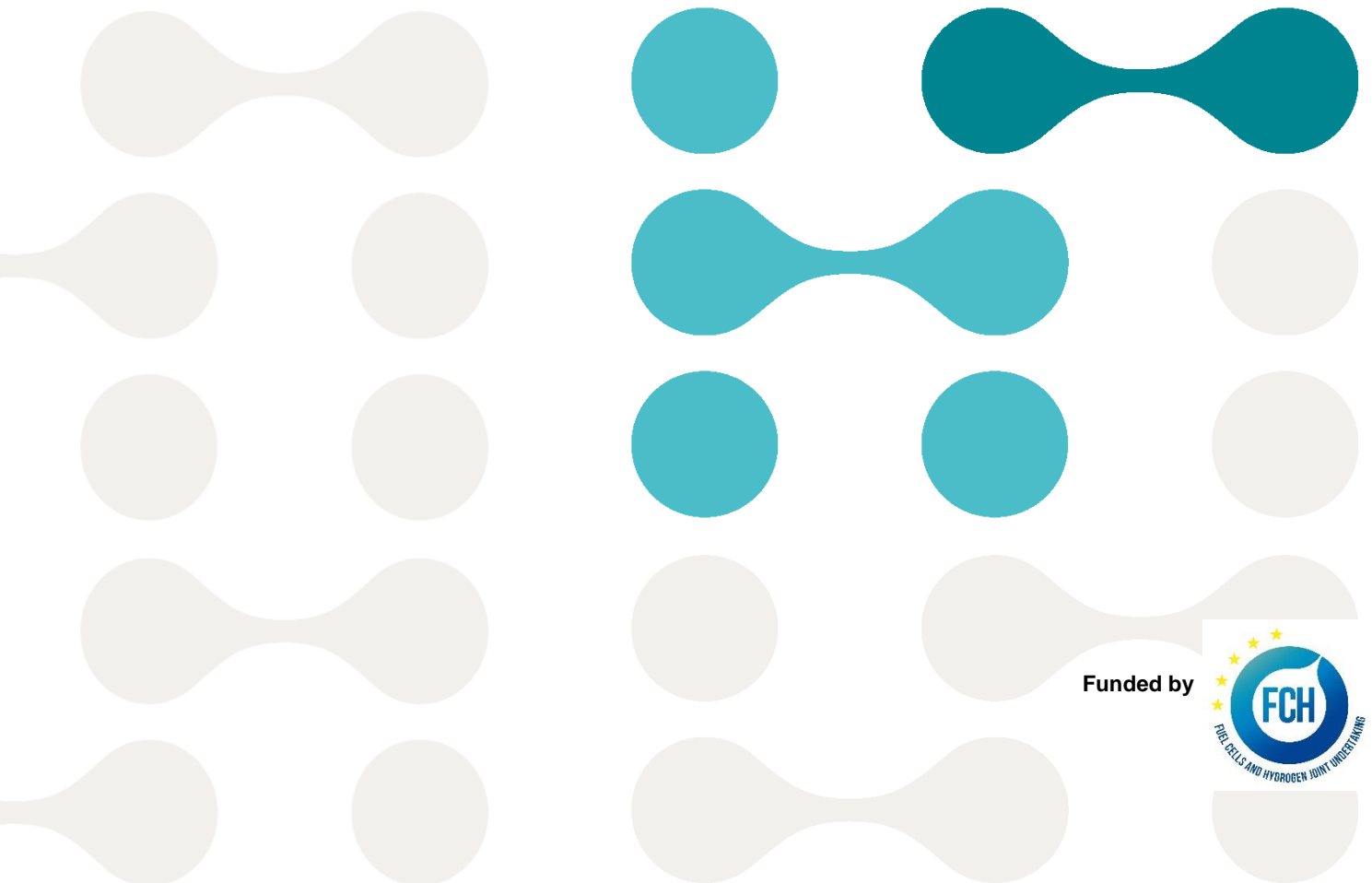




H2FUTURE

Green Hydrogen

WP10.6: Yearly summary of meetings with power industry and the electricity sector in EU28 and beyond



Funded by



Document Information

WP/Task related	WP10.6
Distribution / Confidentiality	All partners
Date of Delivery	24.09.2021
Status and Version	Final
Number of Pages	12 pages
Document Responsible	Ilona Dickschas – Siemens Energy
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This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No 735503. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and Hydrogen Europe and N.ERGHY

Revision History

Version	Date	Author	Description
DRAFT	14.09.2021	Ilona Dickschas	First draft for Review
Review	22.09.2021	Ilona Dickschas	Second draft for review
Final	24.09.2021	Ilona Dickschas	Final Version

1 Introduction

1.1 Purpose of Work Package 10.6:

The purpose of Task 10.6 is to provide yearly summary from Siemens Energy of the meetings with the power industry and the electricity sectors in the EU28 and beyond.

The major communication goals were:

- PEM electrolysis could be scaled up for industrial use
- Show our new product Silyzer 300 up and running (new product generation, that was released on Hannover Fair in 2018)
- High efficiencies >80% are achievable
- Integration of PEM electrolysis in industrial network as primary and secondary frequency reserve

The communication measures were planned based on existing events and communication activities of the segment.

Due to the COVID-19 Pandemic in 2020/ 2021 most of the meetings in 2020 and 2021 were held online due to travel restrictions.



H2FUTURE

2 Overview activities

Siemens Energy has communicated H2Future on different events with the power industry and the electricity sectors over the last years.

During our annual communication and event planning we have had a look were a presentation of H2Future could be of interest for our partners and customers in the power industry and the electricity sector.

As a basis we have used on the one hand the following slides for H2Future of our standard presentation:

as well as the different materials on YouTube like

- <https://www.youtube.com/watch?v=MrLw8TpKBt8>
- https://www.youtube.com/watch?v=0hzZXH_YdEY
- <https://www.youtube.com/watch?v=WORjw03qxqU>

and material from the H2Future Homepage.

2.1 Communication activities 2018

2.1.1 Hannover Fair with Exhibition in April 2018

Product launch of Silyzer 300 incl. presentation of H2Future with focus on ground-laying ceremony on the 16th of April 2018 and piloting Silyzer 300.



2.1.2 European Utility Week 2018 (6.-8. November)

The European Utility Week (EUW) is a premier business, innovation and information platform connecting the smart utility community, such as experts from utilities, network operators, vendors, consultants, start-ups and system integrators covering the entire smart system value chain.

Presentation of H2Future during overall presentation.

2.1.3 DECHEMA (22.-23. November)

<https://dechema.de/en/Electrolysis2018.html>

PRAXISforum Electrolysis in Industry → Presentation of H2Future during overall presentation.

2.2 Communication activities 2019

2.2.1 Energy Storage Europe (12-14. March)

Presentation of H2Future during “Power-to-X Applications and Energy Storage Solutions”

The growing proportion of renewable energies in worldwide power generation is playing a key role in the reduction of global CO2 emissions. However, this development poses huge challenges to power grids, which will have to become much more flexible in the future in order to accommodate these fluctuating energy sources. Technologies such as electrolysis can help to meet this challenge. Electrolysis uses electrical energy to split water into oxygen and hydrogen, which can serve as a storage medium, energy carrier, CO2-neutral fuel or feedstock for many industrial applications. As a result, hydrogen is driving the decarbonization process and paving the way for a new age — one of affordable renewable electricity.

2.2.2 DECHEMA-Infotag „Synthetische Kraftstoffe" (27. March)

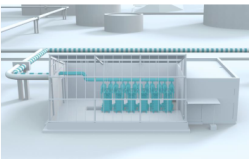
Presentation of H2Future during „Elektrolyse als Schlüsseltechnologie zur Herstellung von eFuels“

Abstract „Der wachsende Anteil erneuerbarer Energien an der weltweiten Stromerzeugung hilft maßgeblich, die CO2-Emissionen auf der Erde zu reduzieren. Die Stromnetze allerdings stellt er vor große Herausforderungen – sie müssen künftig viel flexibler werden. Helfen können Technologien wie die Elektrolyse. Sie wandelt mit elektrischer Energie Wasser in Sauerstoff und Wasserstoff. Letzterer dient als Speichermedium, Energieträger, CO2-neutraler Treibstoff oder Ausgangsstoff für viele industrielle Anwendungen. Damit ist die Wasserstoffelektrolyse eine Schlüsseltechnologie zur Herstellung von eFuels.“

2.2.3 Hannover Fair incl. Exhibition (1. -5. April)

Exhibition of Silyzer 300 incl. presentation of H2Future on the booth.




H2FUTURE – a European Flagship project for generation and use of green hydrogen



6 MW
rated power based on Silyzer 300

1.200 cubic meters
of green hydrogen per hour


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Project

- Partner: VERBUND (coordination), voestalpine, Austrian Power Grid (APG), TNO, K1-MET
- Country: Austria
- Installed: 2019
- Product: Silyzer 300

Use cases



Hydrogen for the steel making process




Supply grid services

Challenge

- Potential for "breakthrough" steelmaking technologies which replace carbon by green hydrogen as basis for further upscaling to industrial dimensions
- Installation and integration into an existing coke oven gas pipeline at the steel plant
- High electrolysis system efficiency of 80%

Solutions

- Operation of a 12-module array Silyzer 300
- Highly dynamic power consumption – enabling grid services
- State-of-the-art process control technology based on SIMATIC PCS 7



2.2.4 Zukunft Offshore (9.- 10. April)

At the “Future Offshore”, the most important Berlin conference on power generation at sea, the most important representatives from the offshore industry and politics discussed perspectives, innovations and the regulatory framework.

Presentation of H2Future during overall presentation “Power-to-X applications”.

2.2.5 Berliner Energietage (20.-22. May)

„Wasserstoff- Energieträger der Zukunft?: Chancen der Schlüsseltechnologie im Kontext der Sektorenkopplung“

Part of common presentation with Fraunhofer “Wasserelektrolyse an der Schwelle zur großskaligen Industrialisierung – Trends und Herausforderungen bis 2030“

2.2.6 Windforce (21.-22. May)

The WINDFORCE Conference has become the central meeting place for the offshore wind industry in Germany.

Presentation of H2Future during overall presentation “Power-to-X applications - References and Portfolio”.

2.2.7 DGMK Fachbereichstagung (23.-25. May)

Thermochemical Conversion - Key Building Block for Future Energy and Raw Material Systems.

The conference will deal with innovative processes or procedures and plants for the use of these energy resources, in particular by thermochemical conversion techniques and the use of the obtained products in energetic and material subsequent processes.

Presentation of H2Future during Keynote – Power to -X A key component of the energy revolution

2.2.8 WHTC 2019 (2.-7. June)

WHTC 2019 provides a forum for the scientific, industrial, governmental and general audiences from all over the world to gather together and present their most recent research findings, and to offer a stimulating atmosphere to discuss and exchange ideas on frontier research topics and future possibilities in hydrogen energy technologies through oral / poster presentations and technology exhibitions.

Presentation of H2Future during overall presentation “Large-scale electrolysis as enabler for CO₂-free economy” and “Large-scale PEM electrolysis for Industrial applications – Hydrogen production reaching fossil parity”

2.2.9 European Fuel Cell Forum (2.-5. July)

Low-Temperature Fuel Cells, Electrolysers & H₂ Processing Fundamentals and Engineering Design

Presentation of H2Future during overall presentation “Large-scale PEM electrolysis for Industrial applications – Hydrogen production reaching fossil parity

2.2.10 f-cell (10.-11. September)

The annual f-cell conference provides a variety of opportunities to learn and exchange information on international hydrogen and fuel cell topics. The event includes a mix of plenaries, parallel sessions and an international trade fair.

Presentation of H2Future during overall presentation “Large-scale PEM electrolysis for Industrial applications – Hydrogen production reaching fossil parity

2.3 Communication activities 2020

2.3.1 Handelsblatt Energiegipfel (21. January)

<https://veranstaltungen.handelsblatt.com/energie/jahrestagung-2020/programm-2020/>

Presentation of H2Future during overall presentation “Elektrolyse in der Praxis” of Prof. Dr. Armin Schnettler.

2.3.2 Fraunhofer Kolloquium “Kohlenstoff neu denken”, Halle (Saale) (03.09.2020)

Presentation of H2Future during overall presentation of Prof. Dr. Armin Schnettler.

2.3.3 Windforce 2020 (4. September)

The WINDFORCE Conference has become the central meeting place for the offshore wind industry in Germany.

Presentation of H2Future during overall presentation “Water electrolysis – trends and challenges”.

2.3.4 Hydrogen - Visioning & Best Practices Knowledge Exchange (17.09.2020)

Special Siemens Energy US Event

Thursday, September 17

Start	End	Length	Agenda Item	Who	
U.S. Eastern Time					
"Hydrogen - Industrial Vision"					
8:30 AM	8:35 AM	0:05	Recap & Preview: Day 3	Bill Linton	Recap / Overview
8:35 AM	8:45 AM	0:10	Introduction of H2Future Project	Christin Schlensog, Siemens	Recap / Overview
8:45 AM	9:05 AM	0:20	Voestalpine - Steel Industry & World's Largest Green H2 Demonstration Plant	Dr. Christopher Harris, Research/Technology Engineer	Virtual Tour & Case Study
9:05 AM	9:25 AM	0:20	Verbund - Austria's Largest Electric Utility, Vision for Hydrogen Programs	Robert Paulnsteiner, Hydrogen Technologist	European Utility Industry View
9:25 AM	9:45 AM	0:20	H2Future Project Virtual Tour	Klaus Scheffer, Siemens	

2.3.5 Wasserstoffmotor 2020 (Karlsruhe) (21. September)

Presentation of H2Future during overall presentation “Chancen und Herausforderungen der Wasserstoff-Elektrolyse“

2.3.6 women&energy “21. Netzwerktreffen” (23. September)

Presentation of H2Future during breakout session – “Rolle von Offshore und Wasserstoff in der Dekarbonisierung.

2.3.7 Article in magazines (October 2020)

Special article in Siemens Energy Customer magazine (October 2020)

<https://www.siemens-energy.com/global/en/news/magazine/2020/h2future-voestalpine-linz.html>

Special article in Steel times international (October 2020) page 35/36

https://issuu.com/quartzbusinessmedia/docs/steel_times_international_september_2020?fr=sYzJINzE1NTc0ODQ

2.3.8 Fichtner Forum Hydrogen 2020 – What will we use hydrogen for in the future?“(6. October)

<https://www.fichtner-hydrogen.com/news/detail/event-fichtner-forum-hydrogen-2020-what-will-we-use-hydrogen-for-in-the-future>

Presentation of H2Future during presentation “Water electrolysis and green methanol”

2.3.9 Online-Seminars „Hydrogen-based reduction of iron ores“, (7. October)

Wednesday, 7th of October 2020

Chapter “H₂-Processes / Applications”

8:30 **Hydrogen – its production and importance for the economic sector**

Ilona Dickschas

Principles of hydrogen electrolysis / P2X and sector coupling /

Overview of references and projects

Presentation of H2Future during overall presentation “Hydrogen – its production and importance for the economic sector”

2.3.10 Hydrogen Online Conference (8. October)

Presentation of H2Future during overall presentation of Prof. Dr. Armin Schnettler.

2.3.11 Hydrogen Dialogue (18. November)

HYDROGEN DIALOGUE will bring together decision-makers and experts from the fields of business, science, and politics along the entire hydrogen supply chain.

https://www.hydrogendialogue.com/wp-content/uploads/2021/03/2020_HyDi_Veranstaltungsrueckblick_en.pdf

Presentation of H2Future during Keynote of Prof. Dr. Armin Schnettler “Business Insight on large-scale electrolysis”

2.3.12 Deutsch-Russische Wasserstofftagung (1. December)

Presentation of H2Future during overall presentation of Prof. Dr. Armin Schnettler.

2.4 Communication activities 2021

2.4.1 EU Green Deal Webinar “Wasserstoff – von der Strategie zum erfolgreichen Markthochlauf (11. January)

https://www.hoganlovells.com/de/events/ger_webinar_eu-green-deal_january-11_2020

Presentation of H2Future during overall presentation of Prof. Dr. Armin Schnettler.

2.4.2 KIT Academy for Responsible Research Teaching and Innovation (26. January)

Presentation of H2Future during overall presentation of Prof. Dr. Armin Schnettler.

2.4.3 Hydrogen - Visioning & Best Practices Knowledge Exchange – Session II (16. - 17. February)

Online Session with the aim of Visioning and best practices examples (knowledge Exchange) with a Silyzer Electrolyser Factory Tour held on day one (16th Feb.) an introducing of New Hydrogen PtX Realities by Siemens Energy and the H2Future Project shown lessons from Steel Industry & World's Largest Green H2 Demonstration on day 2 (17th Feb.)

2.4.4 FGH Fachtagung "Energiesysteme 2050" (3. March)

<https://www.fgh-ma.de/de/themen-expertise/akademie/veranstaltungsuebersicht/jubilaeums-fachtagung-energiesysteme-2050-szenarien-zur-sektorenkopplung>

Presentation of H2Future during Impulsvortrag with Prof. Dr. Armin Schnettler. “Podiumsdiskussion: “Wasserstoff, der Schlüssel für eine intelligente Vernetzung der Sektoren Strom, Wärme und Verkehr?“

2.4.5 Siemens Energy Hydrogen Day (19. March)

Presentation of H2Future during overall presentation of Prof. Dr. Armin Schnettler.

2.4.6 Enlit (30. November – 2. December)

<https://www.enlit-europe.com/>

Presentation of H2Future from Verbund: “H2FUTURE - The importance of sector coupling and the use of hydrogen for the future energy system”.

Presentation of the successful installation of a high performance 6MW PEM electrolyzer including a 2-years demonstration operation

3 Summary and lessons learned

Overall, the interest on the H2Future project was very high in regard to communication on different events and channels.

During the start of the communication, we also have planned visits on-site with customers in the power industry and the electricity sector as soon as the plant is up and running. Due to the Covid-19 situation in 2020 we have looked on alternatives ways to show the plant.

We have established a virtual tour with slides, films and pictures from the plant that were used in several meetings with customers in the power industry and the electricity sector. This was very useful and gave a good overview of the plant itself.

In second half of 2021 we have had first visits with customers on site in Linz with limited number of participants, which was very good to see the plant up and running live on site was for the visitors very impressive.