



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 17127:2020

**Outdoor hydrogen refuelling points
dispensing gaseous hydrogen and
incorporating filling protocols**

Points de ravitaillement en hydrogène en
extérieur distribuant de l'hydrogène
gazeux et intégrant des protocoles de
remplissage

Wasserstofftankstellen im Außenbereich
zur Abgabe gasförmigen Wasserstoffs
und Betankungsprotokolle umfassend

11/2020



National Foreword

This European Standard EN 17127:2020 was adopted as Luxembourgish Standard ILNAS-EN 17127:2020.

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ILNAS-EN 17127:2020

EUROPEAN STANDARD **EN 17127**
NORME EUROPÉENNE
EUROPÄISCHE NORM

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ICS 27.075; 71.100.20; 75.200

Supersedes EN 17127:2018

English Version

**Outdoor hydrogen refuelling points dispensing gaseous
hydrogen and incorporating filling protocols**

Points de ravitaillement en hydrogène en extérieur
distribuant de l'hydrogène gazeux et intégrant des
protocoles de remplissage

Gasförmiger Wasserstoff - Betankungsanlagen - Teil 1:
Allgemeine Anforderungen

This European Standard was approved by CEN on 18 October 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 17127:2020) has been prepared by Technical Committee CEN/TC 268 “Cryogenic vessels and specific hydrogen technologies applications”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 17127:2018.

Compared to the previous version, the following changes apply:

- Improvement of the definitions;
- The general requirements of the characteristics and properties of hydrogen refuelling points have been completed to provide more information;
- Clarification of the fuelling protocols;
- Revision of the acceptable test for the minimum SAT to ensure interoperability;
- Correction of Figure A.1.

This document has been prepared under Mandate M/533 given to CEN by the European Commission and the European Free Trade Association.

It applies to hydrogen refuelling points dispensing gaseous hydrogen to vehicles compliant with GTR13, UNECE R134 or Regulation (EC) No 79/2009.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom

Introduction

The European Commission in its standardization request M/533 of March 12th, 2015, aims to ensure that technical specifications for interoperability of refuelling points are specified in European Standards compatible with the relevant International Standards. These specifications aim to meet the European needs, be compatible and aligned as much as possible with relevant International Standards and as far as possible with existing refuelling infrastructure already in place and leave room to accommodate the adopted standard to local technical, analytical and regulatory needs. The requested European Standards aim to be technologically and commercially neutral and based on the know-how currently in possession of the EU industry and of the public sector on a fair, reasonable and non-discriminatory basis.

According to the legal requirements given in the Alternative Fuels Infrastructure Directive (AFID) and M/533, European Standards specifying only the required specifications for ensuring the interoperability of refuelling points have to be provided. European standards and common requirements with respect to “interoperability” mean the capacity of an infrastructure to supply energy (in this document hydrogen) that is compatible with all vehicle technologies and allows seamless EU-wide mobility and a clear definition of fuel pressure and temperature levels and connector designs.

The European Standardization Organizations (ESOs) should adopt European Standards in accordance with Article 10 of Regulation (EU) No 1025/2012 of the European Parliament and of the Council, and those standards should be based on current International Standards or ongoing international standardization work, where applicable.

Direction from the standardization request M/533 for European Standards for hydrogen supply are to develop *European Standards containing technical solutions for interoperability with technical specifications in regard to Article 5 and point 2 of Annex II, in particular for:*

- a) outdoor hydrogen refuelling points dispensing gaseous hydrogen;
- b) hydrogen purity dispensed by hydrogen refuelling points;
- c) fuelling algorithms and equipment of hydrogen refuelling points;
- d) connectors for vehicles for the refuelling of gaseous hydrogen.

This document specifies Items a) and c).

Item b) is covered by EN 17124 and Item d) by EN ISO 17268.

1 Scope

This document defines the minimum requirements to ensure the interoperability of hydrogen refuelling points, including refuelling protocols that dispense gaseous hydrogen to road vehicles (e.g. Fuel Cell Electric Vehicles) that comply with legislation applicable to such vehicles.

The safety and performance requirements for the entire hydrogen fuelling station, addressed in accordance with existing relevant European and national legislation, are not included in this document.

NOTE Guidance on considerations for hydrogen fuelling stations is provided in ISO 19880-1:2020.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 17124, *Hydrogen fuel — Product specification and quality assurance — Proton exchange membrane (PEM) fuel cell applications for road vehicles*

EN ISO 17268, *Gaseous hydrogen land vehicle refuelling connection devices (ISO17268)*

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 <https://www.iso.org/obp>

NOTE Units used in this document follow SI (International System of Units).

3.1

compressed hydrogen storage system

CHSS

hydrogen storage on-board vehicle, as defined in the GTR#13 and UNECE R134

3.2

dispenser

equipment in the dispensing system, including the dispenser cabinet(s) and support structure, that is physically located in the fuelling area

Note 1 to entry: The hydrogen dispenser typically includes, as a minimum, the fuelling assembly, required temperature and pressure instrumentation, filters, and the user interface to conduct vehicle fuelling.

Note 2 to entry: The manufacturer of the hydrogen dispenser can elect to include additional equipment in the dispenser, including the possibility of all equipment in the dispensing system.

3.3

dispenser cabinet

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

3.4**dispenser fuel pressure**

pressure of the hydrogen gas supplied to the vehicle by the refuelling point

Note 1 to entry: See Annex A for discussion of pressure terminology and its application to dispensing systems.

3.5**dispenser fuel temperature**

temperature of the hydrogen gas supplied to the vehicle by the refuelling point

3.6**dispensing system**

system downstream of the hydrogen supply system comprising all equipment necessary to carry out the vehicle refuelling operation, through which the compressed hydrogen is supplied to the vehicle

3.7**hydrogen fuelling station**

facility for the dispensing of compressed hydrogen vehicle fuel, often referred to as a hydrogen refuelling station (HRS) or hydrogen filling station, including the supply of hydrogen compression, storage and dispensing systems

3.8**hydrogen service level****HSL**

pressure level in MPa used to characterize the hydrogen service of the dispenser based on the NWP rating of the vehicle

Note 1 to entry: The numerical value of HSL also matches the number after the “H” in Pressure Class.

Note 2 to entry: See Annex A for application of pressure terminology to hydrogen dispenser systems and vehicles.

3.9**interoperability**

capability of a hydrogen dispensing point to supply hydrogen at the fuelling station/vehicle interface that is compatible with road vehicles and allows seamless EU-wide mobility through applying clear definitions of connector designs, fuel quality, pressure levels, temperatures and other applicable considerations

3.10**maximum allowable working pressure****MAWP**

maximum pressure permissible in a vessel or system at the temperature specified for the pressure

Note 1 to entry: The maximum allowable working pressure may also be defined as the design pressure, the maximum allowable operating pressure, the maximum permissible working pressure, or the maximum allowable pressure for the rating of pressure vessels and equipment manufactured in accordance with national pressure vessel codes.

Note 2 to entry: See Annex A for application of pressure terminology to hydrogen dispenser systems and vehicles.

3.11**maximum/minimum allowable temperature****TS**

values of the maximum/minimum temperatures at which safe and good functioning of the component is ensured and for which it has been designed, as specified by the manufacturer