



**HyCoRA – Hydrogen  
Contaminant Risk Assessment  
Grant agreement no: 621223**

**Deliverable 5.5  
Compiled communications with  
relevant SDO – interim**

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Confidentiality: **Public**



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<p><b>Summary</b></p> <p>At ISO TC 197 (International Standardisation Organisation Technical Committee 197), a New Working Item Proposal (NWIP) is made to harmonise the two existent standards namely ISO 22734-1:2008 Hydrogen generators using water electrolysis process -- Part 1: Industrial and commercial applications and ISO 22734-2:2011 Hydrogen generators using water electrolysis process -- Part 2: Residential applications into a single document designated as ISO 22734 Hydrogen generators using water electrolysis process standard serving the needs of power to gas and H<sub>2</sub> vehicle refuelling applications.</p> <p>The scope of the new standard will include alkaline ion exchange membrane (AEM) electrolysis technology. Normative references to include high power standards and design, documentation, and test requirements necessary to accommodate current and emerging markets are to be updated while incorporating terms from IEC 60204 clause 4.2 to reflect progress in system control and documentation; application-specific requirements may form part of individual sub-clauses for better clarity and guidance.</p> <p>SINTEF were asked by ISO TC197 Working Group 24 (WG24) “Gaseous hydrogen fueling stations - General requirements” to provide input to the standard to be developed as the HyCoRA project have hands on experience with both US and EU sampling methods. In this respect correspondence is ongoing with the Chairs TC 197, WG24 and WG12 as well as ASTM (American Society for Testing and Materials) representatives.</p> <p>Also, JRC provided input to the CEN/CENELEC Sector Forum on Energy Management (SFEM) working on Hydrogen. The SFEM working group aims to identify PNR (pre-normative research) and standardisation challenges and needs to translate to concrete proposals to CEN/CENELEC on how to best address standardization needs. The final report is now made available with suggestions on PNR actions including related to hydrogen gas purity.</p>	
<b>Confidentiality</b>	Public



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## 1. Objective of this deliverable

The objective of this deliverable is to compile as summary *ad-interim* communications on project findings including feedback collection with relevant SDO (standards drafting organisations) particularly the Working Groups (WG) of the Technical Committee 197 "Hydrogen Technologies" of the International Standardisation Organisation (ISO TC197), those of the Technical Committee 105 "Fuel Cell Technologies" of the International Electrotechnical Commission (IEC TC 105) and fora such as the International Partnership for Hydrogen in the Economy.

## 2. Summary of relevant communications with SDO

In period between project start<sup>1</sup> and up to the due date (project month 18)<sup>2</sup> of this deliverable communications of the consortium on the subject of hydrogen fuel quality and its assurance with relevant SDO took only place with ISO TC 197 and the Sector Forum on Energy Management (SFEM) WG Hydrogen of CEN/CENELEC (European Committee for Standardisation/European Committee for Electrotechnical Standardisation) on the identification of standardization needs, their evaluation in relation to the objectives of European legislation and analyse strategic developments and issues especially future challenges related to new advanced energy technologies in close connection with research framework programmes including the impact on the specific work priorities and the standardization process.

The SFEM WG aims to identify PNR (pre-normative research) and standardisation challenges and needs to translate to concrete proposals to CEN/CENELEC on how to best address standardization needs.<sup>3</sup>

This interim compilation is a summary of these two communications with the said two organisations given below.

**Note in this respect, most of the work conducted at these organisations is under development and almost all information provided is essentially confidential so that documents cannot be distributed prior to their final publication by the respective organisation. Thus, no record of any document of this kind is disclosed here.**

### 2.1 ISO TC 197

A New Working Item Proposal (NWIP) is made to harmonise the two existent standards namely ISO 22734-1:2008 Hydrogen generators using water electrolysis process -- Part 1: Industrial and commercial applications and ISO 22734-2:2011 Hydrogen generators using water electrolysis process -- Part 2: Residential applications into a single document designated as ISO 22734 Hydrogen generators using water electrolysis process standard serving the needs of power to gas and hydrogen vehicle refuelling applications.

The scope of the new standard will include alkaline ion exchange membrane (AEM) electrolysis technology. Normative references to include high power standards and design, documentation, and test requirements necessary to accommodate current and emerging markets are to be updated while incorporating terms from IEC 60204 clause 4.2 to reflect progress in system control and documentation; application-specific requirements may form part of individual sub-clauses for better clarity and guidance.

SINTEF were asked by ISO TC197 WG24 "Gaseous hydrogen fuelling stations - General requirements" to provide input to the standard to be developed as the HyCoRA project have hands on experience with both US and EU sampling methods. In this respect correspondence is ongoing with the Chairs TC 197, WG24 and WG12 as well as ASTM (American Society for Testing and Materials) representatives.

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<sup>1</sup> The project start was 01 April 2014.

<sup>2</sup> The due date of this deliverable was 30 September 2014.

<sup>3</sup> This WG also supports the newly established FCH-JU RCS strategy coordination group identifying and coordinating standardization needed for market introduction of FCH (fuel cell and hydrogen) technologies.

## 2.2 CEN/CENELEC

Framed within the new strategy 2014-17 and following the joint October 2014 workshop by JRC-EARTO<sup>4</sup>-CEN/CENELEC on "Putting Science into Standards - Power to Hydrogen and Hydrogen Compressed Natural Gas (HCNG)",<sup>5</sup> JRC provided as mandated input to the report by CEN/CENELEC SFEM WG Hydrogen on identifying specific topics where standardisation could support the uptake of hydrogen technologies in Europe.

The meanwhile published final report<sup>6</sup> suggests among others urgent PNR actions of high impact to

- focused on the evaluation of parameters related with electrolyser durability specifically in the definition of the tests on hydrogen gas purity which should be performed at rated current density and with an intermittent load profile and to identify the purity of the gas that the electrolyser system is able to reach,
- develop improved metrological methods and measurement techniques for hydrogen purity analysis,
- continue activities to further understand the impact of impurities on fuel cell system performance under automotive conditions, and
- develop risk assessment methodologies to understand the risk and consequences of trespassing impurity level limits.

Note in support of the implementation of the EU Directive of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (2014/94/EU)<sup>7</sup> a new CEN TC 441 Project Committee "Fuel labelling" has been proposed to develop standards providing a harmonized identifier or graphical expressions placed on refuelling points, pumps and their nozzles and on those motor vehicles and their manuals on the market after 18 November 2016.

Also, CEN TC 441 is to collaborate closely with ISO TC 197 on the development of standards for systems, devices, connection, production, storage, transport, measurement and use of hydrogen.

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4 European Association of Research and Technology Organisations

5 See for more detailed information at <https://ec.europa.eu/jrc/en/event/workshop/workshop-putting-science-standards-power-hydrogen-and-hcng/presentations-keynotes-conclusions> and the outcome report available at <http://bookshop.europa.eu/en/workshop-putting-science-into-standards-power-to-hydrogen-and-hcng--pbLDNA26984>.

6 This report compiled by JRC, CEN/CENELEC and NEN is available at <https://ec.europa.eu/jrc/en/publication/cen-cenelec-sector-forum-energy-managementworking-group-hydrogen-final-report>.

7 See also the mandate M/533 by the European Commission in its implementing decision C(2015) 1330 of 12/03/2015 on a standardisation request addressed to the European standardisation organisations to draft European standards for alternative fuels infrastructure.