SLOVENSKI STANDARD
SIST EN 12007-1:2013

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Nadomešča:
SIST EN 12007-1:2000

Infrastruktura za plin - Cevovodni sistemi za najvišji delovni tlak do vključno 16 bar - 1. del: Splošne funkcionalne zahteve

Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 1: General functional requirements

Gasinfrastruktur - Rohrleitungen mit einem maximal zulässigen Betriebsdruck bis einschließlich 16 bar - Teil 1: Allgemeine funktionale Anforderungen

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Infrastructures gazières - Canalisations pour pression maximale de service inférieure ou égale à 16 bar - Partie 1: Recommandations fonctionnelles générales

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Ta slovenski standard je istoveten z: **EN 12007-1:2012**

ICS:

91.140.40 Sistemi za oskrbo s plinom Gas supply systems

SIST EN 12007-1:2013 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12007-1

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Supersedes EN 12007-1:2000

English Version

Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 1: General functional requirements

Infrastructures gazières - Canalisations pour pression maximale de service inférieure ou égale à 16 bar - Partie 1: Exigences fonctionnelles générales

Gasinfrastruktur - Rohrleitungen mit einem maximal zulässigen Betriebsdruck bis einschließlich 16 bar - Teil 1: Allgemeine funktionale Anforderungen

This European Standard was approved by CEN on 24 May 2012.

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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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Foreword

This document (EN 12007-1:2012) has been prepared by Technical Committee CEN/TC 234 “Gas infrastructure”, the secretariat of which is held by DIN.

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 February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

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

This document supersedes EN 12007-1:2000.

Annex B provides details of significant technical changes between this European Standard and the previous edition.

EN 12007 *Gas infrastructure — Pipelines for maximum operating pressure up to and including 16 bar* consists of the following parts:

Part 1: General functional requirements

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Part 2: Specific functional requirements for polyethylene (MOP up to and including 10 bar)

Part 3: Specific functional requirements for steel

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Part 4: Specific functional requirements for renovation

Part 5: Specific functional recommendations of new service lines[1]

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

[1] To be published.

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1 Scope

This European Standard describes the general functional requirements for pipelines up to the point of delivery, and also for buried sections of pipework after the point of delivery, for maximum operating pressures up to and including 16 bar for gaseous fuels in accordance with EN 437:1993+A1:2009, Table 1. It applies to their design, construction, commissioning, decommissioning, operation, maintenance, renovation, extension and other associated works.

This European Standard does not apply to the materials, design, construction, testing and commissioning of gas infrastructures in use prior to the publication of this European Standard. However, this European Standard does apply to the operation, maintenance, renovation and extension of all gas infrastructures.

Specific functional requirements for polyethylene pipelines are given in EN 12007-2, for steel pipelines in EN 12007-3 and for the renovation of pipelines in EN 12007-4. Functional recommendations for pipework for buildings are given in EN 1775. Functional requirements for service lines are given in prEN 12007-5.

Functional requirements for pressure testing, commissioning and decommissioning are given in EN 12327.

Functional requirements for measuring systems are given in EN 1776.

Functional requirements for pressure regulating stations are given in EN 12186.

Functional requirements for pressure regulating installations are given in EN 12279.

Functional requirements for gas transmission are given in EN 1594.

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This European Standard specifies common basic principles for gas infrastructure. Users of this European Standard should be aware that more detailed national standards and/or code of practice may exist in the CEN member countries. This European Standard is intended to be applied in association with these national standards and/or codes of practice setting out the above-mentioned basic principles.

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In the event of conflicts in terms of more restrictive requirements in national legislation/regulation with the requirements of this European Standard, the national legislation/regulation takes precedence as illustrated in CEN/TR 13737 (all parts).

CEN/TR 13737 (all parts) give:

— clarification of all legislations/regulations applicable in a member state;

— if appropriate, more restrictive national requirements;

— a national contact point for the latest information.

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.

EN 1776, *Gas supply systems — Natural gas measuring stations — Functional requirements*

EN 12007-3, *Gas supply systems — Pipelines for maximum operating pressure up to and including 16 bar — Part 3: Specific functional recommendations for steel*

prEN 12007-5, *Gas infrastructure — Pipelines for maximum operating pressure up to and including 16 bar — Part 5: Specific functional recommendations for new service lines* [1]

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EN 12186, *Gas supply systems — Gas pressure regulating stations for transmission and distribution — Functional requirements*

EN 12279, *Gas supply systems — Gas pressure regulating installations on service lines — Functional requirements*

EN 12327, *Gas infrastructure — Pressure testing, commissioning and decommissioning procedures — Functional requirements*

3 Terms, definitions and abbreviations

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

3.1 General terminology

3.1.1
gas infrastructure
pipeline systems including pipework and their associated stations or plants for the transmission and distribution of gas

3.1.2
pipeline
system of pipework with all associated equipment and stations up to the point of delivery

Note 1 to entry: This pipework is mainly below ground but includes also above ground parts.

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3.1.3
gas
gaseous fuel which is in gaseous state at a temperature of 15 °C under atmospheric pressure (1,013 25 bar absolute)

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3.1.4
point of delivery
point of a gas network where the gas is transferred to the user

Note 1 to entry: This can be at a means of isolation (e.g. at the outlet of a LPG storage vessel) or at a meter connection.

Note 2 to entry: For this European Standard, the point of delivery is typically nominated by the distribution system operator and can be defined in National Regulations or Codes of Practice.

3.1.5
pipeline operator
private or public organization authorized to design, construct and or operate and maintain the gas infrastructure

3.1.6
competent person
person who is trained, experienced and approved to perform activities relating to gas infrastructures

Note 1 to entry: Means of approval, if any, will be determined within each member country.

3.1.7
lower explosive limit
LEL
concentration of flammable gas or vapour in air, below which the gas atmosphere is not explosive

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3.1.8
pipeline components
elements from which the pipeline is constructed

Note 1 to entry: The following are distinct pipeline elements:

— pipes, including cold formed bends;

— fittings;

EXAMPLE 1 Reducers, tees, factory-made elbows and bends, flanges, caps, welding stubs, mechanical joints.

— ancillaries;

EXAMPLE 2 Valves, expansion joints, insulating joints, pressure regulators, pumps, compressors.

— pressure vessels.

3.1.9
gas main
pipework in a gas infrastructure to which service lines are connected

3.1.10
service line
pipework from the gas main to the point of delivery of the gas into the installation pipework

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3.1.11
installation pipework
pipework downstream of the point of delivery terminating at the appliance inlet connection

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Note 1 to entry: This pipework is normally the property of the customer.

3.1.12
sleeve
purposely installed length of protective pipe through which a gas pipe passes

3.1.13
casing
protection by means of a construction around the pipeline in order to prevent external loads, or third party interference

3.1.14
carrier pipe
existing pipework in which a renovation system is installed

Note 1 to entry: The carrier pipe can be either a conduit pipe or a support pipe.

3.1.15
competent authority
body authorized by the member country to ensure that the pipeline operator fulfils the requirements of this and other relevant standards

3.2 Pressure related terminology

3.2.1
pressure
gauge pressure of the fluid inside the system, measured in static conditions

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3.2.2
design pressure
DP
pressure on which design calculations are based

3.2.3
maximum operating pressure
MOP
maximum pressure at which a system can be operated continuously under normal operating conditions

Note 1 to entry: Normal operating conditions means no fault in any device or stream.

3.2.4
temporary operating pressure
TOP
pressure at which a system can be operated temporarily under control of the regulating devices

3.2.5
maximum incidental pressure
MIP
maximum pressure which a system can experience during a short time, limited by the safety devices

3.2.6
strength test pressure
STP
pressure applied to a system during strength testing

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3.2.7
combined test pressure
CTP
pressure applied to a system during combined testing

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4 Quality

4.1 Quality and safety management

To provide a consistent and appropriate standard of quality management the pipeline operator shall have organizational, operational and administrative procedures to ensure that activities can be undertaken in a safe and technically sound manner. The pipeline operator shall have suitable systems for technical audit, safety audit and performance review to ensure that established procedures and training programmes continue to meet the obligations of the pipeline operator to users. These should take into account experiences gained.

EXAMPLE 1 Operational incidents or other relevant dangerous occurrences.

This system should include, for each activity:

— adequate numbers of competent persons; and

— adequate other resources.

EXAMPLE 2 Vehicles, communication systems and appropriate tools.

4.2 Competence

The qualification of competent persons involved in the design, construction, operation and maintenance of a gas infrastructure, or parts of it, shall be in accordance with the characteristics of the pipeline system they are working on. These characteristics include, but are not limited to the following:

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— family of gas;

— local conditions;

— design or operating pressure;

— materials used in the system;

— jointing techniques; and

— emergency procedures.

5 Gas characteristics

5.1 Gas quality and family

The quality and family of gas supplied through a gas infrastructure shall be specified so that its characteristics are known to system designers and pipeline operators. This specification includes all relevant characteristics which contribute to safe operation and combustion. Changes in the properties of the gas which fall outside pre-determined operating limits shall be notified to pipeline operators in advance.

Gas may also be treated or conditioned for operational and maintenance reasons.

EXAMPLE 1 For the control of leakage.

EXAMPLE 2 For the control of icing conditions at pressure regulating stations and installations.

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Safe operating procedures for systems supplying gases heavier than air shall recognize the tendency for these gases to settle downwards should they escape from the system.

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5.2 Odorization

Gas supplied to end users should possess a distinctive odour.

Where gas is to possess a distinctive odour its presence in the atmosphere shall be readily detectable at all gas concentrations of 20 % of the lower explosive limit and above. Where the gas does not possess a natural distinctive odour one shall be added for the purpose.

The odorant, where added, shall be non-toxic and harmless for the concentrations employed in normal applications, and the odour shall disappear after combustion.

An odorant may be omitted in gas delivered specifically for further processing or other special purposes. In this case alternative means shall be available to detect leaks.

5.3 Toxicity and lack of oxygen

The potential toxic effects of gas constituents and the potential lack of oxygen shall be considered to ensure safety in all work practices undertaken on the gas infrastructure, in using the gas and in dealing with escaping gas.

6 Materials

The characteristics of materials of pipes, fittings and components and the mode of construction of pipelines shall be appropriate to the types of gas being supplied and the conditions under which they are operated.

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Materials and products shall conform to the relevant European Standards or, in their absence, to the national or other established standards and shall be of a quality fit for purpose. Consideration shall be given to the effects of climatic conditions on material behaviour and its consequential influence on performance. Materials can give a different technical performance in risk or long term behaviour when exposed to or stored under extreme climatic conditions.

EXAMPLE 1 At lower temperatures the critical pressure for rapid crack propagation in polyethylene pipe is reduced.

EXAMPLE 2 At low temperatures in steel pipes loss of resilience can occur, and at high temperatures disbondment of coatings on steel pipes can occur.

NOTE The critical pressure for rapid crack propagation in polyethylene pipe is tested and verified according to product standards, e.g. EN 1555.

For further information, reference should be made to the specific standards for the materials concerned.

7 Design

7.1 General

Gas infrastructures are designed to provide a safe and continuous supply of gas. This design considers technical aspects and procedures together with environmental and safety aspects.

The gas infrastructure consists of pipeline components arranged in networks or single lines, with associated pressure regulating stations or installations and connections to consumers via service lines.

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NOTE During the design phase these parts of the system may be considered separately.

Basic data and design principles should be documented together with the actual data as the gas infrastructure is built. Data such as the diameter, material, design pressure, family of gas and routing maps should be available as long as the gas infrastructure is in operation, see 13.2.

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7.2 Basic design data

The design of any gas infrastructure, or part thereof, should commence with a study collecting relevant basic data for the part of the gas infrastructure to be installed. This basic data shall include, but are not limited to the following:

— the family of gas;

— anticipated gas flow;

— design pressure;

— diameter(s);

— construction materials;

— layout of the existing gas infrastructure;

— the need for pressure regulation; and

— provisional routing of pipeline sections.

The design of the gas infrastructure for flow rate capacity shall as a minimum take account of, but not be limited to the following: