedIn presence fulfilled its primary goals: **raising awareness, maintaining stakeholder engagement, and establishing a professional community** aligned with future exploitation, market uptake, and post-project visibility as defined in D7.1 – D7.4. At the end of the project, the ColdSpark® LinkedIn page stands as a mature, ready-to-use legacy asset and a channel for continued communication, visibility, and promotion of ColdSpark® technology, ideally positioned to sustain collaboration and support the long-term exploitation of project results.

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### Print and Digital Communication materials

To strengthen ColdSpark®’s visibility and ensure consistent communication across channels and events on the side of all project partners, a set of promotional materials was developed and maintained throughout the project in accordance with the Horizon Europe visibility rules and the project’s visual identity defined in D7.1 and further developed in D7.2 and D7.3. These materials supported participation in conferences, exhibitions, and stakeholder events, while also serving as downloadable assets for all internal and external stakeholders freely available in the [Resources section](#) of the project website.

Material	Format	Description & Purpose	Distribution	Impact
<b>ColdSpark® Online Leaflet</b>	Digital (PDF)	Short introduction to the project’s objectives, technology concept, expected impacts, and consortium composition. Designed for online sharing.	Published on website and disseminated through LinkedIn and partner networks. Downloaded 371 times from the project website.	380 downloads from the project website.
<b>ColdSpark® General Brochure (Printed &amp; Digital)</b>	Print (A4) and Digital (PDF)	Comprehensive overview of ColdSpark®’s technology, including its environmental benefits, industrial applications, and partner expertise.	Distributed at conferences, partner events, and uploaded to the website.	371 downloads from the project website.  Approximately 400 copies were distributed (200 by IBBK and 200 by the rest of the partners)
<b>Roll-up Banner</b>	Print (85×200 cm)	High-impact visual summary presenting the project’s aims, key messages, and contact details. Designed for use at physical events to ensure immediate brand recognition.	Displayed at project workshops, external conferences, partner meetings, etc.	Most of the project partners had the roll-up printed at the beginning of project and continuously used it during events.  Although not intended for online use, 325 downloads were registered from the project website.

<b>ColdSpark® Hydrogen Production Brochure</b>	Print & Digital	Thematic brochure focused on ColdSpark®’s hydrogen production pathway, explaining its advantages as a low-carbon, plasma-enabled alternative to conventional methane reforming.	Distributed at energy and hydrogen-related events and digitally via partners.	487 downloads from the project website.  Approximately 1100 copies were distributed (700 by IBBK and 400 by the rest of the partners)
<b>ColdSpark® Carbon Applications Brochure</b>	Print & Digital	Thematic brochure highlighting ColdSpark®’s eCarbon®, including potential industrial uses based on research data for the qualities of the produced carbon.	Shared at various events and downloadable from the website.	186 downloads from the project website.  Approximately 450 copies were distributed (250 by IBBK and 200 by the
<b>Final Event Brochure &amp; Agenda (2025)</b>	Print & PDF	Combined publication for the ColdSpark® Final Event, summarising project achievements, results, demonstration highlights, and exploitation pathways.	Distributed at the Final Event and made available online for broader visibility.	70 copies were printed by EP for the final event.

**Table 4. ColdSpark® Project Promotional Materials (online and print)**

All materials were developed by Europroject (EP), as leader of the project’s communication and dissemination activities, with the active support of all partners in preparing and reviewing the content. Each item consistently applied the ColdSpark® visual identity and included:

- The EU emblem and Horizon Europe funding acknowledgement.
- Project logo, visual style, and colour palette aligned with the brand book.
- Links/QR code leading to the website and LinkedIn page, ensuring cross-channel visibility; project’s LinkedIn page
- Messaging adapted for specific/mixed audiences depending on the promotional material.

Together, all the promotional materials produced during the project’s lifetime established a strong visual and narrative identity for ColdSpark®, supporting its recognisable positioning in the hydrogen and carbon

materials production sectors. Most of them can be used with no or a slight adaptation during the post-project period.

**PARTNERS**

- SEID
- IREC<sup>9</sup>
- University of Glasgow
- NORCE
- ep EUROPROJECT
- IBBK SIGMA
- UNIVERSITY OF LIVERPOOL

**COLDSPARK.EU**

**PROJECT #COLDSPARK**

**CONTACT US**

**PROJECT COORDINATOR:**  
TERJE HAUAN  
SEID AS

**GENERAL CONTACT:**  
info@coldspark.eu

**PROJECT COLDSPARK®**

Cold Methane Pyrolysis

**A novel approach to ultra low carbon hydrogen production and high purity elemental carbon (eCarbon)®**

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme under grant agreement No. 101089933 (ColdSpark). This output reflects only the author's view and the European Union cannot be held responsible for any use that may be made of the information contained therein.

The eCarbon®'s **curling and amorphous edges** serve as active reinforcement sites in **tyre production**, significantly enhancing the quality and performance of the final product.

eCarbon®'s is suitable for application in **soil modifiers** and as an additive to **agricultural mulch** films to augment its durability and resistance to UV radiation.

With high purity and particle size N220-330, eCarbon® is ideal for the production of car treads, conveyor belts, anti-vibration **rubber goods**, etc. Its properties make it an excellent additive in manufacturing **composite materials**, suitable for applications in flexible electronics and sensors.

eCarbon® is an ideal raw material for the **construction industry**, enabling the production of strong, **corrosion-resistant Carbon Rebar** as a substitute for traditional steel rebars.

eCarbon®'s properties allow its application in the **automotive sector** serving as both a pigment and UV stabiliser in coatings, including those for metal protection.

With high purity and **catalyst-free production via methane pyrolysis**, eCarbon® provides a **low CO<sub>2</sub>** alternative to traditional coal, effectively meeting the steel industries environmental compliance needs.

With its high **oxidative stability** and **uniform crystalite size** ranging from 5 to 11 nm, eCarbon® is an ideal choice for the production of battery electrode materials for lithium-ion batteries, supercapacitors, etc. ensuring efficiency and reliability.

**Batteries**

**Tyres**

**Soil enhancements**

**Chemicals**

**Steel industry**

**Concrete**

**Paint**

**eCarbon®** is a patented product developed through the ColdSpark® project, representing a promising new technology that combines environmental friendliness with customisable operating conditions and low energy consumption. It is also producing valuable ultra-low carbon hydrogen as an additional output. Notably, the production of eCarbon® is free from NO<sub>x</sub> and SO<sub>x</sub> emissions, and the final product is highly pure with minimal moisture content.

Figure 12. ColdSpark® Project Carbon Applications Brochure

In addition, ColdSpark®’s visual identity elements were consistently used by all project partners when presenting the project. At the start of the project, Europroject (EP) enabled this process by sharing a graphic charter including a guidance on the use of the project’s visual identity and developed and distributed a comprehensive set of internal and external templates — including PowerPoint and Word templates, press release layouts, meeting minutes, deliverables and agenda templates, etc. These resources ensured a coherent, professional, and recognisable visual identity across all project outputs and partner communications, in full compliance with Horizon Europe visibility requirements.

## Newsletters

In line with the communication strategy defined at the very beginning, the project committed to issuing periodic newsletters as a tool to inform, engage and connect with stakeholders interested in the project development and results. Their purpose was both to ensure transparent communication of project progress and results to external audiences, and to foster visibility among professional networks.

Between 2022 and 2025, five newsletters were published. Each newsletter was made visually appealing by the EP designer, distributed via Mailchimp to the project’s mailing list, shared on LinkedIn, and archived on the project website’s Resources section.

Each newsletter consistently applied the **ColdSpark® visual identity**, integrating the EU emblem, Horizon Europe funding acknowledgment, website and LinkedIn links, and a user-friendly layout optimised for both desktop and mobile reading. Visual coherence with other promotional materials (flyers, roll-ups, brochures, etc.) ensured brand continuity and recognition across communication channels.

No.	Newsletter / Date	Main topics & focus	Recipients / Successful deliveries	Open rate	Impact summary
1	<b>Newsletter #1</b> (sent via Mailchimp in Nov 2022)	Official launch edition introducing the ColdSpark® project, objectives, consortium partners, and expected impact. Highlighted the project’s ambition to develop a non-thermal plasma process for clean hydrogen and carbon production.	<b>80 / 37</b>  <b>369 downloads of the file form the project website</b>	<b>45.25%</b>	Served as the main launch communication for ColdSpark®, establishing early visibility and stakeholder awareness. It marked the beginning of the project’s continuous dissemination cycle and defined the structure later used in all subsequent newsletters.

2	<b>ColdSpark® Newsletter #2</b> (sent 19 Feb 2024)	General project update; overview of progress; highlight of collaboration with STORMING; announcement of the <i>Emission Reduction 2024</i> conference; link to the CORDIS project page; context article on low-carbon construction.	169 / 166  243 downloads of the file form the project website	35.5%	Solid awareness campaign at project mid-stage, with readers primarily using the newsletter to keep informed (moderate open rate) and a smaller but targeted group clicking through to the website, CORDIS and event pages.
3	<b>ColdSpark® Newsletter #3</b> (sent 26 Jul 2024)	Research-heavy issue: new scientific publications on methane splitting and plasma catalysis; visibility of key partners and related initiatives (e.g. Beyonder, ROBINSON, DARE2X); links to conference proceedings (IWA) and high-impact journal papers.	173 / 164  191 downloads of the file form the project website	42.1%	Strong engagement from a technically oriented audience, reflected in a relatively high open rate and targeted clicks to specialised scientific content and proceedings, supporting the project's scientific visibility objectives.
4	<b>ColdSpark® Newsletter #4</b> (sent 29 Jan 2025)	Focus on events, synergies and market-oriented context: participation in biogas and bioenergy events (IBBK, BIO360, EUBCE, Biogas Infotage); article on the cost of green hydrogen; related SOFC and sustainability projects (IREC, LCM 2025, SDEWES).	186 / 171,  169 downloads of the file form the project website	30.4%	Effective for highlighting synergies and upcoming events: readers clicked mainly on conference registration and analytical articles, demonstrating interest in practical applications and broader market discussion around hydrogen costs and deployment.
5	<b>ColdSpark® Newsletter #5 – Final wrap-up issue</b> (planned, Q4 2025)	Final synthesis of project results: demonstration outcomes, key KPIs, highlight of core publications and patents (if any), recap of the final event, links to recordings	192		Expected to consolidate awareness at project closure, driving traffic to final results, the resource library and the LinkedIn page, and providing a clear entry point for

		and materials, and guidance on how to stay engaged post-project (website, LinkedIn, resources).			stakeholders interested in follow-up collaboration or exploitation.
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**Table 5: List of ColdSpark® project Newsletters**

Across its five editions, the ColdSpark® newsletter series evolved from project introduction to results dissemination and exploitation, reflecting the project’s scientific maturity and exploitation opportunities.

In addition to this, email campaigns were used to promote the major ColdSpark events, including the “Critical Raw Materials and Beyond” Webinar and the ColdSpark final event. It should be highlighted that the email campaign announcing the project’s Final Event achieved particularly strong engagement, with an open rate of 48.4%. Moreover, 41.3% of recipients who opened the email clicked through to the event page on the ColdSpark® website to learn more, demonstrating high interest and effective message targeting.

View this email in your browser

**Don't Miss it:  
The ColdSpark® Final Event and Live Reactor Demonstration!**  
**REGISTER TODAY!**

**Innovation *meets* reality!**  
After three and a half years of pioneering plasma-based methane splitting, ColdSpark® invites you to its Final Event, showcasing how this breakthrough process produces clean hydrogen and high-value eCarbon® with no direct CO<sub>2</sub> emissions.  
Organized by SEED AS, the University of Stavanger (US), and Europroject (EP), the event will gather researchers, industry representatives, and technology enthusiasts to explore ColdSpark®'s technological achievements, potential applications, and future market opportunities.  
The highlight of the day will be a **live demonstration of the ColdSpark® reactor**, a unique opportunity to witness the technology in action and discuss its role in advancing Europe's transition toward climate neutrality and resource resilience.

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**KEY TOPICS INCLUDE:**

- Methane splitting as a pathway for low-carbon hydrogen production
- The role of eCarbon® in EU strategic value chains and contributions to the EU Critical Raw Materials Act
- Environmental and techno-economic sustainability of non-thermal plasma processes
- Industrial upscaling and real-world applications
- Integration into biomethane sector
- Communication and exploitation for post-project impact

**REGISTER HERE!**

KNOWLEDGE IS THE FUEL

ECONOMIC IMPACT MATTERS

NEW IDEAS

CONTRIBUTING TO FEED THE FUTURE

ColdSpark® is online

Visit our website and follow us to find more!

Check the project ZENODO account and stay tuned to the latest scientific developments!

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Figure 13. ColdSpark® Project Final Event Email

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## Videos

From the very start of the project, the consortium recognised the growing importance of visual communication for science and innovation outreach. Short, well-structured videos were identified as an effective way to present ColdSpark®'s concept, progress, and results to a broad audience while strengthening the project's online presence.

At the beginning of the project, an **introductory video** was produced and published on the project website and social media channels. Its purpose was to provide a clear and engaging overview of ColdSpark®'s objectives, consortium, and innovative approach to plasma-based methane splitting.

During implementation, **short thematic videos** were created to highlight project milestones, events, and technological developments. These were shared primarily on LinkedIn and disseminated further through partners' channels, maintaining continuous visibility between key events and contributing to steady engagement growth.

A **recording of the webinar** "Critical Raw Materials and Beyond: Methane Splitting for Strategic Value Chains" was also made available on SEID's LinkedIn account, attracting 64 views and extending the reach of the live session to a wider audience. Link to the recording was provided on the project website.

In the final phase, a **final video** was produced to summarise ColdSpark®'s main achievements, showcase the live reactor demonstration, and illustrate the technology's contribution to clean hydrogen and eCarbon® production without direct CO<sub>2</sub> emissions. This video will remain accessible on the project website and partner platforms as part of the long-term dissemination strategy described in D7.4.

Together, these video materials provided a coherent visual narrative of the project's evolution — from concept introduction to technological demonstration — and remain a key legacy asset for continued visibility and exploitation.



Figure 14. ColdSpark® webinar “Critical Raw Materials and Beyond: Methane Splitting for Strategic Value Chains”

## Press Releases

Press releases served as an effective tool to enhance the project’s visibility beyond the immediate research and industrial community, extending its outreach to media outlets and the wider public. Their main objective was to communicate ColdSpark®’s progress and results to professional networks, policymakers, and stakeholders in the hydrogen, energy, and innovation sectors.

Between 2022 and 2025, three press releases were prepared by Europroject (EP) in close collaboration with the consortium and approved by the project coordinator. Each release was published on the project website, shared via LinkedIn, and circulated among project partners for further dissemination through their national and institutional channels. This approach helped achieve coverage in institutional websites, newsletters, and media platforms across Europe. In the beginning of November 2025, press release 1 has been downloaded 323 times, while Press release 2 has been downloaded 150 times.

Although that the number of press releases was smaller than initially planned, collectively, they strengthened ColdSpark®’s public profile and positioned it as a recognised contributor to Europe’s clean hydrogen and carbon innovation landscape leading to media publications about the project.

**PRESS RELEASE NR. 3**

**COLDSPARK®:  
METHANE SPLITTING FOR SUSTAINABLE  
HYDROGEN AND ECARBON® PRODUCTION**

Sandnes, Norway, 2025

After three and a half years of **pioneering research and technology development**, the Horizon Europe ColdSpark<sup>®</sup> project is entering its final phase. The project's results demonstrate a new, efficient, and low-emission pathway for producing **clean hydrogen and high-value eCarbon<sup>®</sup>** through non-thermal plasma splitting — a breakthrough that can support Europe's transition toward climate neutrality and resource resilience.

ColdSpark<sup>®</sup> has successfully developed and validated its **reactor concept**, splitting methane into hydrogen and solid carbon without direct CO<sub>2</sub> emissions. This achievement represents an important step towards decarbonising the hydrogen production pathway and creating value chains aligned with the **EU's Critical Raw Materials Act**.


The Final Event of the project, organised by SEID AS, the University of Stavanger (UIS), and Europroject (EP), will take place on 26 November 2025 in Stavanger, Norway. It will bring together project partners, researchers, and industry representatives to present the main technological outcomes and discuss the future of plasma-based methane conversion. A highlight of the day will be a **live demonstration** of the ColdSpark<sup>®</sup> reactor, offering an exclusive opportunity to see the technology in action.

ColdSpark<sup>®</sup> began as an ambitious vision to prove that plasma can split methane efficiently and sustainably. Today, we have not only proven the concept but also brought it close to market readiness. The next step is scaling up the technology and making it an integral part of Europe's clean energy and carbon material industries.

Following the project's conclusion, ColdSpark<sup>®</sup> technology will continue its journey towards commercialisation under SEID AS, supported by ongoing partnerships and a growing interest from industrial stakeholders.


**For more information and registration for the final event, visit:**  
<https://coldspark.eu/events/>

Registration for the final event



**For media inquiries or to discuss investment opportunities, please contact:**

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Email: [stig@SEID.no](mailto:stig@SEID.no) | Phone: **+47 9175 7131** (General Inquiries)
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Email: [terje@SEID.no](mailto:terje@SEID.no) | Phone: **+47 4144 7722** (Technical Inquiries)

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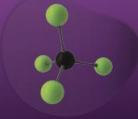


Figure 15. ColdSpark<sup>®</sup> Press Release 3

## Communication Labelling

To streamline and harmonise communication and dissemination activities across the consortium, a labelling system designed to guide partners in organising their outreach activities and to align internal reporting practices was established. The labels were presented in a concise table format, providing short descriptors and examples to help project partners easily identify the category under which their communication actions fall. This approach ensured consistency in both the planning and monitoring of activities, while facilitating structured reporting within the Funding & Tenders Portal’s Continuous Reporting section.

Throughout the project, the same framework served as a reference tool for partners to channel their efforts in directions consistent with ColdSpark®’s overall communication strategy and WP7 objectives. The categories were updated in the respective issues of the Dissemination, Exploitation, and Communication Plan, ensuring alignment with the project’s evolving communication needs and focus.

Short Label	Examples of possible actions
<b>Awareness building and visibility</b>	All posts/materials/activities aiming to build general awareness about the project and discover its objectives, promote the project and its findings to various audiences
<b>Bridging policy-science gap</b>	Any representation of ColdSpark® technology to decision-makers; any materials showing how ColdSpark® covers existing technology gaps
<b>Interest building</b>	Work progress information (posts, articles, etc.); Inform about ColdSpark® technological developments relevant to a specific sector (hydrogen industries and industrial gas suppliers, chemical and steel industries, carbon-based industries; Hydrogen economy networks)
<b>Engagement building</b>	Project newsletters, Partners’ newsletters, direct interaction with the TGs of the project (ex. discussions during events, etc.)
<b>Authority building</b>	Any information about the expert knowledge the project is going to provide, communicating project results
<b>Inform &amp; publicise</b>	Any articles in the media, press releases, etc.
<b>Cross-sectorial solutions</b>	Cooperation with other projects, synergies, fostering knowledge exchange, sharing experience, ensuring compliance and alignment to gaps and needs

**Table 6. Short labels of ColdSpark® project communication activities**

## Dissemination Actions Implementation

### Events

#### Events organised by ColdSpark® project

Over the lifetime of the project, the ColdSpark® consortium organised a series of dedicated events designed to inform the audience about interim results and advancement of the project and engage key stakeholders and prepare the ground for exploitation. Each event was coordinated by Europroject as the communication and dissemination leader with a strong support from all partners, and especially on the side of the project coordinator, SEID AS. The events are listed below:

Title	Format	Purpose & Highlights	Hosted by
<a href="#"><u>Revolutionizing hydrogen production with ColdSpark® from biomethane?</u></a>	Workshop, hybrid, in person in Liverpool and online	A first technical workshop introducing the ColdSpark® concept, routes from (bio)methane to H <sub>2</sub> and solid carbon, initial use-cases, and exploitation framing	Europroject supported by SEID AS and University of Liverpool
<a href="#"><u>(Bio)hydrogen, Bio-CCU &amp; CCS – ColdSpark® workshop at “Progress in Biogas VI”</u></a>	Conference workshop, Stuttgart	Organised as part of “Progress in Biogas VI conference”, this workshop aimed at presenting ColdSpark® to the biogas/biomethane community in Germany.	Europroject supported by SEID AS and IBBK
<a href="#"><u>(Bio)methane cracking: solutions for carbon-negative hydrogen and solid carbon production (joint event with ColdSpark sister projects)</u></a>	Joint webinar with TITAN & STORMING projects	The webinar aimed to present the approaches of the three projects in the call to the wider public, provide policy context, and facilitate cross-project synergies and further cooperation.	Europroject supported by SEID AS
<a href="#"><u>Critical Raw Materials and Beyond: Methane</u></a>	Webinar, recording	Focused on how methane splitting underpins EU strategic value chains (hydrogen and carbon materials) and how the	Europroject with support by SEID AS. This webinar was entirely organised and managed by ColdSpark, while

<a href="#">Splitting for Strategic Value Chains</a>	<a href="#">available here</a>	<p>three projects contribute to resource resilience. A prerequisite for the success of the event was the active participation and presentations by industry leaders from Michelin and Elkem</p>	<p>sister projects invited to share experience and provide contribution. An illustration of the strong interest generated by the event is that it was <a href="#">shared</a> and promoted by external organisations and sectoral platforms not formally connected to the projects, which is an evidence for the high resonance of the event in the sector.</p>
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**Table 7. Events Organised by the ColdSpark® project**

These internal events served multiple strategic functions. They acted as milestones in the project’s dissemination and stakeholder engagement strategy, enabling timely sharing of technical progress, market context and next steps. The joint events with the ColdSpark sister projects contributed greatly to the networking and synergy actions and fuelled the ongoing cooperation with these projects.

The events organised by the project reflects its proactive approach to collaboration, dissemination and exploitation planning aligning with the requirements laid out in D7.1, D7.2 and D7.3. The sequence of the events followed the development of the project, starting with project introduction in the event in Liverpool, collaborations in the biogas sector in the Stuttgart workshop, to clear exploitation-oriented messaging in the Critical raw materials webinar.

### ColdSpark® project Final Event

The ColdSpark® Final Event titled was held on 26 November 2025 in Stavanger, Norway and was jointly organised by SEID AS, the University of Stavanger (UiS), and Europroject (EP). Its main objective was to present ColdSpark®’s technological progress and discuss future perspectives for scaling up plasma-based methane splitting as a pathway for producing clean hydrogen and solid carbon materials. The event included partner presentations, a dedicated poster and networking session illustrating the advancements and research achievements, a lab visits at the University of Stavanger premises, and a **live demonstration of the ColdSpark® reactor**, organised at SEID’s Plasma Test Center, where participants were able to observe the technology in operation.

Information about the event was published on the project website, distributed via a dedicated email campaign, and further promoted through a targeted dissemination campaign on the ColdSpark® LinkedIn account, which was supported by all project partners. These combined efforts generated strong interest from both research and industrial communities.

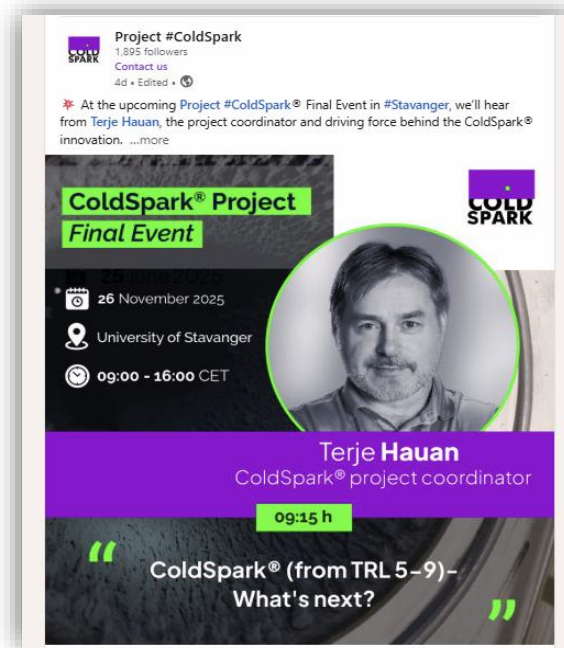
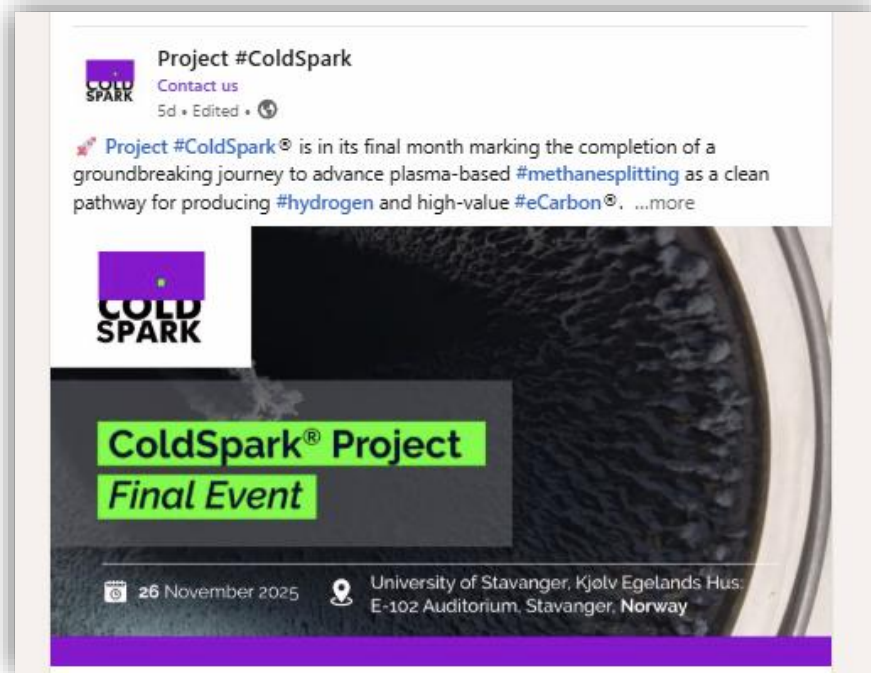


Figure 16: LinkedIn campaign promoting the ColdSpark® Final Event



Figure 17: ColdSpark® Final Event

With 34 participants attending in person — a format chosen to enable the live demonstration of the ColdSpark® reactor — the Final Event brought together a focused and highly engaged audience. Participants asked numerous technical questions and contributed actively throughout the discussions, creating a strong basis for future exploitation and collaboration.

In addition, many stakeholders who were unable to travel reached out before and after the event to express their continued interest in the project and to request follow-up information. This confirms that ColdSpark® has built a wider community of actors who remain committed to exploring the technology beyond the project's official end.

After the event, the presentations and related materials were made available online to ensure broader visibility and long-term accessibility. A lot of stakeholders who could not attend in person reached out by email requesting information and updates, demonstrating continued interest in the project. All the materials were shared through a dedicated [news article on the website](#), and follow-up videos are currently in preparation and will be uploaded shortly.

### Third-party events

Participation in external events has been one of the most effective tools for promoting ColdSpark® to a wide professional audience and for ensuring visibility within both the scientific and industrial clean-energy communities. From the start of the project, partners were consistently encouraged to present the project through oral presentations, posters, or papers at relevant national, European, and international conferences, workshops, and exhibitions.

To facilitate coordination and impact tracking, a dissemination tracker was introduced at the beginning of the project. This internal tool enabled the consortium to collect detailed data on each presentation and estimate the total audience reached across events, ensuring continuous monitoring of dissemination performance.

During the project's lifetime (June 2022– November 2025), ColdSpark® was featured at more than 80 external events, with an estimated cumulative audience exceeding 11 000 participants. These engagements provided valuable opportunities to present the project's technology, results, and exploitation potential to stakeholders from research, academia, industry, and policy sectors. The audience by sectors include the following groups with the corresponding approximate numbers of direct reach:

- Research communities – 702
- Industry – 5338
- Business partners – 94
- Innovators – 53
- Investors – 101
- International organisation (UN body, OECD, etc.) – 5
- EU Institutions – 7
- National authorities – 16
- Regional authorities – 10

- Local authorities – 10
- Civil society – 22
- Citizens (General public) – 1292
- Specific end user communities – 23
- Media – 7
- Other - 3319

The most significant of these events were also promoted through multiple ColdSpark® communication channels to maximise visibility. They were announced in advance in the [Events Section](#) on the project website, highlighted in the Events sections of the project newsletters, and featured in dedicated LinkedIn posts. In several cases, follow-up news articles were published on the website’s [news section](#) to showcase partner contributions and share key takeaways with a wider audience.

Name of the Event	Type	Place
<b>Biogas Info Days Ulm</b>	Conference (National)	Ulm, Germany
<b>The next unicorn? - Develop sustainable technologies to help the world decarbonize</b>	Conference (national)	Oslo, Norway
<b>Biogas Conference Heiden, Westfalen</b>	Conference (national)	Heiden, Germany
<b>ONS, Offshore Northern Seas</b>	Conference (international)	Stavanger, Norway
<b>Biogas Online Course from IBBK</b>	Training/ Educational event	Stuttgart, Germany
<b>GH2 Summit (Green Hydrogen Investment)</b>	Seminar / Symposium	New Delhi, India
<b>Cranfield University Hydrogen Showcase</b>	Workshop	Cranfield, UK
<b>e.on</b>	Workshop	Stavanger, Norway
<b>Int. Progress in Biomethane Mobility from IBBK</b>	Conference (international)	Schwäbisch Hall, Germany
<b>H2 from Biogas in Hof, Germany</b>	Conference (national)	Hof, Germany
<b>Green hydrogen from biogas in Hemmingen, Germany</b>	Other business event	Hemmingen, Germany
<b>Future of Biogas Europe Conference</b>	Conference (international)	Nantes, France
<b>Bio360 Expo 2023 – International Conference &amp; Exhibition on Biogas</b>	Conference (international)	New Delhi, India
<b>World Future Fuel Summit &amp; Expo</b>	Training/ Educational event	Online
<b>proBIOGAS #HANDS ON, International Training</b>	Other business event	Ulm, Germany
<b>Biogas Infotage</b>	Conference (international)	Vienna, Austria

<b>R2Gas Workshop “BIOMETHANE – THE MOST EVIDENT RENEWABLE FUEL TODAY”</b>	Conference (international)	Berlin, Germany
<b>2nd Annual Biogas Forum &amp; H2 Mobility</b>	Conference (international)	Berlin, Germany
<b>B2B Fachforum Green Hydrogen Bavaria</b>	Other business event	Straubing, Germany
<b>Biogas in der Landwirtschaft – Stand &amp; Perspektiven</b>	Conference (national)	Bonn, Germany
<b>Straubinger Gärprodukttagung</b>	Seminar/Symposium	Straubing, Germany
<b>Biogasskonferensen 2023</b>	Conference (national)	Oslo, Norway
<b>Grønn omstilling - Rogaland Fylkeskommune</b>	Seminar / Symposium	Stavanger, Norway
<b>Hydrogen Online Workshop</b>	Workshop	Online
<b>5. Bayerischer Biogas Branchentreff</b>	Other business event	Straubing, Germany
<b>9. Symposium der Plasma for Life Partnerschaft</b>	Seminar / Symposium	Göttingen, Germany
<b>Bayerische Biogasfachtagung "Aufbereitung und Verwertung von Gärprodukten"</b>	Seminar / Symposium	Straubing, Germany
<b>HyValue, the hydrogen value chain for marine applications and "What are the challenges for first movers? What can help to de-risk these barriers?"</b>	Workshop	Bergen, Norway
<b>EBA Biomethane Week</b>	Conference (international)	Brussels, Belgium
<b>German Biochar Forum</b>	Seminar / Symposium	Berlin, Germany
<b>Biogas Convention &amp; Trade Fair</b>	Conference (international)	Nuremberg, Germany
<b>Biogas Infotage Ulm 2024</b>	Other business event	Ulm, Germany
<b>Gesteforelesning, Høgskulen på Vestlandet</b>	Lecture at university	Bergen, Norway
<b>International Online Training “proBIOGAS #HANDS ON</b>	Training/ Educational event	Online
<b>International Conference &amp; Expo on Biofuels and Fgy</b>	Conference (international)	Rome, Italy
<b>SETAC Europe 34th Annual Meeting</b>	Conference (international)	Seville, Spain
<b>112CO2 Symposium on Sustainable Chemical Energy Vectors</b>	Seminar / Symposium	Valencia, Spain
<b>Progress in BIOGAS VI</b>	Conference (international)	Stuttgart, Germany

<b>Regatec Conference &amp; Expo</b>	Conference (international)	Lund, Sweden
<b>IWA World Conference on Anaerobic Digestion</b>	Conference (international)	Istanbul, Turkey
<b>Irish Biogas Hands On Training</b>	Training/ Educational event	Gurteen, Ireland
<b>World Biogas Expo 2024</b>	Other business event	Birmingham, UK
<b>SABIA National Biogas Conference</b>	Conference (international)	Pretoria, South Africa
<b>Biogas Conference by Biomass Suisse</b>	Conference (international)	Lausanne, Switzerland
<b>Biogas Infotage 2025</b>	Other business event	Ulm, Germany
<b>Fuels of the Future</b>	Conference (international)	Berlin, Germany
<b>proBIOGAS #HANDS ON, International Training</b>	Training/ Educational event	Online
<b>Sustainable Development of Energy, Water and Environment Systems (SDEWES)</b>	Conference (international)	Dubrovnik, Croatia
<b>Biogas in der Landwirtschaft - Status und Perspektiven</b>	Conference (national)	Stuttgart, Germany
<b>Fachkunde Abfallvergärung</b>	Training/ Educational event	Backnang, Germany
<b>Impacts of hydrogen technologies on society</b>	Workshop	Torino, Italy
<b>proBIOGAS #International</b>	Training/ Educational event	Stuttgart, Germany
<b>Future of Biogas Europe</b>	Conference (international)	Seville, Spain
<b>Fuels of the Future</b>	Conference (international)	Berlin, Germany
<b>Biogas INTENSIV Biologie</b>	Training/ Educational event	Kirchberg/ Jagst, Germany
<b>Schulung Anlagensicherheit für Betreiber von Biogasanlagen</b>	Training/ Educational event	Kirchberg/ Jagst, Germany
<b>Wasserstoff aus biogenen Reststoffen</b>	Workshop	Rutesheim, Germany
<b>LCM (Life Cycle Management)</b>	Conference (international)	Palermo, Italy
<b>Biogas Intelligence +</b>	Conference (international)	Stuttgart, Germany
<b>Future of Biogas Europe</b>	Conference (international)	Seville, Spain
<b>8th Future of Biogas Europe Summit</b>	Conference (international)	Amsterdam, Netherlands
<b>5th Biogas industry meeting Straubing</b>	Conference (National)	Straubing, Germany
<b>12th Biogasfachtagung</b>	Conference (National)	Muecheln, Germany
<b>Progress in Manure and Digestate Utilisation</b>	Conference (National)	Schwaebisch-Hall, Germany

**Table 8. External events during which the ColdSpark® project has been presented**

Even after the project’s completion, partners will continue presenting ColdSpark® results at scientific conferences, industrial fairs, and networking events to support ongoing dissemination and exploitation. One of the events during which the project results will be presented after the project’s end is the [Green Hydrogen Summit](#) in Oman on 1-3 December 2025.

### Stakeholder Meetings and Technology Showcases

Two stakeholder meetings were held in Norway in April 2024 in Cealtech (<https://cealtech.com/>) and Beyonder (<https://www.beyonder.no/>) premises. An important stakeholder meeting was held as part of the Final Event, giving key stakeholders including potential investors, the opportunity to see the technology operating live and to discuss future opportunities directly with Project Coordinator Terje Hauan. In addition, more than 100 smaller stakeholder meetings have been held at SEID’s premises throughout the project, including discussions with prospective investors and partners exploring opportunities to continue the work towards higher TRLs.

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### Scientific Posters and Publications

Publicising the scientific work and results of the ColdSpark® project has been a core element of its dissemination strategy since the very start of the project. The consortium recognised that peer-reviewed publications and conference presentations are essential for validating results, strengthening credibility, and ensuring the uptake of knowledge by the wider research and innovation community leading respectively to a high interest in the side of investors and exploitation opportunities.

From the beginning, research partners committed to presenting their findings and publishing in peer-reviewed scientific journals, with a commitment for open-access in line with Horizon Europe requirements to maximise visibility and accessibility to project results. In line with the “as open as possible, as closed as necessary”, partners ensured that all publications were made available through the project website’s Resources section and the ColdSpark® Zenodo community. While prioritizing open data sharing, confidentiality is strictly maintained for sensitive information. This balanced approach safeguards intellectual property while supporting open science principles.

#	Title	Type	Link	Lead partner	Open access provided (yes/no)
1	Methane up-carbonizing: A way towards clean hydrogen energy?	Journal Article	<a href="#">Link</a>	UoL	Yes
2	A kinetic study of nonthermal plasma pyrolysis of methane: Insights into hydrogen and carbon material production	Journal Article	<a href="#">Link</a>	UoL	Yes

3	Production of Solid Carbon and Hydrogen from Biomethane using Non-thermal Plasma			SEID, IBBK, UoS	no
4	Environmental, economic, and social impacts of methane cracking for hydrogen production: A comprehensive review	Journal article, published	<a href="#">Link</a>	IREC	The journal is hybrid; publication is in open access
5	Methane Splitting in EU and UK policies: analysis of the recent update from the hydrogen and decarbonised gas market package	Journal article, under revision	<a href="#">Link</a>	IREC	The journal is hybrid; publication is in open access
6	A Life Cycle Assessment of Non-Thermal Plasma Methane and Biomethane Splitting: when hydrogen production is sustainable for decarbonization	Journal article Proposal for special issue	<a href="#">Link</a>	IREC	The journal is hybrid; publication is in open access
7	Prospective Life Cycle Assessment of non-thermal plasma methane Splitting in Europe	Journal article, in preparation	<a href="#">Link</a>	IREC	The journal is hybrid; publication is in open access
8	Techno-economic assessment of non-thermal plasma methane for hydrogen and carbon production	Journal article, in preparation	<a href="#">Link</a>	IREC	The journal is hybrid; publication is in open access
9	Biomethane splitting: the hindered carbon removal potential of biohydrogen	LCM 2025 Springer Book, Accepted waiting for book publication		IREC	no
10	Shielded bifunctional nanoreactor enabled tandem catalysis for plasma methane coupling	Journal publication	<a href="#">Link</a>	UoS	Yes
11	Plasma methane pyrolysis for the production of hydrogen and valuable carbon materials.	Under preparation		UoS	Yes

Table 9. List of ColdSpark® project publications

### Scientific posters

During the project implementation, 5 scientific posters were developed. They served as an important tool to communicate the main ideas to the project stakeholders providing visual presentation of the project's technological concept, progress, and results.

Each poster was carefully designed to ensure technical accuracy and visual coherence with the ColdSpark® visual identity. All posters are publicly available through the Resources section of the project website (<https://coldspark.eu/resources>) and the project Zenodo account to ensure long-term accessibility.

## Production of Solid Carbon and Hydrogen from Biomethane using Non-thermal Plasma

REMYA RAVINDRAN NAIR, SACHIN CHAVAN, ISABELLA BULFARO, KATRIN KAYSER, MICHAEL KÖTTNER, TERJE HAUAN

### 1. De-carbonising hydrogen production

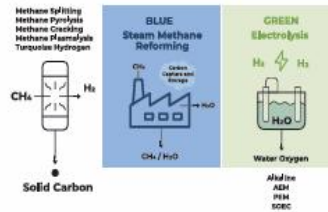
NTP offers a promising pathway to ultra-low-carbon hydrogen if low-CO<sub>2</sub> electricity is used.

- Biomethane pyrolysis represents a promising pathway for reducing the carbon footprint of hydrogen production.
- Non-thermal plasma (NTP) provides the required reaction energy by generating highly energetic electrons capable of breaking molecular bonds through electron impact dissociation.
- High operational flexibility, allowing process parameters to be precisely tuned to minimise energy consumption while optimising product yield and quality.

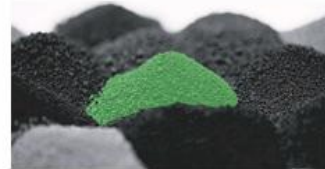
### 3. Non-thermal plasma (NTP) as a novel pathway to de-carbonised hydrogen: Carbon materials, from amorphous carbon to nano-graphene: eCarbon®



### 2. Technical pathways for hydrogen production from renewable sources



### 4. EU's critical raw materials Act



### 5. ColdSpark® solution: H<sub>2</sub> and e-Carbon® production with no direct CO<sub>2</sub> emissions.



### 6. Life Cycle Assessment (LCA) – Desktop Study by IREC

Objective	Assess GHG emissions from methane splitting using different European electricity mixes
Countries studied	Norway, Spain, France, Germany
Approach	Cradle-to-gate LCA model based on desktop research and benchmark comparisons
Key findings	Negative GHG emissions are possible when waste-based biomethane is used as feedstock

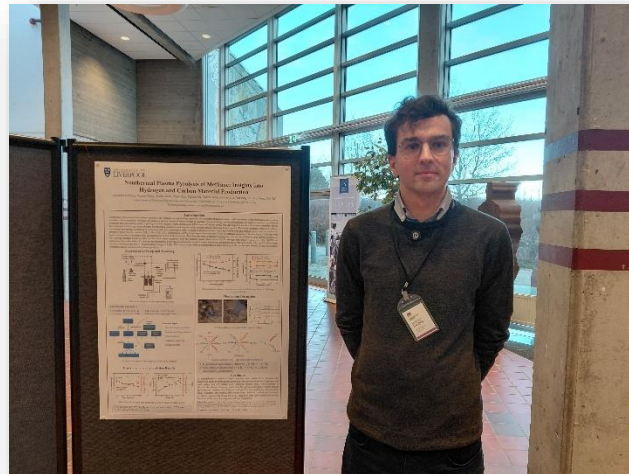


Visit project ColdSpark® website: <https://coldspark.eu/>  
Follow us on LinkedIn: Project #ColdSpark



This project has received funding from the European Union's Horizon Europe Research and Innovation Programme under grant agreement No. 101069931 (ColdSpark). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Figure 18. Latest ColdSpark® scientific posters intended to biogas sector representatives



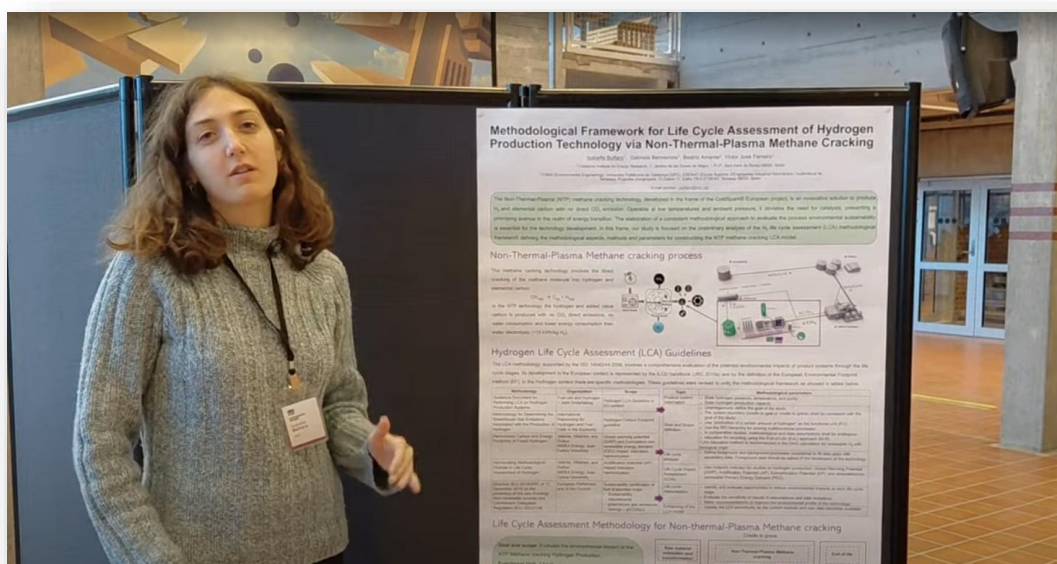
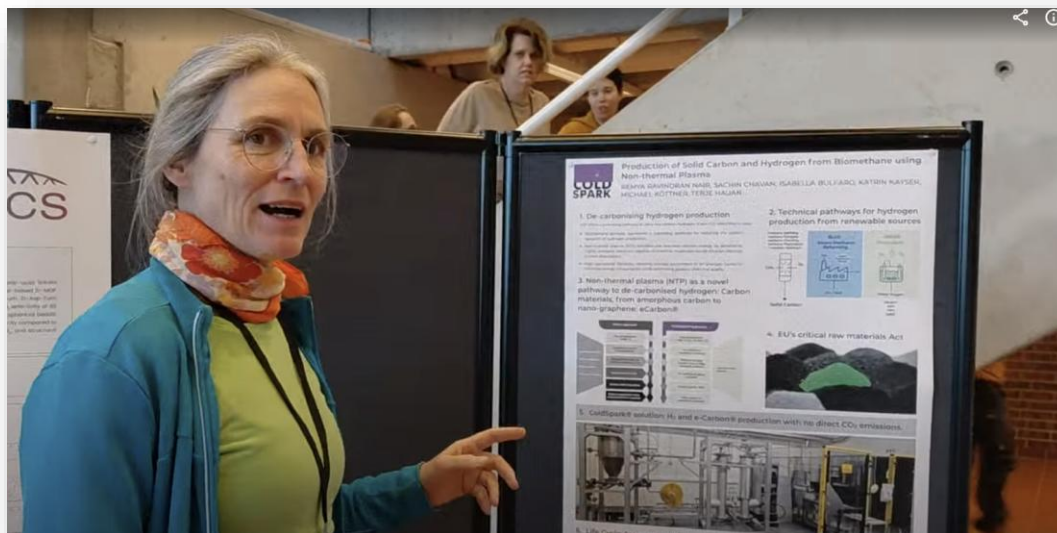


Figure 19. Some of the ColdSpark® scientific posters presented during the project’s final event

## Media Presence

Since its beginning and mainly through the efforts of the project coordinator, ColdSpark® actively pursued visibility in professional and public media, targeting magazines and online outlets focused on clean energy, innovation, and sustainable technologies.

For its lifetime, the project was featured in several **regional and sectoral publications in Norway**, reaching a broad audience across the energy, business, and policy domains.

- In [Sandnesposten](#) (18 August 2022), a regional newspaper with strong local readership, SEID AS presented the *ColdSpark*<sup>®</sup> concept as a major Norwegian climate innovation supported by Horizon Europe. The article introduced the project's non-thermal plasma technology and highlighted its potential to transform natural gas into hydrogen and solid carbon without CO<sub>2</sub> emissions.
- The **Næringsforeningen i Stavanger-regionen** magazine (8 December 2022) published a detailed article on "[Vil lage hydrogen ved hjelp av naturgass](#)", describing the development of *Project ColdSpark*<sup>®</sup> and its relevance for the local and national hydrogen economy. The article reached the business community and industrial associations.
- In **Stavanger Aftenblad – Debatt** (March 2024), Terje Hauan from SEID authored an opinion article titled "[Naturgass kan gå fra problem til ressurs gjennom ny hydrogenteknologi](#)". The article explained how the *ColdSpark*<sup>®</sup> approach contributes to Europe's low-carbon hydrogen strategy by turning natural gas into a sustainable resource. This publication reached a general and policy-oriented readership and positioned the project within the national dialogue on green transition.

In addition, *ColdSpark*<sup>®</sup> was referenced on several **sectoral platforms**, including [Energy Transition Norway](#), [H2-view.com](#), [Business Norway](#), etc. These appearances helped strengthen the project's professional reputation and public awareness, expanding its reach well beyond traditional dissemination channels.



**NÆRINGS FORENINGEN**  
Gjør SMÅR til vekst

Bli medlem Nyheter **Arrangementer** Søk



## Vil lage hydrogen ved hjelp av naturgass



Frode Berge  
8. desember 2022

Det Sandnes-baserte selskapet SEID jobber for å oppnå det som er mange teknologiselskapers våte drøm: Lønnsom produksjon av hydrogen, uten utslipp av klimagasser. Kan Risavika bli stedet?

Seid er et norrønt begrep for kunnskap og teknologi som befinner seg i grenselandet mellom religion og magi. På en klode der klimaalarmklokkene ringer stadig sterkere kan det saktens være behov for hjelp fra både trolldom og høyere makter. Og SEID er ett av stadig flere lokale teknologiselskaper som daglig gjør framskritt i arbeidet med å utvikle ny, og sårt tiltrengt, miljøteknologi.

Terje Hauan er medgründer og sjef for strategi og forretningsutvikling i SEID. Han har lang fartstid som gründer, og har deltatt i oppstarten og utviklingen av 13 ulike selskaper. I tillegg har han jobbet hos tungvektene som Weatherford og Interwell.

Selskapet som i dag altså bærer det lett mystiske navnet SEID har en historie som strekker seg helt tilbake til 1997.

## SEID's Project ColdSpark simplifies sustainable hydrogen production

Published 21 Feb 2023 (updated 8 Nov 2024) - 3 min read



Figure 20. ColdSpark® Media Presence

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## Open Access Policy

From its outset, ColdSpark® adopted the principles of open science as a key element of its communication and dissemination strategy, ensuring that results were shared in a transparent and responsible manner in accordance with Horizon Europe’s open access requirements. The project followed the principle of making results *“as open as possible, as closed as necessary,”* balancing knowledge sharing with the need to protect commercially sensitive and potentially exploitable information to ensure the further scaling up.

The project made all public deliverables, newsletters, and communication materials available through the project website’s Resources section, ensuring free access to a wide audience, including researchers and industry stakeholders. ColdSpark® also ensured that scientific results produced by the consortium were published in open-access peer-reviewed journals, and that links to those publications were added to both the project website and the Zenodo repository to guarantee long-term accessibility. The Zenodo repository shows high interest in the project results with **730 downloads and 759 views** from the ColdSpark community in November 2025.

All partners were reminded of the project’s open science commitments through internal guidelines established in D7.1 (Communication, Dissemination and Exploitation Plan) and reinforced in D7.2 and D7.3, which defined procedures for data handling, referencing, and protection of intellectual property. Each publication underwent internal review to ensure alignment with these principles and to prevent disclosure of confidential or pre-exploitable results.

According to the rules set in the ColdSpark® Consortium Agreement, any proposed publication relating to the project is sent to the Coordinator and all other Parties at least 45 days before publication date. Any of the Parties had the right object to the publication within 15 days whenever there is an assessment of intellectual property rights infringement or the publication includes sensitive information. Additionally, all partners had the legal obligation to properly acknowledge the funding received by the European Union on all communication and publications and EP as communication and dissemination leading partner was responsible for monitoring this process. Through these measures, ColdSpark® contributed to the transparency and accessibility of European research on clean hydrogen and carbon materials, while safeguarding the consortium’s ability to further develop and commercialise the technology after project completion.

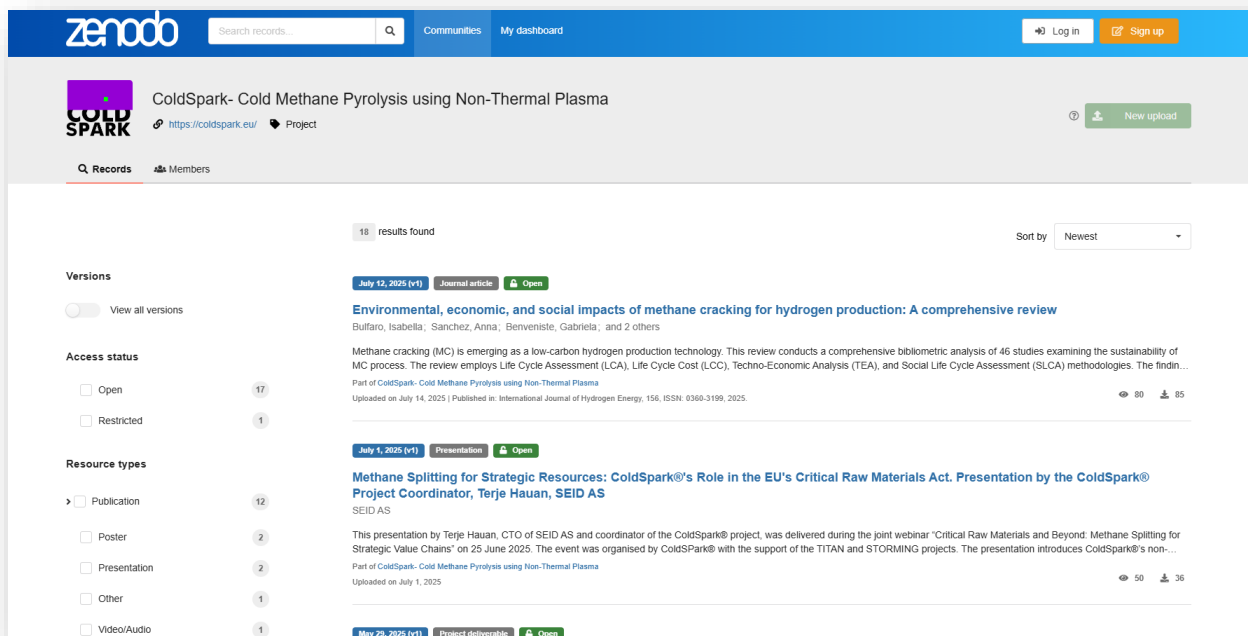


Figure 21. ColdSpark® Zenodo Community

## Communication and Dissemination Performance based on KPIs

Regular monitoring and evaluation have been an integral part of the ColdSpark® communication and dissemination strategy to ensure the continuous relevance, consistency, and impact of all activities. The assessment of progress was carried out throughout the project using both quantitative and qualitative indicators, allowing timely adjustments to enhance outreach and stakeholder engagement.

The effectiveness of the dissemination and communication activities was measured against the Key Performance Indicators (KPIs) defined in the Grant Agreement and refined in subsequent deliverables (D7.2 and D7.3). Some indicators were recalibrated during implementation to more accurately reflect project realities and partner feedback. For example, the initially high target for the number of news items published on partner websites was adjusted to 25, focusing instead on the quality and relevance of published content rather than quantity. Similarly, the timing of newsletters and press releases was strategically aligned with major project milestones, such as technology demonstrations, joint webinars, and participation in flagship events, to maximise visibility and impact.

This continuous evaluation approach ensured that ColdSpark®'s communication and dissemination actions remained purposeful, high-quality, and aligned with the project's evolving objectives and exploitation priorities.

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## Monitoring and Evaluation of Communication and Dissemination Activities

Monitoring of communication and dissemination activities was systematically integrated into the ColdSpark® project management structure to ensure coherence, transparency, and impact across all outreach actions. Partners were required to record their activities in the Communication and Dissemination Tracker, providing evidence such as photos, event materials, participant lists, and links to online publications.

Regular evaluation and coordination were carried out through:

- Monthly and semi-annual WP7 reports,
- Continuous updates of the dissemination tracker, and
- Dedicated sessions during the monthly Technical Committee meetings.

This structure ensured efficient coordination among partners, consistent visibility, and early identification of areas where improvements or additional support were needed. Overall, this integrated monitoring framework ensured that ColdSpark®'s communication and dissemination activities were data-driven, results-oriented, and continuously optimised throughout the project lifecycle.

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### Management of Communication, Dissemination, and Exploitation Activities

The management of ColdSpark®'s communication, dissemination, and exploitation activities was structured to ensure clear responsibilities, continuous coordination, and full alignment with the project's objectives and EU requirements.

The WP7 leader, Europroject, was responsible for steering and implementing all DEC activities across the consortium. As the lead organisation, EP prepared and continuously updated the Communication, Dissemination and Exploitation Plans, tracked its implementation, and ensured consistent application of the ColdSpark® visual identity, communication standards, and messaging.

Each partner contributed actively to dissemination and communication within their networks, providing input for newsletters, events, publications, and social media campaigns. Partners also shared updates and evidence of their activities in the Communication and Dissemination Tracker, facilitating transparent reporting and coordinated outreach efforts.

The internal communication and coordination procedures established at the beginning of the project proved effective and efficient throughout its implementation. Regular information exchange among partners through monthly meetings, semi-annual WP7 updates, and shared documentation ensured consistency and timely response to emerging opportunities. These processes will continue beyond the formal project end, supporting the sustainability of ColdSpark®'s communication and exploitation activities and ensuring that results remain visible and usable by partners, stakeholders, and the wider research and industrial community.

## Key Performance Indicators and Impact-Tracking

The project applies the following key performance indicators concerning communication, dissemination and exploitation.

KPI	Target	M24	M42 (project end)	Status
Project website	Launched by M2	Achieved	Achieved	Achieved
	Monthly updates	Being implemented	Regularly implemented	Achieved
	30 000 hits	5.8 K users, 14000 hits (in May 2024)	12,246 Users, 28000 hits	Slightly below target
Project graphic identity & logo, including QR code, PPT and deliverables templates	Ready by M2	Achieved	Achieved	Achieved
Informative printable material: posters, roll-up banner, flyers and project factsheet	Available from M3, throughout the project	Achieved	Achieved	Achieved
	Number of flyers and project factsheet distributed 20 posters, 10,000 flyers, 4,000 project factsheets.	In implementation	Approximately 1620 printed materials distributed + 1423 downloads from the project website  7 different posters presented over 20 times	Slightly below target  Although the number of printed materials distributed is low, this reflects the project's sustainability policy. The outreach impact is instead achieved through a high number of downloads and views on the project website.

<b>Informative multimedia material: audio-visual material, digital flyers &amp; gadgets</b>	<p>Available from M3, throughout the project</p> <p>1,000 visualisations 500 downloads</p>	<p>Digital flyer available; project video available</p>	<p>Achieved</p>	<p>Achieved</p>
<b>E-newsletters</b>	<p>Schedule is adapted to correspond to the major project achievements</p> <p>Number of subscriptions to the service 1,500 enrolments</p>	<p>2 Newsletters available, a schedule for 6 more is available in the current plan</p> <p>Currently we have 180 subscribers</p>	<p>5 Newsletters produced</p> <p>195 subscribers</p>	<p>Number of newsletters is slightly below target</p> <p>Number of subscribers is below the target</p>
<b>Social media campaign (LinkedIn)</b>	<p>Launched by M2</p> <p>2,000 posts, 5,000 followers</p>	<p>Achieved</p> <p>800 followers</p>	<p>Achieved</p> <p>&gt;2000 followers</p>	<p>Achieved</p> <p>Number of followers is below the target, but the LI account will be active beyond the project end</p>
<b>Announcements on partners' websites</b>	<p>From the KOM</p> <p>25 newsfeeds published on the partner's website</p>	<p>Achieved</p> <p>In implementation</p>	<p>Achieved</p> <p>Achieved</p>	<p>Achieved</p> <p>Achieved</p>
<b>Press releases campaign</b>	<p>Instead of quarterly as per Grant Agreement, the schedule of the press releases has been adjusted to correspond to the achievement of the major milestones featured on the project's website</p>	<p>New press release to the scaling-up phase</p>	<p>3 press releases published</p>	<p>Achieved</p>

Publication of articles In line with public interest developments in the project, events	At least 5 publications in high-impact journals	In implementation	Achieved	Achieved
	At least 3 articles per year in the press		Slightly below target	Number is slightly below target
Reports and other project documents (Public deliverables)	Upon completion of deliverables	In implementation	Achieved	Achieved
	200 downloads, 1,000 consultations	Zenodo – 110 downloads Website – 200 downloads	Zenodo – 730 downloads, 759 consultations Website – 6371 downloads	Achieved
Participation in major national and International Conferences	At least 4 major conferences during the project  Number of contacts made: 150 contacts	The numbers have already been achieved but the consortium continues its efforts	Number highly exceeds the target	Achieved
EU events and workshops	At least 2 events yearly: 50 contacts	In implementation	Number highly exceeds the target	Achieved
Stakeholders' meetings	1 yearly  At least 3 during project life	2 stakeholder meetings have been conducted so far	3 stakeholder meetings conducted, including over 100 visits, consultations and meetings with stakeholders conducted mainly by SEID as main technology developer	Achieved
Final demonstration event	100 participants	To be implemented	34	Number is below target

**Table 10. Communication and dissemination KPIs**

Overall, the evaluation confirms that most KPIs were achieved or exceeded, with only a few quantitative targets falling slightly below projections due to the project's highly specialised nature. The focus on content quality, visual consistency, and stakeholder relevance ensured that the dissemination strategy delivered measurable and lasting impact.

## Conclusion

The communication and dissemination activities implemented throughout the ColdSpark® project have successfully achieved their overarching objectives of ensuring visibility, awareness, and engagement across scientific, industrial, policy, and public audiences. Guided by the strategic framework established in the successive DEC Plans (D7.1–D7.4), the project maintained a coherent narrative, a consistent visual identity, and a dynamic, adaptive approach that evolved in parallel with the technological progress and exploitation potential of ColdSpark®.

Through the efforts of the whole consortium, ColdSpark® effectively positioned itself as a reference initiative in the emerging field of methane splitting. The dissemination activities reached thousands of stakeholders worldwide, and the project website, LinkedIn community, and publications collectively ensured long-term accessibility to its results and reinforced the project's scientific and industrial credibility.

The communication and dissemination efforts extended beyond awareness-raising to actively support exploitation and post-project continuity and market uptake. The strong alignment between communication, dissemination, and exploitation ensured that ColdSpark®'s results will continue to inform, inspire, and support Europe's transition toward clean hydrogen and raw materials industries.

The lessons learned from this project highlight the crucial role of a clear visual identity and adaptive stakeholder communication, serving as a valuable reference for future Horizon Europe projects seeking to bridge the gap between scientific innovation, industrial application, and societal impact. Despite the challenges of translating complex scientific knowledge into messages tailored to diverse audiences, the experience of ColdSpark® demonstrates that this is communication worth every effort, as it transforms advanced research into shared understanding, engagement, and real-world impact.

## APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

Deliverable 7.3 has been developed in accordance with the provision outlined within the following related documents:

- ColdSpark® Grant Agreement Nr. 101069931,
- ColdSpark® Consortium Agreement
- D7.1. Plan for Dissemination, Exploitation and Communication (M6)
- D7.2. Plan for Dissemination, Exploitation and Communication (M12)
- D7.3. Plan for Dissemination, Exploitation and Communication (M24)
- D7.4. Plan for Dissemination, Exploitation and Communication (M42)
- D7.6. Exploitation plan (Common business plan)