



Open Season for a Hydrogen Transport Infrastructure – Haut-Rhin and Bas-Rhin

18th September 2023



Open Season for the construction of a hydrogen transport infrastructure on the territory of the Haut-Rhin and the Bas-Rhin

Hydrogen Specifications Proposal Haut-Rhin and Bas-Rhin

Disclaimer

The hydrogen specifications presented in this document (the “**Hydrogen Specifications Proposal**”) reflect the best knowledge available at the time of publication. These gas quality specifications are subject to change, depending on the results of future testing and research programs and the publication of European gas quality standards. The information contained herein reflects the current viewpoint of GRTgaz S.A. and is for information purposes only. It does not constitute any commitment on the part of GRTgaz S.A., and should not be viewed as giving rise to any contractual relationship whatsoever between GRTgaz S.A. and any interested party.

Introduction

Hydrogen specifications, just as they exist for natural gas transport, are needed to ensure the safe operation and interoperability of future hydrogen transport networks.

These hydrogen specifications must preserve the integrity of the transmission facilities with regard to the risks of chemical reaction and modification of the physical characteristics of their constituent materials, and guarantee the delivery of hydrogen to end consumers in line with their needs.

Any gas introduced into the hydrogen transport network as proposed in this Open Season will therefore have to comply with hydrogen specifications in terms of :

- Hydrogen quality ;
- Pressure and temperature conditions.

Hydrogen quality

Hydrogen quality specifications will apply to hydrogen production injected into the transport infrastructure, as well as to deliveries to end consumers.

The gas industry is currently working to propose standardized hydrogen specifications at European level.

Technical recommendations on hydrogen quality, detailed in the "CBP-H2" reference document, have been proposed by EASEE-gas and published at the following link:

https://easee-gas.eu/download_file/DownloadFile/36/cbp-2022-001-01-hydrogen-quality-specification

They have been drawn up taking into account :

- The nature of H2 production capacity by 2030
- The nature of the main uses by 2030 and any constraints they may face
- Possible desorption of reconverted pipes, in the absence of feedback.

GRTgaz is a stakeholder in this work, enabling a French contribution to this European project. It plays an active role in the development of CBP-H2 including associations representing producers and users, as well as infrastructure operators.

A technical specification is currently being drawn up by CEN TC 234 WG11. The parameters and limits defined and discussed in this specification are essentially based on CBP-H2. This technical specification is not a European standard.

To date, GRTgaz proposes to retain these "CBP-H2" recommendations, summarized in the table below, as those that will apply to the proposed transmission infrastructure. They may evolve in line with technical advances in the sector and regulatory requirements currently being defined.

Parameter	Unit	Minimum	Maximum
Hydrogen ¹	mol	98,0	-
Carbon monoxide	ppm mol	-	20
Total sulfur ^{2,3}	mgS/m3(n)	-	21
Carbon dioxide	ppm mol	-	20

Total hydrocarbons (including CH ₄) ³	mol	-	1,5
Inert compounds (nitrogen, argon, helium)	mol	-	2,0
Oxygen ^{4,5}	ppm mol	-	10
Total halogenated compounds	ppm mol	-	0,05
Water dew point	°C at 70 bar (a)	-	-8
Hydrocarbon dew point ³	°C from 1 to 70 bar (a)	-	-2

¹ Does not take into account a possible odorizer

² Limit content calculated at standard conditions (1.01325 bar(a) and 0°C)

³ Limit values defined for a transitional period during which the composition of hydrogen may be influenced by the presence of compounds related to natural gas.

⁴ Expressed as a rolling 24-hour average

⁵ The maximum oxygen content may be increased to 1000 ppm mol if flows do not reach a sensitive facility.

Summary table of "CBP-H2" hydrogen quality recommendations

Pressure and temperature conditions

The operating conditions of the infrastructure, and in particular the minimum and maximum pressures and temperatures, will be defined in subsequent phases of the Open Season in consultation with the participating players and according to the technical specifications gathered from producers and consumers.

For information purposes and as a preliminary step, GRTgaz plans to study a maximum operating pressure of between 30 and 67.7 bar. This maximum operating pressure will be assessed in greater detail depending on the environment and the system's operating conditions, which will be defined in subsequent stages of the Open Season.