CertifHy WG2 "GO Issuing" meeting

Date: 03/04/2017

Location: FCH JU building, 56-60 Avenue de la Toison d'Or, Brussels

Minutes of Meeting

WG Coordinator - Hinicio	Other project team participants
- Frederic Barth (FB) - Wouter Vanhoudt (VW)	- Patrick Schmidt (LBST) (for item 3 – via web) - Marko Lehtovaara (Grexel) (for item 4 – via web)

Participants
- Florian Schwarz (Uniper, WG2 chair) - Hans Vandesyppe (Engie) - Jonas Cautaerts (Colruyt Group) - Guy de Reals (Air Liquide) - Joost Sandberg (AkzoNobel) - Alexander Simmat (H&R) - Detlev Wôsten (H&R) - Christoph Stiller (Linde) (via web) - Marek Fulde (FLD Technologies) (afternoon)

Note: content in brackets [] are considerations from the project team posterior to the meeting

Item	Objectives
0. Introduction	1. Approval of agenda 2. Presentation of WG2 State of work
Points of discussion	
Agenda - Guy De Reals: The allocation method for the Chlor-Alkali plant needs to be presented and discussed FB: this is one of the questions that will be covered under agenda item 2. "Outstanding questions"	
Actions	None

Item	Objectives
1. Pilot plant case studies - H2 from SMR with CO2 capture (see Pilot plant case studies presentation)	Finalise presentation of the Air Liquide pilot plant case study, focussing on the method for calculating Green and Low Carbon hydrogen quantity and footprint
Points of discussion	
Introduction: The four pilot plant case studies were presented in the WG2 web-meeting of 1 March 2018. Additional time was needed to go over the Air Liquide plant case study. The following points were discussed. *Uses of the captured CO2 allowing CO2 emissions to be deduced from the H2 emissions ("deductible" CO2 uses).*	

The following was observed:

- "No double-counting" also means that emissions must be counted only once.
- It is likely that CO2 users currently do not consider their use of CO2 to be contributing to CO2 emissions, as the CO2 used usually comes from a waste stream which would have been emitted in any case.

It was agreed, as a general rule, that CO2 emissions cannot be deduced from the co-produced hydrogen unless explicit allocation of these emissions to the CO2 application is demonstrated.

FB: based on recital (81) of the RED, there is an expectation that allocation methods are "predictable over time".

Two types of CO2 applications could allow deduction of emissions from the co-produced H2:

- Long term storage: geological storage or CO2 mineralisation
  Use of CO2 for pH control of water could fall into this category [provided this constitutes permanent mineralisation]
- Substitution of CO2 locally generated from fossil sources
  e.g. injection of CO2 instead of combustion of natural gas or propane for generating CO2 in greenhouses

  [Impact on CO2 emissions needs to be quantified through a representative case study, comparing CO2 injection with the relevant reference solution, using a UNFCC Clean Development Mechanism (CDM) methodology
  The relevant reference solution is the best available technique using natural gas, to be determined. This could for instance be co-generation of CO2, heat and electricity, operated to meet CO2 concentration target in the greenhouse. Often, the heat is not needed; only the generated CO2 and electricity are useful.

  The alternative solution is to inject CO2 captured in another source, providing heat only when needed. The fact that electricity is no longer produced needs to be taken into account in the analysis.]

Contractual allocation is also a possible approach allowing to ensure that emissions are counted once. However, there are concerns that would need to be addressed:

- Transfer of emissions to sectors less concerned about emissions
- Lack of predictability

To be noted: CO2 capture allows to act only on the direct CO2 emissions of the H2 production process. Consequently, with capture of 90% of the CO2 emissions in production by SMR, the footprint of the resulting H2 is still 22 g_{CO2}/MJ due to the upstream emissions of NG.

Presentation

Slide 57: add a chart showing that 100% of the emissions are allocated to the different product streams (Steam, CO2 stripped H2, remaining H2)

Detlev Wösten questions the GO issuing eligibility criterion based on 12 months past production needing to be at SMR benchmark, referring to the cause and effects principle. It is recalled that this criterion was introduced in CertifHy Phase 1 as a result of stakeholder input on expectations for a product carrying a "green" or low carbon label.

Actions	None

Item	**Objectives**
2. Outstanding questions to be addressed regarding the application of the CertifHy criteria (see separate document)	Discuss and adopt way forward

Points of discussion

The following points were discussed:

1. CO2 capture & use: What are the uses of CO2 extracted in H2 production by SMR that can be considered to reduce the H2 footprint?

See Item 1 above.

Skipping to question 6:

6. CO2 emissions benchmark: The benchmark emissions for H2 used in gas applications (e.g. injection into the gas grid) should be the emissions of gas (65 gCO2/MJ) and not of H2 produced by SMR.

Discussions led to the following conclusion:

Use of H2 in gas applications would mainly occur through injection into the NG grid, in which case the applicable GO framework is that of gas. It will be up to this gas GO framework to determine the conditions that apply to H2 for its conversion to green or low carbon gas by injection into the NG system. The relevant CO2 footprint of the H2 is shown on the CertifHy certificate in any case.

Therefore, no change is deemed necessary in the Hydrogen GO system for covering the use of H2 in gas applications.

Action: Develop slides explaining how the GO system works when the hydrogen is injected into the gas grid or when it is used as a combustible, and showing the (lower) impact on GHG emissions in those cases.

Additional questions:

- Can the H2 GO scheme specifically address flexible power balancing allowing to integrate additional green electricity in the grid (e. g. from a windmill)?

In other words, can flexibility allowing electricity consumption to be synchronized with green electricity generation be considered by the H2 GO scheme?

FB: This is an issue pertaining to the electricity GO framework

Discussions led to the following conclusion:

The GO system for electricity currently has the flaw of allowing to claim the consumption of green electricity at times when green electricity is not produced in sufficient quantity to meet green electricity demand. However, this is an issue that applies for any use of electricity and that needs to be addressed by the electricity GO framework (not the H2 GO framework).

[There is no fundamental obstacle to creating a market for green electricity ensuring real-time balance between green electricity production and consumption – the current electricity system achieves this for overall electricity production and consumption.]

Action: Indicate awareness that electricity GOs do not at this stage provide for real-time balance between green electricity production and consumption, nor encourage consumption of electricity in a way that supports integration of renewable generation. Noting however that PtoH2 will tend to exploit its flexibility to operate when the cost of electricity is low, i.e. operate when renewable electricity production is abundant.

- Can renewable electricity in the “residual mix” be counted as renewable electricity input for issuing H2 GOs?

In a GO based system, claims on the renewable nature of the energy provided have to be based on GOs. Electricity providers making a claim on the quality of the electricity provided need thus have GOs to refer to for supporting their claim.

The residual mix is by definition the share of electricity which is not covered by GOs. Therefore, renewable electricity in the residual mix cannot be counted as renewable electricity input for issuing H2 GOs

In certain countries, such as Germany, no GOs are issued for supported renewable energy production. Therefore, there is no GO based system for making claims on the energy provided using this electricity. This is an issue pertaining to the electricity GO framework - raised in the discussions around the RED recast - that will hopefully be resolved.

- Application of the criterion on 12 months past production (to be better that benchmark): data on used electricity may only be available for the calendar year.

FB proposal: apply criterion on past production to the hydrogen produced in the nearest 12 months period for which consumed electricity data is available.

Remaining questions:

There was not enough time to cover the other questions listed in the “Outstanding questions” document, including emissions allocation in the Chlor-Alkali process. A web meeting will be set-up for this.

Actions	1. Develop slides explaining how the GO system works when the H2 is injected into the gas grid or when it is used as combustible, and showing the (lower) impact on GHG emissions in those cases. 2. Indicate awareness that electricity GOs do not at this stage provide for real-time balance between green electricity production and consumption, nor encourage consumption of electricity in a way that supports integration of renewable generation

	3. Set-up WG2 web-meeting for discussing emissions allocation in the Chlor-Alkali process, as well as other outstanding questions that could not be addressed due to lack of time.

Item	Objectives
3. Review of preliminary scheme design and procedures (see presentation)	Gather WG2 feedback with regards to practicality

Points of discussion

The procedures where presented by Patrick Schmidt

Comments:

- P1.1 GO Issuing:
  - For applying the criterion on GHG emissions of past production, what if no (updated) electricity emission factor is available?
    => Use the latest one available.
  - Pros and cons of an initial 90% GO issuing (i.e. 10% reserve) until first positive Production Batch Audit is discussed.
- P1.2 GO Transfer:
  What if the GO buyer does not pay? Rewind GO Transfer in case of a sales failure?
  => GOs will be traded bilaterally 'over the counter' for the time being, i.e. there is no CertifHy trading platform yet to foster liquidity or provide third party transaction support.
- P1.4 GO Expiry (time-out):
  Detlev Woesten: why should the GO lifetime be 12 months?
  Hans Vandesyppe/Guy de Reals: if the lifetime is too long, GO accumulation may destroy the market.
- P1.3 GO Cancellation:
  - Shouldn't the issuing of a cancellation statement be considered as systematic, as it contains information regarding the use of the hydrogen that must be gathered (see Registry interface)?
  - Guy de Reals: Dismiss GO Cancellation request if no (sufficient) information regarding the GO use is provided.
  - Wouter Vanhoudt: H2 GOs shall be cancelled only if used for hydrogen applications.
- P1.5 GO Correction (to be developed after pilot phase): What's to be done in cases like
  - Feedstock/electricity emission factor is corrected after GO Issuing;
  - GO sales failure, e.g. buyer doesn't pay – rewind GO Transfer by seller, Issuing Body, or how?

Actions	WG2 members to address comments and questions on the scheme preliminary procedures to Frederic by end of [May]. These will be compiled and provided to WG1.

Item	Objectives
4. Demonstration of registry user interface	Address questions and gather feedback on desired functionalities

Points of discussion

Marko Lehtovaara (ML) demonstrates the user interface of the pilot GO registry.

Note. The registry does not provide market place functions (i.e. matching of offer with demand, and handling of transactions)

- Joost Sandberg: can the user see the list of account holders? -> need to know who to contact to buy GOs
  ML: The list of account holders can be made visible by the other account holders
- To be noted: The cancellation statement gathers information on the hydrogen use in order to allow subsequent verification of proper application of the GO.

- Guy de Reals: cancellation request to also record the origin of the hydrogen used, in order to be able to address residual mix (incl. evaluation of different approaches for handling the residual mix issue in the pilot) - Account holder categories will be useful for statistical purposes	
Actions	None