



Sector Fora Joint Task Force 'Hydrogen quality needs for industrial uses'
(CEN-CLC SF JTF H2qInd)

Background information

The standardization initiative for Hydrogen quality for industrial end-users

CEN-CENELEC is the European standardization body and responsible for European standards on hydrogen. Technical committees are working on technical hydrogen standards in full support of the EU Commissions energy strategies. So called Sector Fora support the standardization with coordination of topics and pre-normative actions.

As such the **CEN-CENELEC Sector Fora Joint Task Force 'Hydrogen quality needs for industrial uses'** (CEN-CLC SF JTF H2qInd) is established to reflect the technical needs of industrial users properly in the standardization of hydrogen quality, especially supplied by a converted natural gas grid.

Focus of the action:

- existing industrial plants, but also looking into the ability of new plants/technologies under development
- power generation;
- purification technologies and costs.

PEMS is out of scope as not expected to be fed by repurposed networks.

This initiative is complementary to the current drafting of a CEN Technical Specification on the quality of hydrogen provided from repurposed natural gas infrastructure (CEN/TC 234 WI 00234096), see below for more information.

The CEN-CENELEC Sector Forum Joint Task Force 'Hydrogen quality needs for industrial end-uses' is a joint initiative of

- the CEN-CENELEC Sector Forum Energy Management and Energy Transfer WG Hydrogen (contact: françoise.vandenbrink@nen.nl)
- the CEN Sector Forum Gas Infrastructure (contact: hiltrud.schuelken@dvgw.de) and
- the CEN Sector Forum Gas Utilisation (contact: stephane.rossato@afgaz.fr)

Experts and stakeholder organisations of all parts of the chain, especially industrial users, are participating in the process (see list below).

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CEN-CENELEC website : [CEN-CENELEC - CEN-CENELEC \(cencenelec.eu\)](http://cencenelec.eu)





The draft CEN Technical Specification 'Quality of gas - Hydrogen used in converted/rededicated gas systems' (CEN/TC 234 Work Item 00234096)

This draft Technical Specification defines the quality parameters and limiting values of gaseous hydrogen, i., transported, distributed and/or delivered by converted gas infrastructure to connected applications in a safe way.

It takes into account the condition of existing piping with possible presence of liquid and solid deposits influencing the hydrogen quality. It is expected and aimed at that over time the hydrogen delivered through such pipework will improve significantly in quality. This shall be taken in the further development of the document.

Many parameters given in the Technical Specification are deduced from EN 16726, the European standard for H-gas quality. They are verified by project results such as HyQual, which have been consulted in combination with end-users' specifications,. In the project, different sources of hydrogen have been evaluated, including pyrolysis, steam reforming, electrolysis (Chlorine-Alkaline process and water electrolysis). Furthermore, the proposal takes biological hydrogen production process into account. Further projects are ongoing on the matter.

Also the related results of the EC funded pre-normative knowledge study of CEN/GERG 'Removing the technical barriers to use of hydrogen in natural gas networks and for (natural) gas end users' has been taken into account.

This Technical Specification is supposed to balance the requirements of gaseous hydrogen for the producer, the different grid operators and the end-users consumers, respectively in order to set- up a reliable backbone of futures energy supply which is (partly) based on using converted / rededicated gas infrastructure. As a consequence on-site pre-treatment cannot be excluded for applications and/or processes with specific stringent requirements.

This Technical Specification gives evidence to the end-user which hydrogen quality can be expected and ensured as minimum requirement and without further purification.

However, it is recognised that some end-users are very sensitive to some gas quality parameters and impurities. In these cases, mitigation measures may be needed, such as purification of the described hydrogen quality.

This document supports the implementation of the hydrogen strategy on European and national level and will accordingly facilitate the trade of hydrogen across entire Europe

This Technical Specification is in elaboration in CEN/TC 234 Gas infrastructure, in cooperation with CEN-CLC/JTC 6, CEN/TC 268, ISO/TC 197, and TCs for equipment and application):

- taking into account both natural gas systems and new built hydrogen systems;
- hydrogen qualities for fuel cell applications EN 17124:2019 (CEN/TC 268 WG 5, legally binding in some countries, e.g. DE).

(Contact: CEN/TC 234 Gas infrastructure (hiltrud.schuelken@dvqw.de))



Stakeholder involvement in CEN-CLC Sector Forum Joint Task Force Hydrogen quality needs for industrial uses

Standardisation organisations

CEN-CLC SFEM WG Hydrogen
CEN SF Gas infrastructure
CEN SF Gas utilisation
CEN-CLC JTC 6 H2 in energy systems
CEN/TC 58 Safety and control devices for burners and appliances burning gaseous or liquid fuels
CEN/TC 131 Gas burner using fans
CEN/TC 234 Gas infrastructure
ISO/TC 109 Oil and gas burners (WG 1 Gas burners)
ISO/TC 197 Hydrogen technologies
AFNOR (FR)
BSI (UK)
DIN (DE)
DS (DK)
ELOT (GR)
NBN (BE)
NEN (NL)
NSAI (IRL)
UNI (IT)

European Organisations

Clean Hydrogen Partnership
EC JRC
EIGA
ENTSOG
Euromot
European Turbine Network (ETN)
Hydrogen Europe

Project involvement by experts

EMPIR
H2Fuel
EU Hydraite
EU MetroHyVe2

Technical Institutes

Danish Gas Technology Center (DGC)
ERIG
GERG
National Physical Laboratories (NPL, UK)
NTUA (University Athens)
ZBT (H2 quality laboratory)

Companies and national associations

Airliquide
BASF (DE)
Commercial fuel solutions (UK)
Dreizler
DUNGS
DVGW (DE)
ENAGAS (ES)
Energy UK
ENGIE (FR)
Fluxys (BE)
Gasunie (NL)
GRTgaz
ITM-Power (UK)
MOL (HU)
OCI NV (NL, amonia production)
RICE (FR)
SIEMENS (DE)
SNG (UK)
Total Energies
Uniper Energy
VSL
Yara (amonia production)