SLOVENSKI STANDARD
SIST EN 12186:2015

01-januar-2015

Nadomešča:
SIST EN 12186:2000
SIST EN 12186:2000/A1:2005

Infrastruktura za plin - Plinske postaje za regulacijo tlaka za prenos in distribucijo - Funkcionalne zahteve

Gas infrastructure - Gas pressure regulating stations for transmission and distribution - Functional requirements

Gasinfrastruktur - Gas-Druckregelanlagen für Transport und Verteilung - Funktionale Anforderungen

Infrastructures gazières - Postes de détente régulation de pression de gaz pour le transport et la distribution - Prescriptions fonctionnelles

Ta slovenski standard je istoveten z: **EN 12186:2014**

ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment

SIST EN 12186:2015 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12186

October 2014

ICS 23.060.40; 27.060.20; 75.200

Supersedes EN 12186:2000

English Version

Gas infrastructure - Gas pressure regulating stations for transmission and distribution - Functional requirements

Infrastructures gazières - Postes de détente régulation de pression de gaz pour le transport et la distribution - Prescriptions fonctionnelles

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This European Standard was approved by CEN on 13 September 2014.

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Ref. No. EN 12186:2014 E

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Foreword

This document (EN 12186:2014) 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of an identical text or by endorsement, at the latest by April 2015 and conflicting national standards shall be withdrawn at the latest by April 2015.

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 12186:2000.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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

There is a complete suite of functional standards prepared by CEN/TC 234 "Gas Infrastructure" to cover all parts of the gas infrastructure from the input of gas into the on-shore transmission network up to the inlet connection of gas appliances, including transmission, distribution, storage, compression, pressure regulation and metering, installation, injection of non-conventional gases, gas quality issues and others. In preparing this European Standard, a basic understanding of gas infrastructure by the user has been assumed.

The gas infrastructure is complex and the importance on safety of its construction and use has led to the development of very detailed codes of practice and operating manuals in the member countries. These detailed statements embrace recognized standards of gas engineering and the specific requirements imposed by the legal structures of the member countries.

As gas pressure regulating stations for transmission and distribution are specifically designed for pipelines, they are considered as annexed equipment, and as such are excluded from the scope of the Directive 97/23/EC (Pressure Equipment Directive – PED [11]). However, standard pressure equipment installed in these stations, e.g. gas pressure regulators, safety valves, valves, filters, heat exchangers, vessels, is covered by the directive [15].

Directive 2009/73/EC [13] concerning common rules for the internal market in natural gas and the related Regulation (EC) No 715/2009 [14] on conditions for access to the natural gas transmission networks also aim at technical safety (security) including technical reliability of the European gas system. These aspects are also in the scope of CEN/TC 234 standardization. In this respect CEN/TC 234 evaluated the indicated EU legislation and amended this technical standard accordingly, where required and appropriate.

In this edition of EN 12186 environmental aspects relevant to the design, construction and testing, operation and maintenance, decommissioning and disposal of gas pressure regulating stations are covered in accordance with CEN Guide 4 and CEN/TR 16388.

This European Standard specifies common basic principles for the gas infrastructure. Users of this European Standard should be aware that more detailed national standards and/or codes of practice can 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 basic principles as outlined in Clause 1 of this European Standard.

In the event of conflicts in terms of more restrictive requirements in national legislation/regulation with the requirements of this standard, the national legislation/regulation takes precedence as illustrated in CEN/TR 13737-1 and CEN/TR 13737-2. CEN/TR 13737 gives:

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

— if appropriate, more restrictive national requirements;

— a national contact point for the latest information.

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 Scope

This European Standard contains the relevant functional requirements for gas pressure regulating stations, which form part of gas transmission or distribution systems. It is applicable to the design, materials, construction, testing, operation and maintenance of gas pressure regulating stations.

This European Standard does not apply to gas pressure regulating stations commissioned prior to the publication of this standard.

The stations covered by this European Standard have a maximum upstream operating pressure which does not exceed 100 bar. For higher maximum upstream operating pressures this standard should be used as a guideline.

If the inlet pipework of the station is a service line and the maximum upstream operating pressure does not exceed 16 bar and the design flow rate is equal to or less than 200 m^3/h under normal conditions, EN 12279 applies.

Basic system requirements for gas pressure regulating stations are contained in this European Standard. Requirements for individual components (valves, regulators, safety devices, pipes, etc.) or installation of the components are contained in the appropriate European Standards.

NOTE For combined regulating and measuring stations, the additional requirements of EN 1776 can apply.

The requirements in this European Standard do not apply to the design and construction of auxiliary facilities such as sampling, calorimetering, odorization systems and density measuring. These facilities are covered by the appropriate European Standards, where existing, or other relevant standards.

The requirements of this European Standard are based on good gas engineering practice under conditions normally encountered in the gas industry. Requirements for unusual conditions cannot be specifically provided for, nor are all engineering and construction details prescribed.

The requirements in this European Standard are based on the physical and chemical data of gaseous fuels – including non-conventional gases – in accordance with Table 1 of EN 437:2003+A1:2009 for first and second family gases. Additional requirements in the case of gaseous fuels heavier than air and/or sour gases are not covered by this European Standard.

The objective of this European Standard is to ensure the safe operation of such stations. This does not, however, relieve all concerned of the responsibility for taking the necessary care and applying effective quality management during the design, construction and operation.

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 334, *Gas pressure regulators for inlet pressures up to 100 bar*

EN 437:2003+A1:2009, *Test gases - Test pressures - Appliance categories*

EN 1127-1, *Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology*

EN 1594, *Gas infrastructure - Pipelines for maximum operating pressure over 16 bar - Functional requirements*

EN 1775, *Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations*

EN 10204, *Metallic products - Types of inspection documents*

EN 12007-1, *Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 1: General functional requirements*

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

EN 12732, *Gas infrastructure - Welding steel pipework - Functional requirements*

EN 13463-1, *Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements*

EN 14382, *Safety devices for gas pressure regulating stations and installations - Gas safety shut-off devices for inlet pressures up to 100 bar*

EN 15001-1, *Gas Infrastructure - Gas installation pipework with an operating pressure greater than 0,5 bar for industrial installations and greater than 5 bar for industrial and non-industrial installations - Part 1: Detailed functional requirements for design, materials, construction, inspection and testing*

EN 16348, *Gas infrastructure - Safety Management System (SMS) for gas transmission infrastructure and Pipeline Integrity Management System (PIMS) for gas transmission pipelines - Functional requirements*

EN 60079-10-1, *Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres*

EN 60079-14, *Explosive atmospheres - Part 14: Electrical installations design, selection and erection*

EN 62305-1, *Protection against lightning - Part 1: General principles*

EN 62305-2, *Protection against lightning - Part 2: Risk management*

EN 62305-3, *Protection against lightning - Part 3: Physical damage to structures and life hazard*

EN 62305-4, *Protection against lightning - Part 4: Electrical and electronic systems within structures*

CEN/TS 15399, *Gas Supply Systems - Guidelines for Management systems for Gas Distribution Network*

3 Terms, definitions, symbols and abbreviations

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

3.1 General

3.1.1
authorized person
competent person who is appointed to fulfil a given task on gas pressure regulating stations

Note 1 to entry: The appointment procedure is defined in each member country.

3.1.2
competent person
person who is trained, experienced and approved to perform activities relating to gas pressure regulating stations

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

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

3.1.4
volume under normal conditions
quantity of gas which in a dry state occupies a volume of 1 m^3 at a pressure of 1,013 25 bar absolute and at a temperature of 0 °C

3.1.5
hazardous area
area in which an explosive or flammable gas atmosphere is or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of equipment

[SOURCE: EN 60079-10-1:2009]

3.1.6
hazardous area zones
hazardous areas are classified into zones based upon the frequency of the occurrence and the duration of an explosive gas atmosphere

[SOURCE: EN 60079-10-1:2009]

3.2 Station

3.2.1
cavity wall
wall formed from two layers such as brick or blockwork with a space between

3.2.2
enclosed installation
plant installed in an enclosed space (apart from any necessary ventilation apertures)

3.2.3
open-air installation
plant installed in the open air, which may or may not be protected by a canopy

3.2.4
separate building
building which is detached from any other building and is used exclusively for the enclosed installation of gas pressure regulating and/or measuring equipment and ancillaries and can be accessed by personnel

3.2.5
cabinet station
enclosed space (apart from any necessary ventilation apertures), which is used exclusively to house gas pressure regulating and/or measuring equipment and ancillaries and is too small for access by personnel

3.2.6
underground station
space, partly or totally below ground level in which the gas pressure regulating and/or measuring equipment and ancillaries are installed

3.2.7
component
any item from which a gas pressure regulating station is constructed

Note 1 to entry: A distinction is drawn between the following groups of components:

– equipment – e.g. valves, meters, preheaters, line filters, safety shut-off devices and pressure regulators which are used to control the flow of gas in and out of the station;

– pipework – e.g. pipe, reducers, bends, tees and insulating joints which are used to connect the equipment;

– ancillaries – additional devices and instrumentation which ensure that the equipment functions correctly.

3.2.8
inlet pipework
connecting pipework through which gas enters the station

3.2.9
main
pipework in the gas infrastructure to which service lines are connected

3.2.10
outlet pipework
connecting pipework through which gas leaves the station

3.2.11
pressure regulating station
installation comprising all the equipment including the inlet and outlet pipework as far as the isolating valves and any structure within which the equipment is housed, used for gas pressure regulation and over-pressure protection

3.2.12
service line
pipework from the main to the point of delivery of the gas into the installation pipework

3.2.13
standard pressure equipment
equipment covered by Directive 97/23/EC (Pressure Equipment Directive - PED)

EXAMPLE Gas pressure regulators, safety valves, valves, filters, heat exchangers, vessels.

Note 1 to entry: See Article 1 No. 3.1 of Directive 97/23/EC and Guideline 1/17 of the Commission's Working Group "Pressure" [15].

3.2.14
commissioning
activities required to fill pipework, equipment and assemblies with gas for the first time and to perform test runs to check the system's integrity

3.2.15
decommissioning
activities required to take out of service any pipework, station, equipment or assemblies filled with gas and to disconnect them from the system

3.2.16
inspection
process of measuring, examining, testing, gauging or otherwise determining the status of items of the pipeline system or installation and comparing it with the applicable requirements

3.2.17
maintenance
combination of all technical and associated administrative actions intended to keep an item in, or restore it to, a state in which it can perform its required function

Note 1 to entry: Maintenance includes surveillance, inspection, function check-out, overhaul and repair.

Note 2 to entry: For further terms and definitions related to maintenance, see EN 13306.

3.2.18
disposal
activities to be performed after components of a decommissioned gas pressure regulating station have been dismantled

3.3 Pressure, design and testing

3.3.1
design factor
f_o
factor applied when calculating the wall thickness or design pressure

3.3.2
design flow rate
flow rate on which the design calculations are based

3.3.3
design pressure
DP
pressure on which design calculations are based

Note 1 to entry: A part of a pressure regulating station designed for a design pressure DP can comprise components designed for a different maximum allowable pressure (PS).

3.3.4
pressure
gauge pressure of the fluid inside the system, measured in static conditions

3.3.5
operating pressure
OP
pressure which occurs within a system under normal operating conditions

3.3.6
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 are: no fault in any device or stream.

3.3.7
temporary operating pressure
TOP
pressure at which a system can be operated temporarily under control of regulating devices

3.3.8
maximum incidental pressure
MIP
maximum pressure which a system can experience during a short time, limited by the safety devices