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Gaseous hydrogen — Service stations

Hydrogène gazeux — Stations service

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Contents

Page

Foreword	v
Introduction.....	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Design.....	2
4.1 Materials	2
4.1.1 General requirements	2
4.1.2 Hydrogen compatibility.....	2
4.1.3 Compatibility with cold temperatures	2
4.2 Hydrogen production and delivery.....	2
4.2.1 On-site hydrogen production	2
4.2.2 Delivery of hydrogen by pipelines.....	2
4.2.3 Delivery of hydrogen by trucks.....	2
4.3 Hydrogen storage.....	2
4.3.1 Storage in the form of gaseous hydrogen	2
4.3.2 Storage in the form of liquid hydrogen	2
4.3.3 Storage in the form of hydrocarbon sources of hydrogen	2
4.4 Piping.....	2
4.4.1 Piping carrying gaseous hydrogen	2
4.4.2 Piping carrying liquid hydrogen	2
4.4.3 Piping carrying hydrocarbon sources of hydrogen.....	2
4.5 Flow control and pressure relief devices.....	2
4.6 Dispensers	2
4.7 Filling hoses.....	2
4.8 Filling connectors.....	2
4.9 Other service station equipment.....	2
4.9.1 Cryogenic pumps and evaporation units.....	2
4.9.2 Compressors.....	2
4.9.3 Gas dryers	3
4.9.4 Hydrogen purifiers	3
4.9.5 Filters	3
4.10 Electrical equipment and wiring	3
4.10.1 Classification	3
4.10.2 Ventilation	3
4.10.3 Electrical equipment	3
4.10.4 Electromagnetic compatibility and interference	3
4.11 Instrumentation	3
4.11.1 Monitoring instrumentation.....	3
4.11.2 Alarms.....	3
4.11.3 Emergency shut-off system	3
5 Layout.....	3
5.1 Locations of service stations in different surroundings.....	3
5.2 Clearance distances for hydrogen equipment	3
6 Protection	3
6.1 Protection against the accumulation of static charges.....	3
6.2 Lightning protection.....	3
6.3 Protection against mechanical damages.....	3
6.4 Rain and wind protection.....	3

6.5	Protection from unauthorized access	3
7	Hydrogen fuel	3
7.1	Filling pressure	3
7.2	Fuel quality	4
7.3	Labelling of dispensers.....	4
8	Emergency procedures	4
8.1	Fire.....	4
8.2	Leakage.....	4
9	Warning signs	4

Foreword

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In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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ISO/TR was prepared by Technical Committee ISO/TC 197, *Hydrogen technologies*, Subcommittee SC , .

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

Introduction

Gaseous hydrogen — Service stations

1 Scope

This Technical Report specifies the characteristics of service stations that dispense gaseous hydrogen used as fuel onboard land vehicles of all types.

It covers, as applicable, the system that produces gaseous hydrogen on-site, the system that stores and dispenses gaseous hydrogen from the point of supply at the service station property to the filling connector installed onboard the land vehicle.

2 Normative references

The following referenced documents are indispensable for the application 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.

3 Terms and definitions

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

4 Design

4.1 Materials

4.1.1 General requirements

4.1.2 Hydrogen compatibility

4.1.3 Compatibility with cold temperatures

4.2 Hydrogen production and delivery

4.2.1 On-site hydrogen production

4.2.1.1 Hydrogen production from water electrolysis process

4.2.1.2 Hydrogen production from reforming of hydrocarbon fuels

4.2.2 Delivery of hydrogen by pipelines

4.2.3 Delivery of hydrogen by trucks

4.3 Hydrogen storage

4.3.1 Storage in the form of gaseous hydrogen

4.3.2 Storage in the form of liquid hydrogen

4.3.3 Storage in the form of hydrocarbon sources of hydrogen

4.4 Piping

4.4.1 Piping carrying gaseous hydrogen

4.4.2 Piping carrying liquid hydrogen

4.4.3 Piping carrying hydrocarbon sources of hydrogen

4.5 Flow control and pressure relief devices

4.6 Dispensers

4.7 Filling hoses

4.8 Filling connectors

4.9 Other service station equipment

4.9.1 Cryogenic pumps and evaporation units

4.9.2 Compressors

4.9.3 Gas dryers

4.9.4 Hydrogen purifiers

4.9.5 Filters

4.10 Electrical equipment and wiring

4.10.1 Classification

4.10.2 Ventilation

4.10.3 Electrical equipment

4.10.4 Electromagnetic compatibility and interference

4.11 Instrumentation

4.11.1 Monitoring instrumentation

4.11.1.1 Monitoring of fuelling parameters

4.11.1.2 Monitoring of safety parameters

4.11.2 Alarms

4.11.3 Emergency shut-off system

5 Layout

5.1 Locations of service stations in different surroundings

5.2 Clearance distances for hydrogen equipment

6 Protection

6.1 Protection against the accumulation of static charges

6.2 Lightning protection

6.3 Protection against mechanical damages

6.4 Rain and wind protection

6.5 Protection from unauthorized access

7 Hydrogen fuel

7.1 Filling pressure

7.2 Fuel quality

7.3 Labelling of dispensers

8 Emergency procedures

8.1 Fire

8.2 Leakage

9 Warning signs