



The Wobbe Index in the H-gas standard and renewable gases in gas quality standardisation

Presentation by CEN

Sector Forum Gas WG Pre-normative studies on H-gas quality parameter (SFGas GQS)

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The SFGas GQS proposal on Wobbe Index

Remind:
Standards are voluntary; however, CEN Member countries committed themselves to apply them if not contradicting to national legislation!

❖ Normative recommendation for a Wobbe Index Entry Range

46,44 to 54,00 MJ/m³ [15°C/15°C] units as used in CEN

13,59 to 15,8 kWh/m³ [25°C/0°C] units as used in NC INT

❖ Normative requirement of a Wobbe Index Exit Classification, based on the distributed gas and incl. permissible deviation

- **Class specified** bandwidth within a specified Wobbe Index range:

3,7 within 46,44 to 53,00 [MJ/m³; 15°C/15°C] units as used in CEN

1,08 within 13,59 to 15,52 [kWh/m³; 25°C/0°C] units as used in NC INT

- **Class extended** any other situation of WI bandwidth and/or of the WI range
 - **assessment of presence of sensitive users** downstream of the exit points and implementation of appropriate mitigation measures requested
 - consideration of a **continuous experienced situation** similar to class specified (e.g. after initial assessment)

→ **European legal/regulatory framework needed for the implementation of the Wobbe Index Exit Classification!**



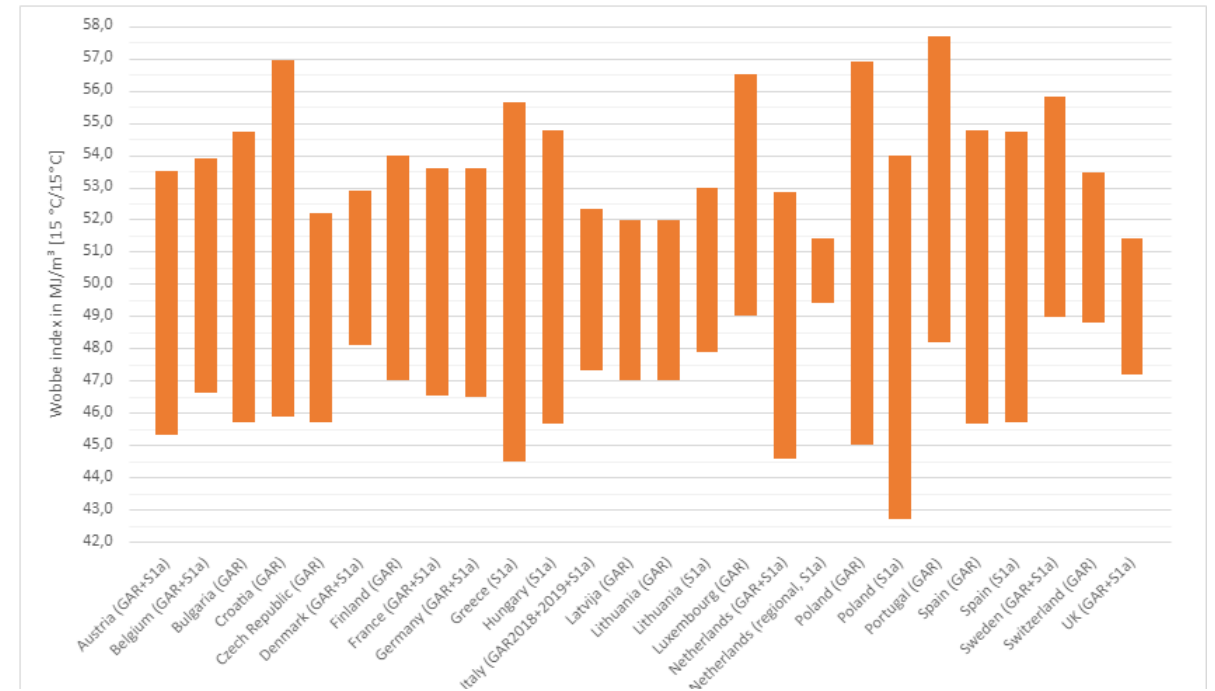
❖ CEN SFGas GQS normative recommendation for a Wobbe Index Entry Range

46,44 to 54,00 MJ/m³ [15°C/15°C]

13,59 to 15,8 kWh/m³ [25°C/0°C]

- No consensus for *a requirement* of a WI entry range possible,
 - end-users cannot accept the broad bandwidth at the exit point;
 - in case the gas cannot be treated, measures are requested to ensure that end-users are not exposed to the whole range.
- + The *recommendation* reflects the Member States' competence for WI entry range and
- + avoids A-deviations from these countries when voting on the future CEN standard.
- + Management of cross-border restrictions due to gas quality differences is being ensured with reference to INT NC Art 15.

Note: the legal WI range is usually not the actual range of locally distributed gases.



WI range (MJ/Nm³, 15°C/15°C/101.325 kPa) in the European countries as reported in the tables of CEN SFGas GQS Survey 1a and as published in the OJ based on the report of the EU countries to the Commission and other EU countries, according to GAR, art 4.(1)



❖ **CEN SFGas GQS normative requirement of a Wobbe Index Exit Classification, based on the distributed gas and incl. permissible deviation**

- **Class specified** bandwidth within a specified WI range: 3,7 within 46,44 to 53,00 [MJ/m³; 15°C/15°]
- **Class extended** any other situation of WI bandwidth and/or of the WI range

The Wobbe Index Exit Classification gives:

- + **more information** on WI and, therefore, **more certainty for end-users**,
 - + in general and with view to discrepancy between actual WI values of locally distributed gases (at exit points) and the legal WI limits;
- + **flexibility to use renewable and decarbonised gases**; especially considering that renewable gases will be injected closer to the exit points and therefore possibly leading to more variation than in the past;
- + acknowledgement of specific **continuous experienced regional situations** (e.g. LNG, national production) even if in the extended class.
- **Discrepancies in view :**
 - In case the gas cannot be treated, measures are requested to ensure that end-users are not exposed to the whole range.
 - No limits for rate of change are yet included in the proposal as more knowledge and mitigation measures need to be identified. End-users see concerns with a high rate of change.
 - Uncertainty of the actual implementation and the legal/regulatory framework
 - Hydrogen requires extra attention due to ensure the readiness of the system and applications





→ European legal/regulatory framework needed for implementation of the proposed Wobbe Index Exit Classification!

Consideration of the identified aspects for a legal/regulatory framework in the Prime Movers' Group Subgroup 'WI Framework' involving the same stakeholder groups than in CEN SFGas GQS:

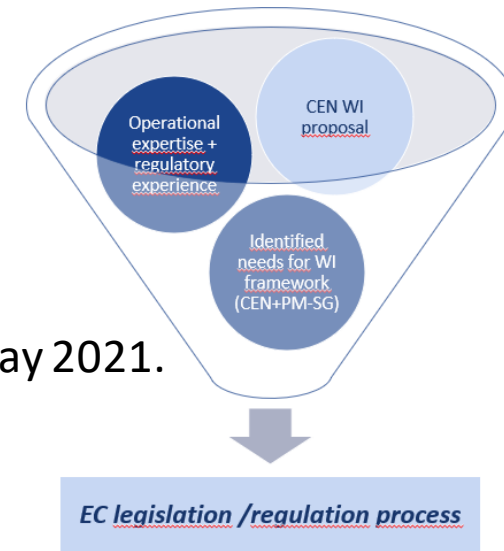
Analysis and more detailed description of the aspects (where possible by use of flow charts):

1. Assignment + switching of classes
2. Identification + assessment of sensitive users
3. Identification + cost/benefit analysis of mitigation measures
4. Communication + information flows

- 1st deliverable in consultation in PMG SG 1, to be presented to EC DG Energy beginning of May 2021.
- Further steps will follow.

Major open issue:

- extent, intensity and time distribution of the permissible deviation of the indicated classification WI values
- Emergencies/force majeure
- Lead time for switch of class and
- possibly time duration of a classification





Influence of H₂ and Biomethane on the proposed Wobbe Index Exit Classification

- Blending of hydrogen or lower WI biomethane into a natural gas stream results generally in a decrease of the WI.
 - The proposed lower WI entry range reflects this.
 - The classification can also be applied for these blends.
- Remark: *injection of these gases, especially hydrogen, affects other gas quality parameters (e.g. methane number, relative density).*



Source: MT Energy



Examples in CEN- CENELEC standardisation initiatives for renewables and decarbonised gases

Parallel preparation of the use of:

- ,pure hydrogen (H₂) and
- hydrogen blends

→ For blends, guidance on H₂ concentrations is needed to prepare infrastructure and applications

H-gas quality

Completion EN 12726 by Wobbe Index when confidence in appropriate legal/regulatory framework
(CEN/TC 234, CEN-CLC/JTC 6)

H₂NG blending

preparations for 10%, 20% up to 100%
(Infrastructure, equipment, appliances)

H₂ quality in converted/rededicated natural gas systems

Standardisation start 05/2021
(CEN/TC 234, CEN-CLC/JTC 6)

H₂ purity needs of end-users

Joint pre-normative investigation by Sector Fora (1st focus industrial)
(Joint TF of SFEM, SFGas)

H₂ readiness of CNG tanks, H₂ quality in natural gas systems

- EC-CEN pre-normative studies
(CEN/TC 234-GERG, CEN/TC408-GERG)

LH₂ for transport standardisation in preparation

Safe use of hydrogen in built environment

Technical Report in preparation
(CEN-CLC/JTC 6)

Guarantees of Origin for electricity, gaseous hydrocarbons, H₂ and heating & cooling

(CEN-CLC/JTC 14 WG 5, CEN-CLC/JTC 6)



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