

DELIVERABLE REPORT

D6.2 DRAFT COMMUNICATION & DISSEMINATION PLAN



Green Industrial Hydrogen via steam electrolysis



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Table of acronyms

FC	Fuel Cells
RES	Renewable Energy Sources
StE	Steam Electrolysis

Preamble

As a proof-of-concept, the GrInHy2.0 project (Green Industrial Hydrogen via high-temperature electrolysis) includes designing, manufacturing and operation of a steam electrolyzer based on the Solid Oxide Cell technology in a relevant industrial environment, Salzgitter steel production plant.

This document contains the current status of GrInHy2.0's dissemination plan and is part of its communication strategy. Besides some context information on the project (e.g. objectives and target groups), the dissemination plan describes the corporate design and points out different dissemination forms (communication channels) of planned activities.

This document will be periodically updated as the situation and information change in the course of the project.



Introduction

This public deliverable for the initial draft Communication and Dissemination Plan (CDP) is aimed at presenting the strategy, planning, and review of the main communication and dissemination activities related to the EU project GrInHy2.0. The report includes an analysis of the target groups, and details the different tools the consortium has at its disposal to maximize the dissemination of the results to the scientific communities and arouse public interest. The context and objectives of the project are also introduced.

The communication strategy includes the following essential aspects:

- Structure of communication management
- Goals and objectives
- Target group analysis
- A uniform visual identity
- Choice of medium and means
- Measures for performance monitoring

1 Context of the Project

1.1 GrInHy2.0

The European Commission and its roadmap for moving towards a competitive low-carbon economy in 2050 sets greenhouse gas emissions targets for different economic sectors. One of the main challenges of transforming Europe's economy will be the integration of highly volatile renewable energy sources (RES). Especially hydrogen produced from RES will have a major part in decarbonizing the industry, transport and energy sector – as feedstock, fuel and/or energy storage.

However, access to renewable electricity will also be a limiting factor in the future and energy efficient technologies the key. Due to a significant energy input in form of steam preferably from industrial waste heat, Steam Electrolysis (StE) based on Solid Oxide Electrolysis Cells (SOEC) achieves outstanding electrical efficiencies of up to 84%_{el,LHV}. Thus, StE is a very promising technology to produce hydrogen and oxygen most energy efficiently.

In context with the production of green hydrogen from a steam electrolyzer, the steel industry combines both hydrogen and oxygen demand – today and future – and the availability of cost-efficient waste heat from its high-temperature production processes. Currently, the H₂ demand is mostly met using natural gas, and as a consequence is generating CO₂. Switching the source of H₂ from fossil fuel to StE using RES would naturally allow reducing greenhouse gas emissions, while favoring the development of a highly innovative and energy efficient technology. This context constitutes the frame for the EU project GrInHy2.0, the continuation of the first GrInHy project that ran from March 2016 to March 2019, and is summarized in the following Figure 1:

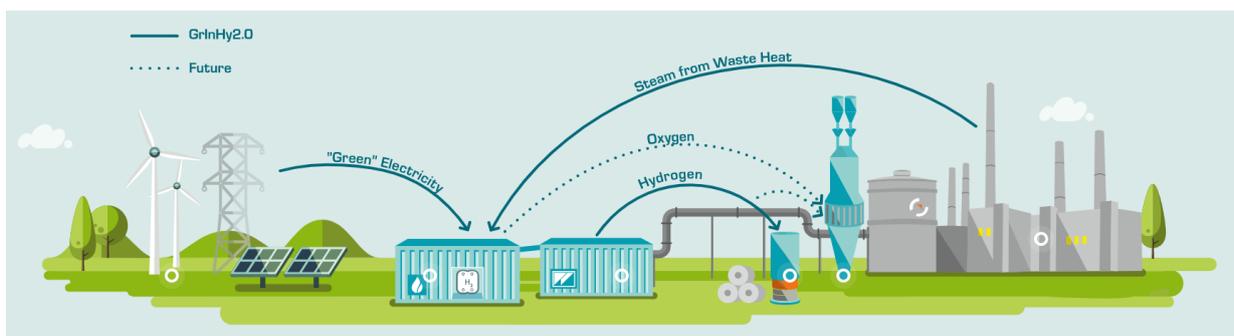


Figure 1: Context of the GrInHy2.0 EU project.

There are multiple facets to this EU project, and the different partners of the consortium are expected to tackle subjects ranging from technological demonstration & system design, to techno-economic assessments and regulatory framework, among others. Without a doubt, this wide range of focuses will generate data, results, conclusions and outlooks that will need to be disseminated. Indeed, it is the consortium responsibility to make sure that GrInHy2.0 results reach the appropriate communities and the general public.

This public report is aimed at detailing the draft Communication and Dissemination Plan (CDP). It gathers the different methods and tools the consortium will use to disseminate GrInHy2.0 results, spread awareness, and generate enthusiasm of the target groups.

1.2 Explanation of terms HTE, SOEC, StE

Often, HTE, SOEC and StE are used synonymously. In context of GrInHy2.0, the following statement defines the use of these terms:

High-Temperature Electrolysis” (HTE) is the generic term for all SOEC-based electrolysis which include “Steam Electrolysis” (StE) and “Co-Electrolysis”. In the scope of GrInHy2.0, both terms HTE and StE have been used as synonyms. Since HTE is the more widely accepted and used term in the public, we suggest only making use of the term “High temperature Electrolysis” for all dissemination activities going forward.

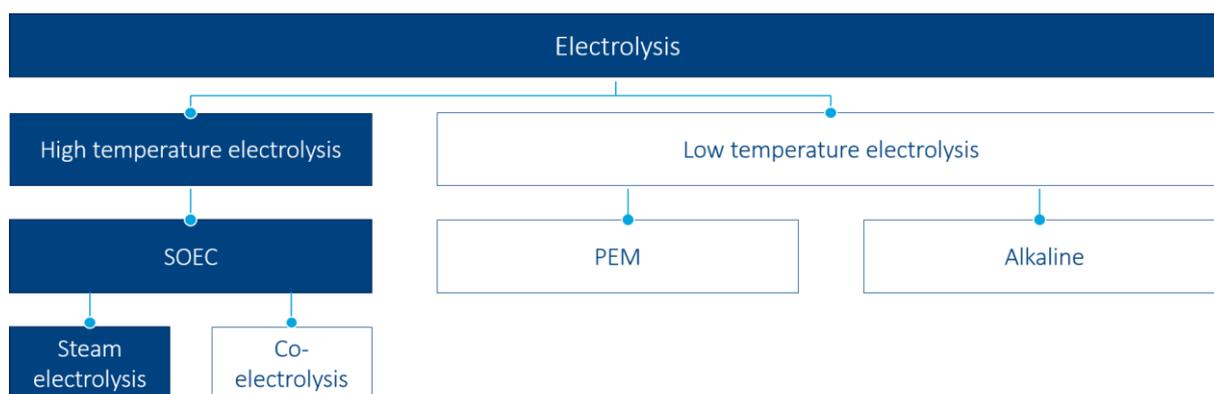


Figure 2: Explanation of terms

1.3 Target Groups

All potential stakeholders have been identified, segmented and divided into primary and secondary target groups. The direct focus for dissemination activities lays on primary target groups, whereas the secondary target groups have the role of multiplying those activities.

Besides supporting dissemination activities, the pre-determination of different target groups is also the basis for developing recipient-adapted communication strategies.

By the end of the project, all target groups shall know about the existence of the project as a good practice example, gain specific technology insight and learn about benefits related to the implementation of a High Temperature Steam Electrolyzer. This is also synonymous with the expected impact.

Primary

- (1) Possible customers in the industry sector
 - Steel Industry
 - Oil Refineries
 - Chemicals
 - Technical Gas Suppliers
 - Wind Mill and Biogas Operators
 - Micro Grid Operators / EPC's
- (2) Experts, scientists and researchers
 - Process engineering
 - Electrical engineering
 - Material scientists



(3) Political decision makers (national and international)

Secondary

(1) Fuel Cells and Hydrogen Joint Undertaking (FCH JU) and its three Members

- a. European Commission,
- b. Hydrogen Europe, and
- c. Hydrogen Europe Research.

(2) Intermediate actors, e.g. industry associations

- Deutscher Wasserstoff und Brennstoffzellen Verband (DWV)
- Association Française pour l'Hydrogène et les Piles à Combustible (AFHYPAC) in France
- And potentially other national associations

(3) Media



2 Dissemination Tools

2.1 Visual Identity

As part of deliverable D6.1, the GrInHy2.0 project has a visual identity through its official logo and website. The former is depicted in Figure 3, while the latter can be found at the following URL: <https://www.green-industrial-hydrogen.com/>



Figure 3: Official GrInHy2.0 logo.

In addition, a set of official template documents has been produced and shared with the consortium. A uniform visual identity will help standardize the external communication, and therefore support the dissemination activities.

It is important for the partners to note that section 29.4 of the Grant Agreement establishes that any dissemination of results (in any form, including electronic) must:

(a) Display the JU logo,



(b) Display the EU emblem,



(c) Include the following text:

“This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (JU) under grant agreement No 826350. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and Germany, Luxembourg, Italy, France”.

2.2 Official Website

GrInHy2.0 website is expected to play a central role in the dissemination efforts of the project's results. Indeed, in addition to showcasing the context of the project in a user-friendly way (Figure 4) and the consortium (Figure 5), the following key features will be made available:

- Periodic updates
- Announcement of the consortium public appearances
- Regular press releases.
- Periodical announcement of newly published scientific results.
- Downloadable access to public deliverables
- Subscription to the newsletter

GrInHy2.0 website can be found at:

<https://www.green-industrial-hydrogen.com/>

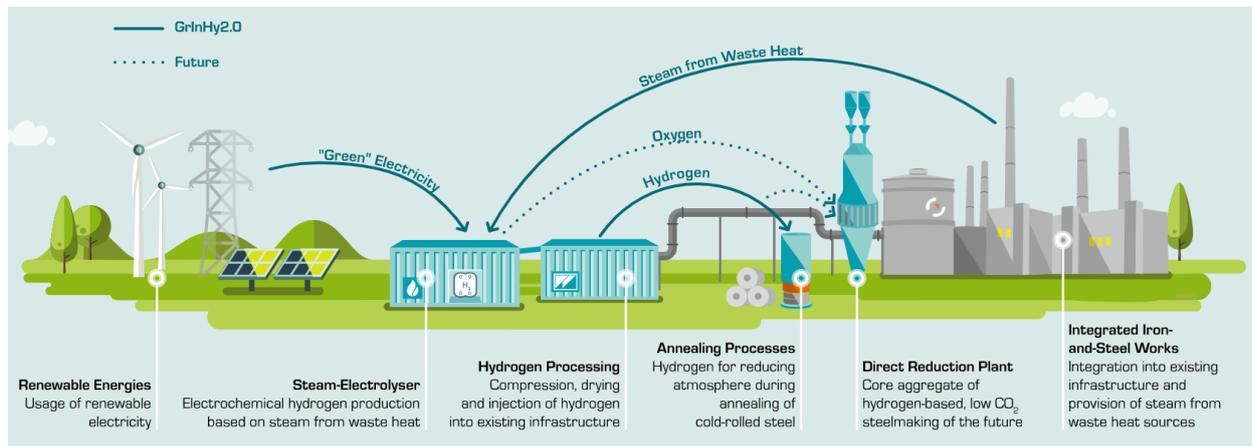


Figure 4: Official GrInHy2.0 website homepage.



Figure 5: Official GrInHy2.0 website consortium page.

2.3 Press Releases

Press releases will continue to be used to disseminate outstanding results and perspectives to the general public. Indeed, the communication and dissemination tool has already been used to announce the start of GrInHy2.0 project. The following Table 1 and Table 2 gather the different websites that have already showcased the first press release that marked the beginning of the GrInHy2.0 project.

Date	Title	URL
07/03/19	SZFG and Sunfire take the next step in the development of steam electrolysis with GrInHy2.0	https://www.salzgitter-ag.com/en/press/press-releases/press-release-of-salzgitter-ag/2019-03-07/szfg-and-sunfire-take-the-next-step-in-the-development-of-steam-electrolysis-with-grinhy20.html
14/03/19	GRINHY2.0 –HYDROGEN FOR LOW-CO2 STEELMAKING	https://www.sunfire.de/en/company/news/detail/grinhy2-0-hydrogen-for-low-co2-steelmaking

Table 1: Online visibility of GrInHy2.0 first press release on partners' websites

Date	Title	URL
14/03/19	SALZGITTER BAUT WASSERSTOFFPRODUKTION AUS	https://www.energate-messenger.de/news/190178/salzgitter-baut-wasserstoffproduktion-aus
	GrInHy2.0 - Wasserstoff für eine CO2-arme Stahlproduktion	https://www.pressebox.de/inaktiv/salzgitter-ag-0/GrInHy2-0-Wasserstoff-fuer-eine-CO2-arme-Stahlproduktion/boxid/947121
	Wasserstoff für CO2-arme Stahlproduktion	https://www.solarserver.de/solar-magazin/nachrichten/aktuelles/2019/kw11/wasserstoff-fuer-co2-arme-stahlproduktion.html
	Salzgitter baut Elektrolyseur für die Stahlproduktion	https://www.energie-und-management.de/nachrichten/energietechnik/detail/salzgitter-baut-elektrolyseur-fuer-die-stahlproduktion-129849
15/03/19	Salzgitter and Sunfire to build world's most powerful high-temperature electrolyser	https://www.gasworld.com/salzgitter-and-sunfire-collaborate/2016821.article
21/03/19	SZFG and Sunfire take the next step in the development of steam electrolysis with GrInHy2.0	https://metals-consulting.com/szfg-and-sunfire-take-the-next-step-in-the-development-of-steam-electrolysis-with-grinhy2-0/
01/04/19	n.a.	https://www.chemengonline.com/chementator-briefs-51/
05/04/19	Salzgitter und Tenova: Projekt zur CO2-armen Stahlproduktion auf Wasserstoffbasis	https://www.prozesswaerme.net/aktuell/wirtschaft-und-unternehmen/05-04-2019-salzgitter-und-tenova-projekt-zur-co2-armen-stahlproduktion-auf-wasserstoffbasis/
18/04/19	Sunfire and Salzgitter to build world's most powerful steam electrolysis plant	https://www.thechemicalengineer.com/news/sunfire-and-salzgitter-to-build-world-s-most-powerful-steam-electrolysis-plant/

Table 2: Online visibility of GrInHy2.0 first press release

3 Dissemination to the Scientific Communities

This section aims at identifying how to best disseminate the results of the GrInHy2.0 project to the key target groups. Both scientific journals and conferences devoted to a relevant theme are considered.

3.1 Scientific Journals

Significant progress and results achieved in the frame of the GrInHy2.0 project will be published in relevant scientific journals. The following Table 3 gathered journals devoted to the relevant fields of energy, fuel cells, and hydrogen.

Journal	Main topic	URL
Journal of Power Sources	All aspects of the science, technology and applications of sources of electrochemical power: the science and applications of primary and secondary batteries, fuel cells, supercapacitors and photo-electrochemical cells.	http://www.journals.elsevier.com/journal-of-power-sources/
Applied Energy	Analysis and optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems. Innovative technologies and systems of both fossil and renewable energy to the economic industrial and domestic use of energy with no or minor impact on the environment.	http://www.journals.elsevier.com/applied-energy/
International Journal of Hydrogen Energy	The International Journal of Hydrogen Energy aims to provide a central vehicle for the exchange and dissemination of new ideas, technology developments and research results in the field of Hydrogen Energy between scientists and engineers throughout the world	http://www.journals.elsevier.com/international-journal-of-hydrogen-energy/
Fuel Cell Bulletin	Fuel Cells Bulletin is the leading source of technical and business news for the fuel cells sector. From its international perspective it distills the important information you need to take advantage of the growing opportunities in fuel cells.	http://www.journals.elsevier.com/fuel-cells-bulletin
Fuel Cells	<i>Fuel Cells — From Fundamentals to Systems</i> publishes on all aspects of fuel cells, ranging from their molecular basis to their applications in systems such as power plants, road vehicles and power sources in portables.	https://onlinelibrary.wiley.com/journal/16156854

IEEE Transactions	IEEE and its members inspire a global community to innovate for a better tomorrow through its more than 423,000 members in over 160 countries, and its highly cited publications, conferences, technology standards, and professional and educational activities. IEEE is the trusted “voice” for engineering, computing, and technology information around the globe.	https://www.ieee.org/
International Journal of Life Cycle Assessment	The Int J Life Cycle Assess is a forum for scientists developing LCA and LCM (Life Cycle Management); LCA and LCM practitioners; managers concerned with environmental aspects of products; governmental environmental agencies responsible for product quality; scientific and industrial societies involved in LCA development, and ecological institutions and bodies.	https://www.springer.com/environment/journal/11367

Table 3: Scientific journals relevant to the GrInHy2.0 project.

Note: Section 29.2 of the Grant Agreement binds the consortium to publish their research in open-access format.

3.2 Conferences

Conferences allow the consortium to convey the objectives, results, and outlooks of the GrInHy2.0 project to the European and international H₂ & Fuel Cell (FC) communities.

This section gathers the names, websites, locations and dates of potential conferences with topics related to the project. Only the upcoming dates are given here, due to availability, though most events are held every year.

Name	URL	Location & upcoming date	Participation
FC EXPO 2020, 16th International Hydrogen & Fuel Cell Expo	http://www.fcexpo.jp/en	Feb 26-28th 2020, Japan	
NOW GmbH: Hydrogen and Fuel Cell Technology Supplier Marketplace	https://www.now-gmbh.de/en	Germany	
Hydrogen and Fuel Cell Showcase	http://www.climate-change-solutions.co.uk/events/hydrogen-and-fuel-cell-showcase-university-of-birmingham/	July 18th 2019 UK	
Materials Research Society Spring Meeting & Exhibit	https://www.mrs.org/spring2020	April 13-17th 2020 USA	
22nd International Conference on Fuel Cells Science and Technology	https://waset.org/conference/2020/01/new-york/ICFCST	January 30-31th 2020, USA	

23rd World Hydrogen Energy Conference, WHEC 2020	http://whec2020.org/	July 5-9th, 2020, Turkey	
World Hydrogen Technologies Convention (WHTC) 2019	http://whtc2019.jp/	June 2-7 th , 2019, Japan	
SOFC - XVI	http://www.eguchi-lab.ehcc.kyoto-u.ac.jp/SOFC_XVI/index.html	September 8-13 th 2019, Japan	
14th European SOFC & SOE Forum	https://www.efcf.com/index.php?id=2401	30-3rd July 2020 Switzerland	
Hannover fair	http://www.hannovermesse.de/home#	April 20-24th 2020, Germany	
FDFC 2021	n.a.	2021	
European Fuel Cell Technology & Applications "Piero Lunghi" Conference (EFC)	http://www.europeanfuelcell.it/	December 9-11th Italy, 2019	
International Renewable Energy Storage Conference (IRES)	https://www.eseexpo.com/	March 10-12th 2020, Germany	
Progress in Fuel Cell Systems - Bruges workshop	http://www.birmingham.ac.uk/research/activity/bruges/index.aspx	May, Belgium	
Conference on Carbon Dioxide as Feedstock for Fuels, Chemistry and Polymers	http://co2-chemistry.eu/programme	March, Germany	
EU Green Week	https://www.eugreenweek.eu/	May-June Belgium	
Process system engineering conference: ESCAPE	http://efce.info/ESCAPE_28-p-20000955.html	June The Netherlands	
236th ECS Meeting	https://www.electrochem.org/236	October 13-17th USA	

Table 4: Conferences expected to be relevant to efficiently disseminate GrInHy2.0 results.

4 Targets & Performance Monitoring

The grant agreement provides the partners with a set of targets to be met during the course of the project. These targets are gathered in the following Table 5.

Target groups	Indicators for measuring the effectiveness of the approach	Min value	Feedback expected
Customers <i>Industrial companies from different sectors; Local authorities</i>	Customer request for other project deployments	50	Discussions on industrial and commercial fairs (mainly Hannover Fair) Request for specific features in order to address specific needs of various sectors
	Interest of industrial customers on technology exploitation via partnerships and/or license agreements	15	
Research community <i>H₂ & FC researchers & industries</i>	Publications at international conferences (M24 onwards)	6	Disseminate the latest results towards H ₂ & FC actors Designing new collaborative research proposals. MoUs concluded between research & industrial partners
	Publications in international journals (M24 onwards)	6	
	Participation with presentation of results at international events with industry	3	
	Workshop with international stakeholders	1	
Industry associations <i>Steel, Refining, Chemicals, Think tanks</i>	Participation with presentation of results at association events	3	Attract attention and generate interests from industry associations and get their support in the political decision-making process
General public <i>Public & Private</i>	Non-scientific publications (article, press releases); Participation in national events promoting	10	Attract attention and generate interests for an optimal exploitation of the project's results for further exploitation
	Flyers/Poster distributed at conferences, workshops, etc.	1000	
	Project Website (M3): Nb of visits	3000	
	Public deliverables: Nb of downloads	200	
Standards & regulation bodies	Standardization groups in particular IEC TC105 Participation in EU commission's consultation & other worldwide regulatory in the field of interest	1	Promoting the GrInHy2.0 results and making sure that they can be integrated and contribute in future standards
Final dissemination event	Presentation & inauguration of the installed demonstrator (WP6)	1	Improved knowledge of the potential of the technology

Table 5: GrInHy2.0 initial draft PDE and target values.

In order to have an efficient and up-to-date overview of the ongoing dissemination efforts, all partners will keep a record of their successful efforts quantifiable by the above table. Published



results and participation to conferences and other public events will be featured and advertised on the official GrInHy2.0 website, while updated target values will be included in the newsletter.