European Hydrogen Week

CertifHy

Study on accelerating the deployment of Guarantees of Origin Schemes for Hydrogen and for the design of a Voluntary Scheme for compliance with RED II targets

Call for tenders no. FCH / OP / CONTRACT NO. 278

- CertifHy 3 -

3 December 2021, Brussels, Belgium

An initiative funded by the FCH 2 JU

https://www.certifhy.eu/

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#CleanHydrogen

European Commission

CertifHy aims to develop the 1st European-wide Green and Low Carbon hydrogen GO scheme

2014 | 2016 | 2017 | 2018/9 | 2020 | 2023

Phase 1

1. Define a **widely acceptable definition of green hydrogen**
2. Determine **how to design and implement** a robust **EU wide GO scheme**

Affiliated partners:

TOTAL, MACHIELS, AkzoNobel, colruyt, Shell, AIR PRODUCTS, AREVA H_2Gen, BMW, EDF, AIR LIQUIDE, THE LINDE GROUP, HYDROGENICS (SHIFT POWER | ENERGIZE YOUR WORLD), uniper, OMV

Phase 2

1. Set-up a **hydrogen GO Stakeholder platform**
2. **Finalise the scheme design** ensuring it can be the **main route to guarantee the origin of green & low carbon hydrogen across EU Member States**
3. **Run a pilot scheme** to test the proposed design
4. **Identify actions** which need to be undertaken after the completion of the study **to achieve an EU wide deployment of the scheme**

Phase 3

1. **Prepare EU wide deployment:**
   Implement Scheme:
   - Gas Scheme Group of AIB
   - Voluntary Issuing Body
   - Expand Stakeholder Forum with WG on Issuing Bodies
   - Build Market
2. **Expand from GOs to RFNBO certification**

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CertifHy 3 (2020-2022): Provide earlier experience from CertifHy to the AIB Gas Scheme

- CEN Standard **CEN - EN 16325, Guarantees of Origin related to energy**: no consensus within experts. New standard cannot be expected before end 2023

- **AIB Gas Scheme Group:** working on implementation of current draft of CEN Standard

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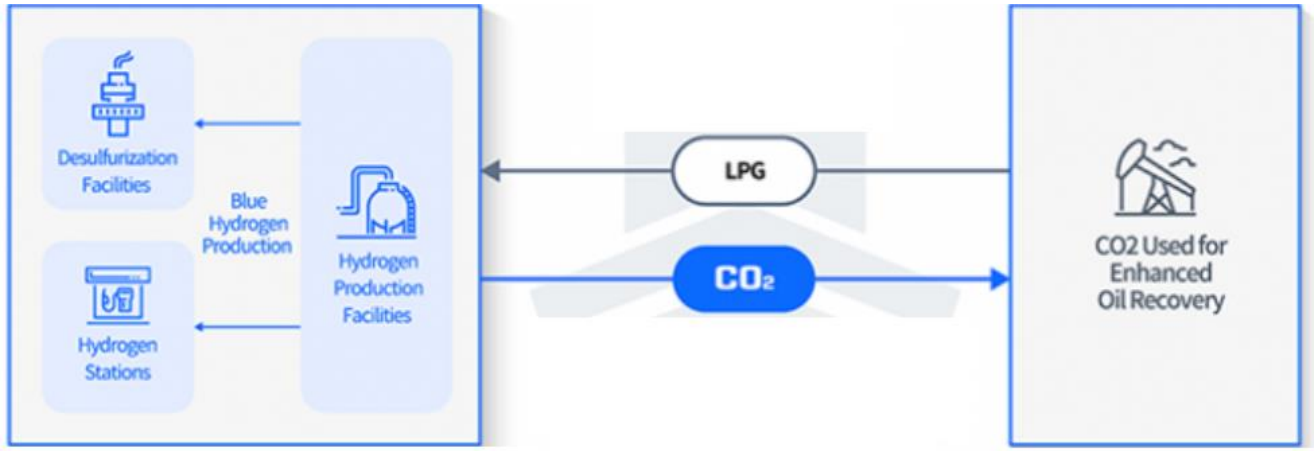
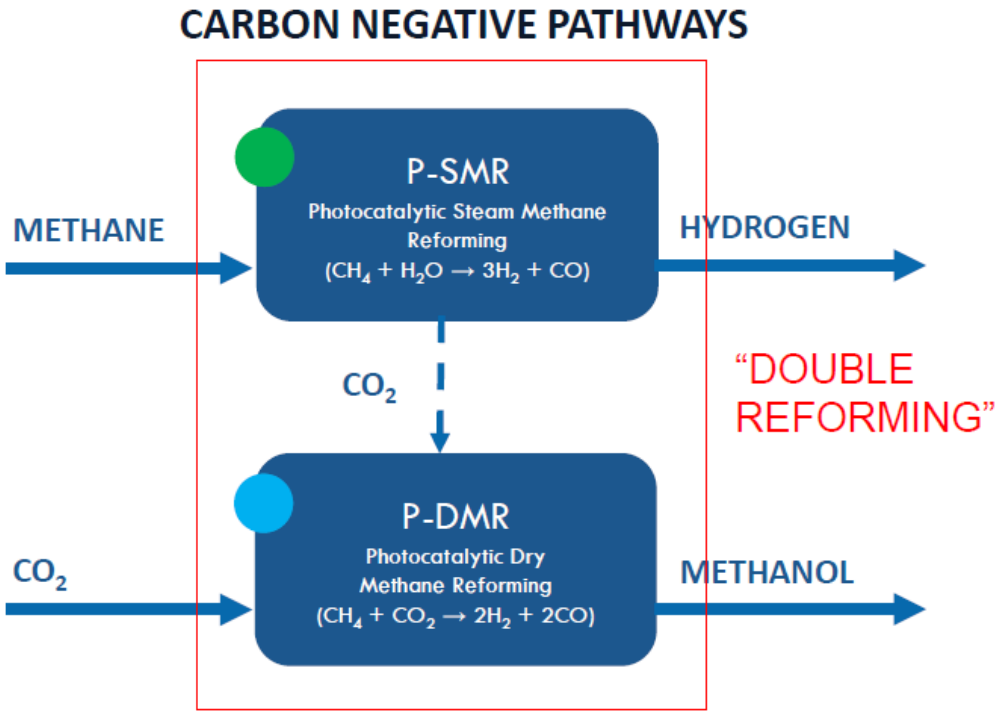
CertifHy 3 (2020-2022): CertifHy continues to monitor blue and green hydrogen project concepts that might create controversy





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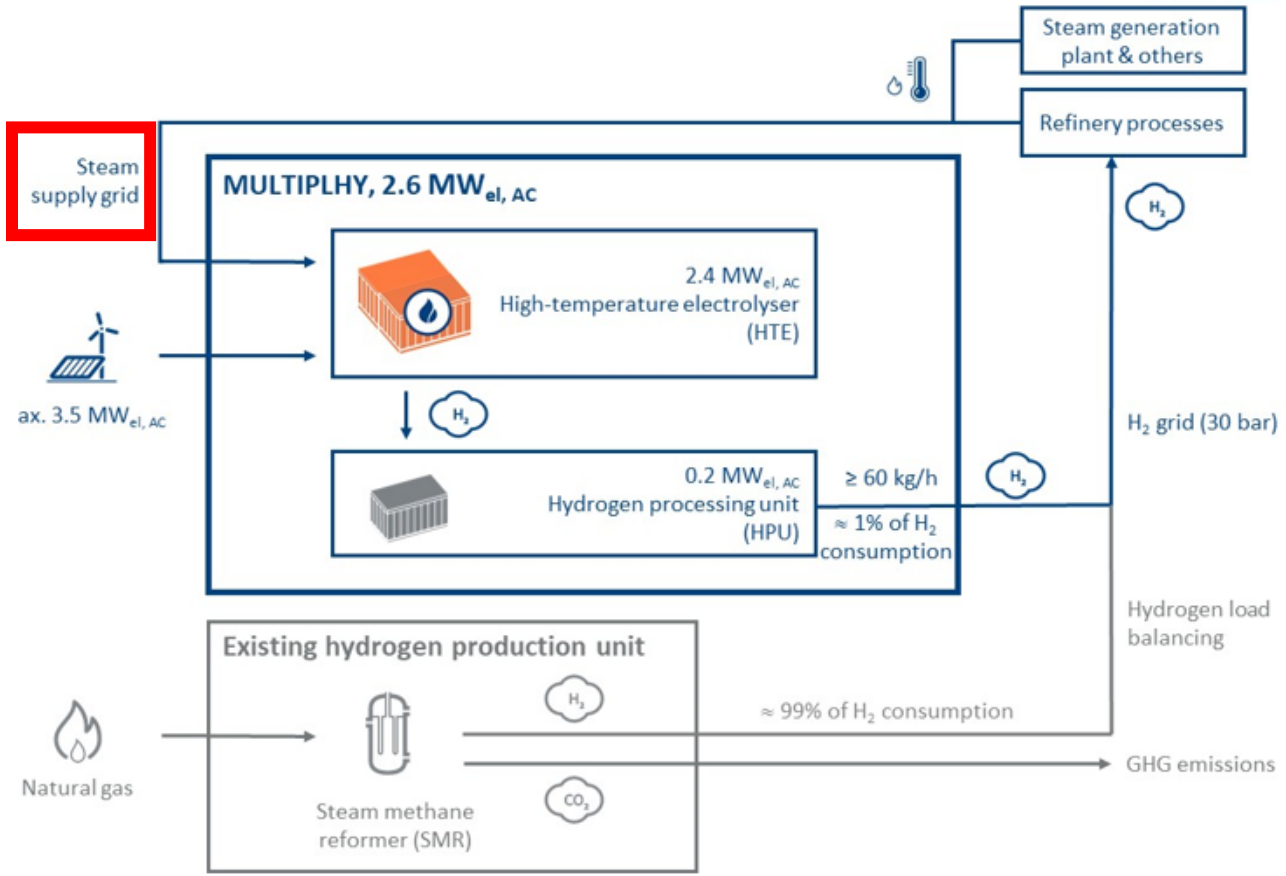
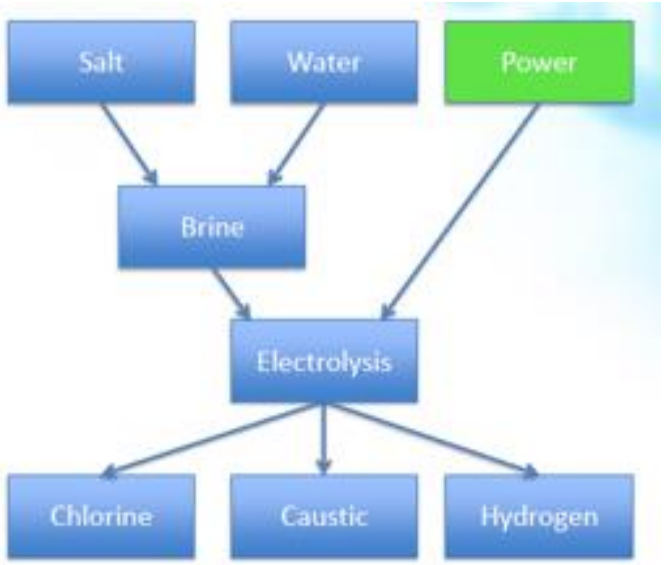
CertifHy 3 (2020-2022): WG2 is working on various new production pathways case studies: SOEC within HVO refinery (1/2)



- Electrolyzer is coupled to a Hydrogen Processing Unit (HPU), which is responsible for hydrogen purification and compression
- Steam production will provide the electrolyser with low-grade steam.
- A valorisation of the oxygen enriched air flow (a resulting by-product of the electrolysis) within the refinery will be examined

CertifHy 3 (2020-2022): WG2 is working on various new production pathways case studies: revising the Chloralkaline-elektrolyser GHG footprint methodology (2/2)

Example: coal based electricity: x GHG / MWh



Allocation method	% of GHG from Power allocated to H2	% of GHG from Power allocated to Cl	% ...to Caustic
Mass based allocation	Historical EuroChlor method		
Energy based allocation			
Value based allocation (EUROSTAT prices averaged)	CertifHy2: Temporary method (in absence of ODC data)		
Mole based allocation			
Benchmark based (against ODC process, producing Clorine but no H2)	CertifHy2: foreseen method, also confirmed by IPHE as “system expansion”		

CertifHy 3 (2020-2022): IPHE has elaborated a set of recommendations on GHG footprint methodologies

Methodology for Determining the Greenhouse Gas Emissions Associated With the Production of Hydrogen

A Working Paper Prepared by the
IPHE Hydrogen Production Analysis Task Force

VERSION 1 - OCTOBER 2021

C.4 Allocation for The By-Product Pathway

Chloralkali industry

As energy-based allocation used in the other investigated pathways is not feasible, it is recommended for this first version to use the system expansion allocation based on the ODC process.

https://1fa05528-d4e5-4e84-97c1ab5587d4aabf.filesusr.com/ugd/45185a_ef588ba32fc54e0eb57b0b7444cfa5f9.pdf

Vertogas, appointed as H2 GO Issuing Body in Netherlands, adopted CertifHy Scheme for green & low carbon H2 (renewability & GHG footprint methodology)

It is important that European GOs have a harmonized way of calculating the GHG footprint of H2, which is a key prerogative for customer trust: the same production techniques/pathway should yield the same "hydrogen passport"

Roelf Tiktak, Managing Director Vertogas

From 2022, Vertogas in the Netherlands will be responsible for issuing GoOs for green hydrogen. For example, all energy carriers receive a kind of "energy passport".

It has been 20 years since Groen Certificate Management (now CertiQ) issued its first green certificate. The green certificate system has since been replaced by the Guarantees of Origin (GoO) system. A GoO is the undisputed link to guarantee the sustainable origin of the energy carrier in question. Vertogas (a subsidiary of Gasunie) was established in 2009 to certify renewable gas. Vertogas has received a legal mandate from the Ministry of Economic Affairs and Climate to also issue GoOs for green hydrogen.

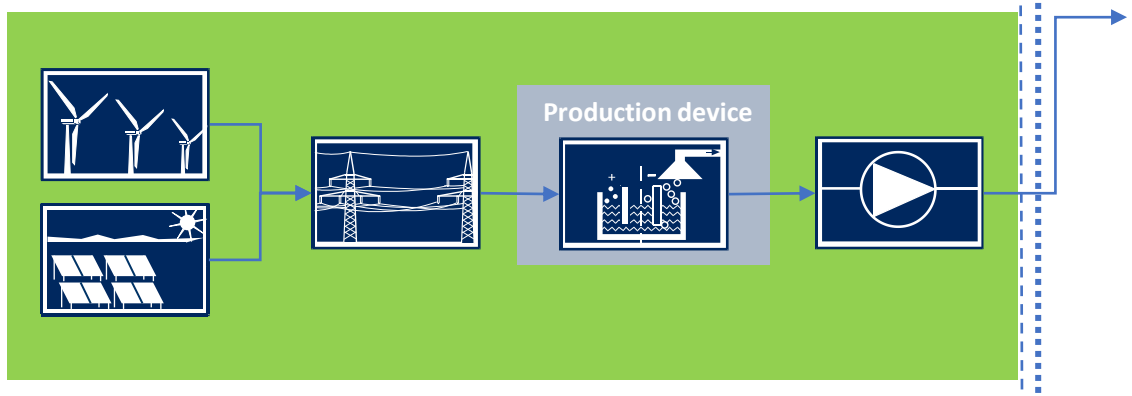
To expand the market for CO_2 Free facilitate hydrogen, is a comprehensive system of guarantees of origin (GoO) and certification required and must be made to definitions agreed. Under the Renewable Energy Directive (RED-II), the development of a GoO system is mandatory and the RED II provides a framework for this. In the FCH project CertifHy , the European rules and measurement methodology are determined. As a CertifHy member, Vertogas is involved in setting up the hydrogen certification scheme and will develop a framework for the Dutch hydrogen GoOs.

Source: Vertogas

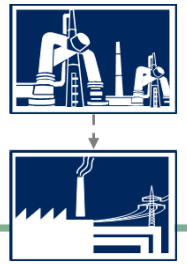
https://allesoverwaterstof.nl/certificaat-garanties-van-oorsprong-groene-waterstof/

CertifHy 3 (2022-2023): from GO …

CertifHy GO scope



Out of scope



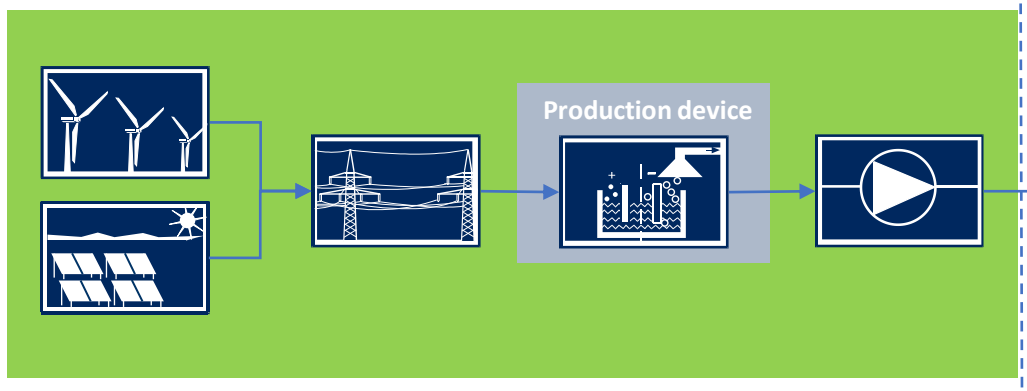
Application	Labelling: consumer disclosure
Legal background	Labelling RED II Art 19
Mode of delivery	Book & claim
Organization	Issuing Bodies by Government mandate
Applied scheme	CertifHy GO Scheme (in process)
Document type	GoO Guarantee of Origin
Value	End Consumer disclosure: i.e. CSR/ Marketing

CertifHy 3 (2022-2023): … towards H_2/RFNBO certification (mass balancing)

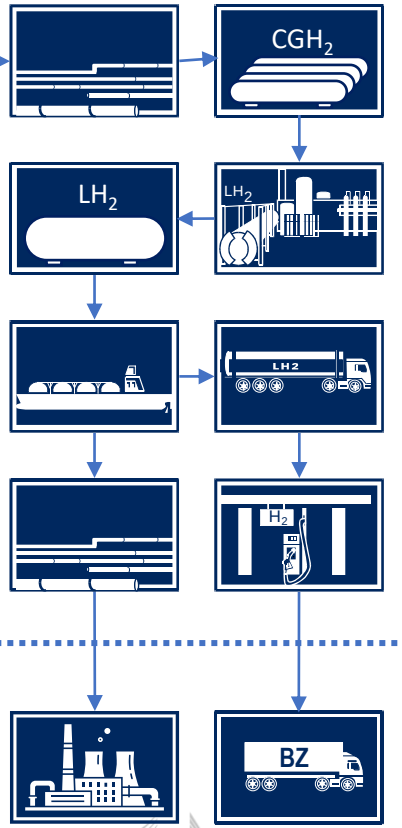
CertiHy H_2/RFNBO scope

CertifHy GO scope

Renewable electricity criteria:
Additionality, temporal & geographic correlation



+ mass balance



Application	Labelling: consumer disclosure	Transport sector	
Legal background	Labelling RED II Art 19	RED II - Art 25	Mass Balance (RED I Art 18 and RED II Art 30)
Mode of delivery	Book & claim	Mass Balancing	
Organization	Issuing Bodies by Government mandate	Voluntary Scheme recognized by EC	**RFNBO: non-existent (yet)**
Applied scheme	**CertifHy GO Scheme (in process)**	**RFNBO: non-existent (yet)**	**RFNBO: non-existent (yet)**
Document type	GoO Guarantee of Origin	PoS Proof of Sustainability	PoO Proof of Origin
Value	End Consumer disclosure: i.e. CSR/ Marketing	RED II: 14% Renewable Fuel in Transport obligation on Fuel Suppliers	

Out of scope

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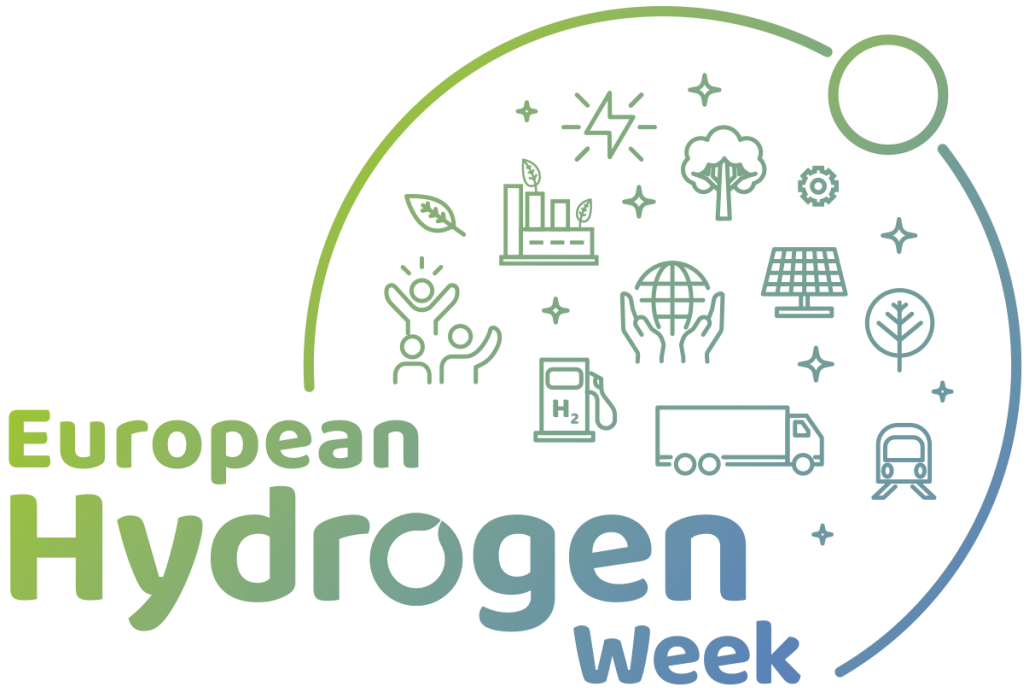

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