

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12186:2014 sisaldab Euroopa standardi EN 12186:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 12186:2014 consists of the English text of the European standard EN 12186:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 22.10.2014.	Date of Availability of the European standard is 22.10.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 23.060.40, 27.060.20, 75.200

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

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

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

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

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.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	4
1 Scope	6
2 Normative references	6
3 Terms, definitions, symbols and abbreviations	7
3.1 General.....	7
3.2 Station	8
3.3 Pressure, design and testing.....	10
3.4 Pressure control	11
3.5 Continuity of supply	12
4 Quality and management system.....	13
5 Environmental impact	13
6 Layout of the gas pressure regulating station	13
6.1 General.....	13
6.2 Layout of the site	14
6.3 Site security.....	14
7 Housings.....	14
7.1 General.....	14
7.2 Requirements for housings	15
7.3 Underground stations	16
8 Design of the station	17
8.1 General.....	17
8.2 Continuity of supply	17
8.3 Gas pre-heating.....	17
8.4 Filters, separators, scrubbers	18
8.5 Noise control	18
8.6 Apertures and vent lines	18
8.7 Hazardous areas	19
8.8 Lightning and earthing.....	19
8.9 Cathodic protection and electrical isolation.....	20
8.10 Pressure control equipment and ancillaries.....	20
8.11 Pipework	20
8.12 Welding	21
8.13 Instrumentation pipework	21
8.14 Stress analysis.....	22
8.15 Standard pressure equipment.....	23
8.16 Isolating valves	23
9 Pressure control	23
9.1 General.....	23
9.2 Pressure regulating system.....	24
9.3 Pressure safety system.....	24
9.4 Safety shut-off devices	26
9.5 Monitors.....	26
9.6 Venting pressure safety devices.....	27
9.7 Pressure alarm system	27
9.8 Instrumentation.....	27
9.9 Bypasses	27

10	Testing	27
10.1	General	27
10.2	Pressure testing	28
10.3	Reporting	28
11	Commissioning	29
12	Operation and maintenance	29
12.1	General	29
12.2	Data	30
12.3	Maintenance	30
12.4	Training	31
12.5	Work undertaken	31
12.6	Fire fighting	31
13	Decommissioning and disposal	31
13.1	Decommissioning	31
13.2	Disposal	32
Annex A	(informative) Glossary	33
Annex B	(informative) Significant technical changes between this European Standard and the previous edition	35
Bibliography	37

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 m³/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, calorimetry, 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