
Gaseous hydrogen — Fuelling stations —

Part 1: General requirements

*Carburant d'hydrogène gazeux — Stations-service —
Partie 1: Exigences générales*





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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword – Supplementary information](#).

The committee responsible for this document is ISO/TC 197, *Hydrogen technologies*.

ISO/TS 19880-1 has been prepared with the ultimate goal of developing an International Standard and it replaces ISO/TS 20100:2008, on the same subject, which was withdrawn in 2015.

A list of all parts in the ISO 19880 series can be found on the ISO website.

Gaseous hydrogen — Fuelling stations —

Part 1: General requirements

1 Scope

This document recommends the minimum design characteristics for safety and, where appropriate, for performance of public and non-public fuelling stations that dispense gaseous hydrogen to light duty land vehicles (e.g. Fuel Cell Electric Vehicles).

NOTE These recommendations are in addition to applicable national regulations and codes, which can prohibit certain aspects of this document.

This document is applicable to fuelling for light duty hydrogen land vehicles, but it can also be used as guidance for fuelling buses, trams, motorcycles and fork-lift truck applications, with hydrogen storage capacities outside of current published fuelling protocol standards, such as SAE J2601.

Residential applications to fuel land vehicles and non-public demonstration fuelling stations are not included in this Technical Specification.

This Technical Specification provides guidance on the following elements of a fuelling station (see [Figure 1](#) and [Figure 2](#)):

- hydrogen production/delivery system
 - delivery of hydrogen by pipeline, trucked in gaseous and/or liquid hydrogen, or metal hydride storage trailers;
 - on-site hydrogen generators using water electrolysis process or hydrogen generators using fuel processing technologies;
 - liquid hydrogen storage;
 - hydrogen purification systems, as applicable;
- compression
 - gaseous hydrogen compression;
 - pumps and vaporizers;
- gaseous hydrogen buffer storage;
- pre-cooling device;
- gaseous hydrogen dispensers.

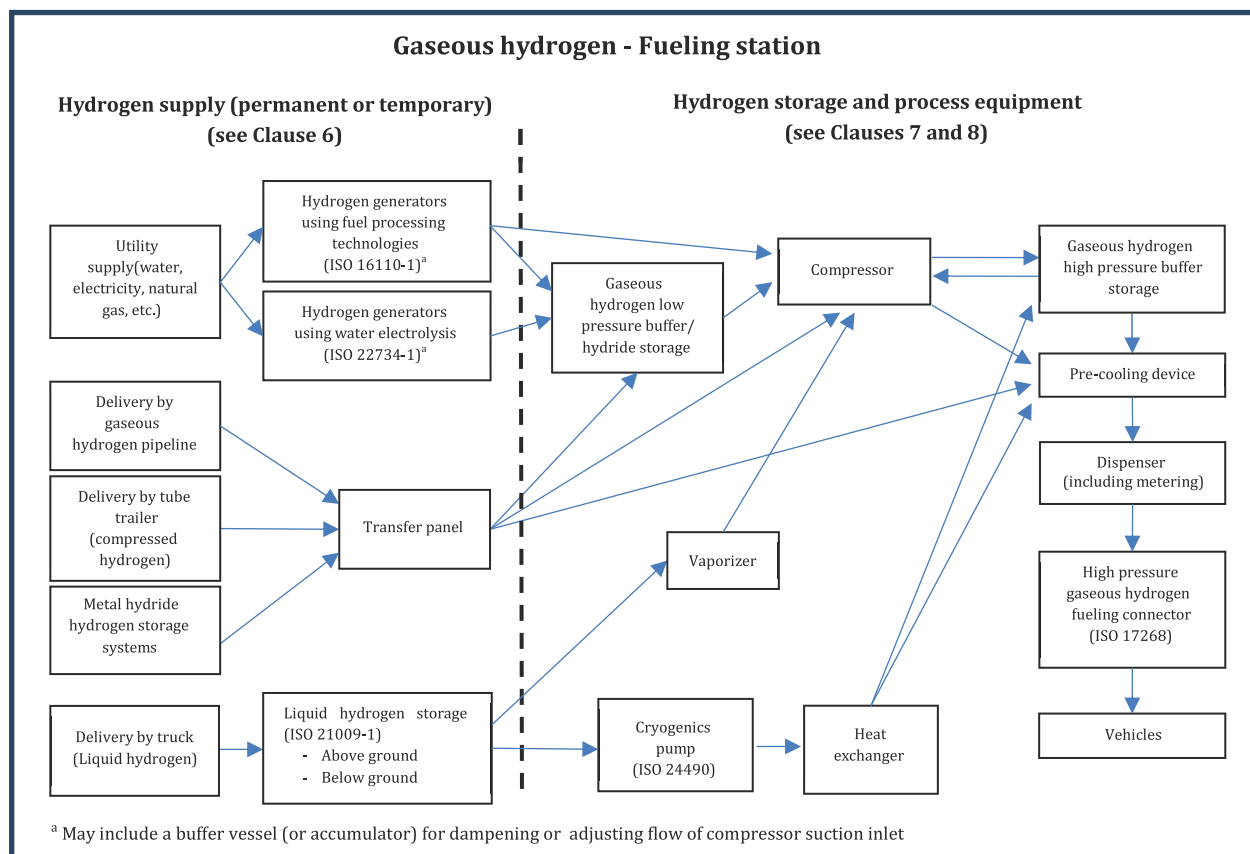


Figure 1 — Example of typical elements in a hydrogen fuelling station, including the hydrogen supply

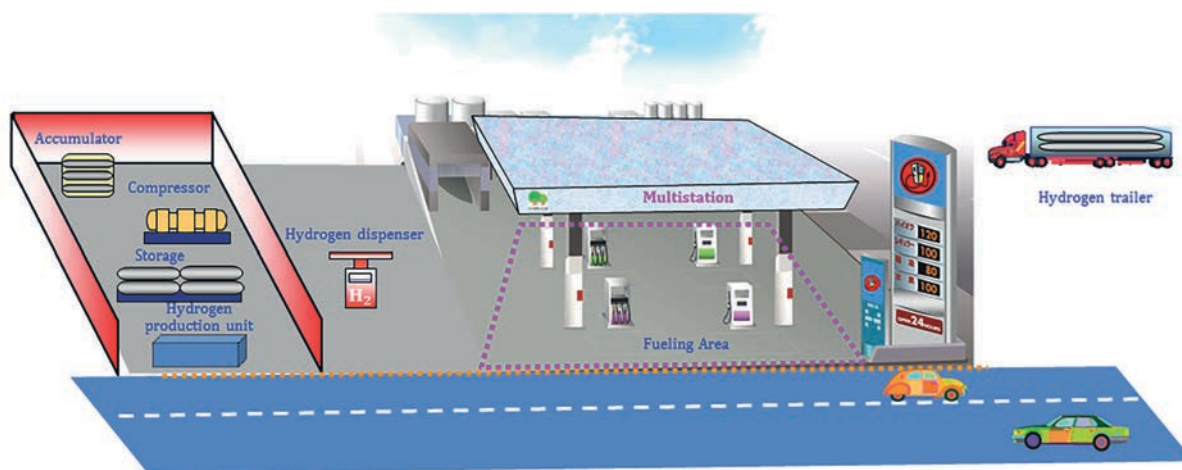


Figure 2 — Image of an example hydrogen fuelling station

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

accessory

device with an operational function

3.2

authority having jurisdiction

AHJ

organization, office or individual responsible for approving a facility along with an equipment, an installation or a procedure

3.3

bleed venting

expiration or inspiration of air or gas from, or to, one side of a diaphragm of any accessory, component, or equipment such as a valve, pressure regulator or switch

3.4

breakaway device

device installed on a dispensing hose that separates when a given pull force is applied and closes the flow of hydrogen to prevent gas leakage and protect the dispenser from damage from vehicles driving away

3.5

buffer storage tanks

pressurized tanks, which can be located between a hydrogen generator and a compressor for an even flow of gas to the compressor or between the compressor and dispenser for accumulation of pressurized gas supply for vehicle fuelling

3.6

control system

system which responds to input signals from the process and/or from an operator and generates output signals causing the process to operate in the desired manner

Note 1 to entry: A separate safety instrumented system (SIS), typically with a greater reliability than the more basic process control system (BPCS), may be required, according to the manufacturer's risk assessment, to respond solely to safety critical alarms. Further information is provided in IEC 61508 and 61511.

3.7

connector

joined assembly of nozzle and receptacle which permits the transfer of hydrogen

[SOURCE: ISO 17268:2012, 3.1]

3.8

dispenser

parts of the pressurised-gas fuelling station via which the pressurised gas is dispensed to vehicles

Note 1 to entry: As an example, the dispenser may include a dispenser cabinet, gas flow meter, a fueling hose and fueling nozzle attachments.

3.9

dispenser cabinet

protective housing that encloses process piping and may also enclose measurement, control and ancillary dispenser equipment