

European Standardization Organizations

CEN/CENELEC SFEM WG hydrogen and other standardization activities

Françoise van den Brink

CEN/CLC/SFEM WG hydrogen, CEN/CLC JTC 6 and CEN/CLC/JTC 14 WG 5

Hydrogen standardization landscape

Sector Forum

- CEN-CENELEC Sector Forum Energy Management and Transition (SFEM) – Working Group ‘Hydrogen’
- CEN Sector Forum Gas Infrastructure (SFG- I)
- CEN Sector Forum Gas Utilization (SFG-U)

Production

- ISO/TC 197 (mirrored by CEN-CLC/JTC 6)

Import/export

- CEN-CLC/JTC 14/WG 5 ‘Guarantees of origin’
- CEN-CLC/JTC 6

Infrastructure incl. components

- CEN/TC 234, CEN/TC 235, CEN/TC 236, CEN/TC 237, ...

Storage

- CEN/TC 234, CEN/TC 268, CEN/CLC/JTC 6

Mobility

- CEN/CLC/JTC 6, CEN/TC 15, CEN/TC 268, CEN/TC 282, CEN/TC 256, CLC/TC 9X, ISO/TC 197...

Built environment/application

- CEN/SFG-U and dedicated CEN/TCs on appliances

Industry (High temperature and Feedstock)

- Sector Fora Joint Task Force Hydrogen purity/quality need for industrial end-user

Cross cutting items

- CEN-CLC/JTC 6 and other TCs

CEN and CENELEC TCs activities → provision of hydrogen readiness by revision and elaboration of the appropriate standards

- CEN/TC 234 'Gas infrastructure'
- CEN-CLC/JTC 6 'Hydrogen in Energy Systems'
- CEN-CLC/JTC 14 WG 5 'Guarantee of origin'
- CEN/TC 58 'Safety and control devices for burners and appliances burning gaseous or liquid fuels'
- CEN/TC 237 'Gas meters'
- CEN/TC 268 'Cryogenic vessels'
- ...

CEN-CENELEC reports

- SFEM WG 'Hydrogen' reports (2015 and 2019)

European and national studies

- Marcogaz infographic, HYDEPLOY, H21, ...

EU funded projects

- EMPIR** → NEWGASMET Flow metering of renewable gases (biogas, biomethane, hydrogen syngas and mixtures with natural gas)
- FCH-JU** → **THYGA** – Hydrogen admixtures in natural gas domestic and commercial uses, **HYCORA** – Contaminant Risk Assessment, **HIGGS** – Hydrogen in gas grids, **H2SENSE** – Cost-effective and reliable hydrogen sensors for facilitating safe use of hydrogen, ...
- EC-CEN PNR H2NG** - H2 in natural gas systems

Standardisation of hydrogen quality European SURVEY

Please participate in the survey on hydrogen quality needs for industrial uses

The survey is addressed to industrial companies and manufacturers of industrial equipment, including:

- ❖ Influence of gas quality components and impurities on industrial processes and equipment when using hydrogen
- ❖ Technical measures to enable the use of hydrogen from converted natural gas networks

[LINK TO THE SURVEY](https://ec.europa.eu/eusurvey/runner/CEN_CLC_SF_JTF_H2qInd_EUSurvey)

[https://ec.europa.eu/eusurvey/runner/CEN CLC SF JTF H2qInd EUSurvey](https://ec.europa.eu/eusurvey/runner/CEN_CLC_SF_JTF_H2qInd_EUSurvey)

> extended by end of 2022.

Note: The data will be aggregated; indication of name and company is voluntary.



Standardization Requests (in the pipeline)



Hydrogen (H2)

- Compete chain H2 production (new) to application
- H2 in repurposed and dedicated infrastructure, H2NG in NG infrastructure
- Methanation
- Cross-cutting items
- Revision/preparation of ENs

- 49 CEN-CLC TCs involved
- Inclusion of H2 and H2NG standards

Gas Appliances (GAR)

- Design, construction of appliances and fittings allowing compliance with Gas Appliance Regulation (2016/426/EC)
- Revision of 75 and completion of 3 identified standards

- EN 437 Test gases
- Test pressures – Appliance categories (current process includes H2 and H2NG)

Alternative Fuels Infrastructure (AFI II)

- Focus on electricity and hydrogen
- Support to interoperable infrastructure for Hydrogen supply for road transport (gaseous and liquified)
- Refuelling vessels and hydrogen, methanol and ammonia bunkering

- Focus on 4 identified standards with different deadlines according to maturity
- 3 standards developed in support of AFI I (M/533)

Standardization, enabler towards meeting EU targets

Vision-Strategy-roadmap:

- The European Green Deal
- EU Policy alignment: Fit For 55
- Innovation

Standardization:

- Boosting Innovation to Market
- Harmonization through out Europe (34 countries)
- Access to a market of 600+ Million consumers



1 EN standard replaces 34 different national ones

CEN/CENELEC Sector Forum Energy Management- Energy Transition – **WG Hydrogen**

→ Open platform since 2015

→ Publication of reports

→ Close collaboration with EC, JRC, Hydrogen Europe, FCH-JU, ...

→ Priority consideration about global standardization activities, esp. ISO TC 197

Pathways to Improvement



CEN/CENELEC: Synergies and complementarities through active cooperation with major stakeholders

CEN/CENELEC SFEM WG Hydrogen and CEN/CENELEC JTC6 Hydrogen in Energy Systems

Numerous strengthened collaborations, beside liaison with other CEN/CENELEC TCs, such as with :

- ✓ **European Commission** (i.e. DG ENER, DG MOVE, DG GROW)
- ✓ **JRC**, EC Joint Research Center (Petten)
- ✓ **FCH-JU**, Fuel Cells and Hydrogen Joint Undertaking
- ✓ **Hydrogen Europe**
- ✓ **ISO** (i.e. ISO/TC 197)
- ✓ **IEC**
- ✓ **Gas sector (Blending NG)**
- ✓ **Application sectors**



**FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING**



CEN/CENELEC: Next steps

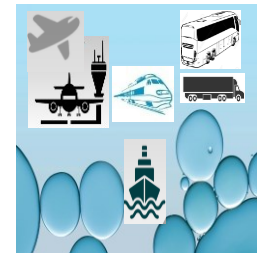
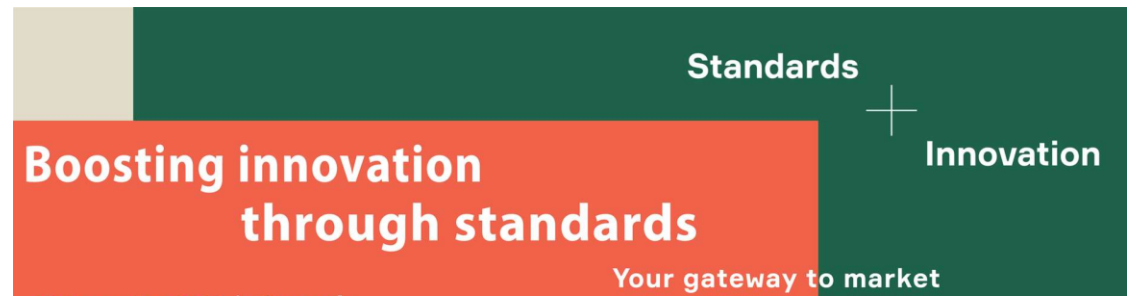


CEN/CENELEC SFEM WG Hydrogen:

- ✓ WS maritime (Feb 2022)
- ✓ WS Liquid Hydrogen (Feb 2022)
- ✓ WS Heavy Duty vehicles (Feb 2022)

- ✓ WS Aviation
- ✓ WS Trains
- ✓ WS decarbonization capacity of hydrogen and how its environmental benefit can be assessed

..... in support of Green Deal and Fit for 55 objectives and roadmaps,
.... in support of industry competitiveness



A joint way forward

- ▶ **Standardisation will provide the basis for the decarbonisation of the energy system by the use of hydrogen and in line with the EC Hydrogen Strategy**
 - ▶ Transfer of the roadmap 'whole hydrogen value chain' from EC Hydrogen Alliance working group on standardization to CEN/CENELEC
 - ▶ Prioritization needed
 - ▶ Coordination essential
 - ▶ Joining the stakeholder **expertise and experiences** is needed!
 - ▶ EC funding
 - ▶ Good cooperation is ongoing!

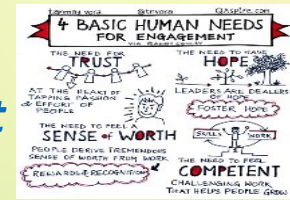


Conclusions and perspectives



Standards are key enablers to ACCELERATING INNOVATION TO MARKET

✓ They bring **TRUST & CONFIDENCE**, and thus, acceptance and engagement



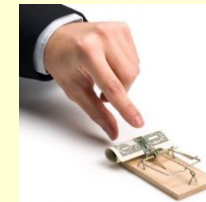
Standards are key support to DECISION MAKING

✓ They support confidence in decision making, thanks to benchmarking of best practices, robust technical references & guidance, and management systems



Standards are key support to INVESTMENT DECISION

✓ They contribute to de-risking investment, thanks to alignment of understanding among stakeholders, setting reference framework & solutions, results oriented engagement



COLLABORATION AND COOPERATION between all stakeholders:
Key to successful development of standards



Thank you! Any questions?

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Bernard Gindroz: chair CEN/CLC SFEM/WG hydrogen, CEN/CLC/JTC 6

gindrozb@bmgi-consulting.com

Françoise van den Brink: secretariat CEN/CLC SFEM/WG hydrogen, CEN/CLC/JTC 6, CEN/CLC/JTC 14 WG 5

Francoise.vandenbrink@nen.nl