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

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12186:2025 sisaldab Euroopa standardi EN 12186:2025 ingliskeelset teksti.	This Estonian standard EVS-EN 12186:2025 consists of the English text of the European standard EN 12186:2025.
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 and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 10.12.2025.	Date of Availability of the European standard is 10.12.2025.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

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

EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Gas infrastructure - Gas pressure control 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 10 November 2025.

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, 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, Türkiye and United Kingdom.

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

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European foreword

This document (EN 12186:2025) 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 June 2026, and conflicting national standards shall be withdrawn at the latest by June 2026.

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 12186:2014.

EN 12186:2025 includes the following significant technical changes with respect to EN 12186:2014:

— the scope of the standard is expanded and now covers natural gas, blends of natural gas with hydrogen and hydrogen, as mentioned in CEN/TR 17797;

— measures to avoid greenhouse gas emissions were further detailed throughout the document;

— measures for adapting to climate change were included;

— as part of comprehensive automation, regulators, valves and safety devices are increasingly being equipped with communication interfaces so that they can be integrated into the overall information management of a pressure control station. The relevant requirements for these smart systems and equipment are defined in this document;

— gas pressure control stations are increasingly being integrated into operators' communication infrastructures. This has been taken into account in this edition of EN 12186 by including basic requirements for information security and safety-related electrical/electronic solutions.

Annex E provides the details of significant technical changes between this document and the previous edition.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

Introduction

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.

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 injection, transmission, compression, pressure control, storage, blending, gas treatment, odorization, distribution, measuring, and associated installation pipework, as well as related requirements such as safety, gas quality, sustainability, environment and emissions. Within the scope of CEN/TC 234, gaseous energy carriers and blends describe gases which are in the gaseous state when conveyed in the gas pipeline infrastructure such as hydrogen, hydrogen rich, and methane rich gases, dimethyl ether (DME) and propane and butanes used for combustion and/or as feedstock, excluding steam and compressed air.

In preparing this document, a basic understanding of gas infrastructure by the user has been assumed. CEN/TC 234 standards are maintained to provide the state of the art and especially to facilitate the use of green gases in the gas infrastructure.

As gas pressure control 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 2014/68/EU (Pressure Equipment Directive – PED [3]). 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 [4].

Directive (EU) 2024/1788 [9] on common rules for the internal markets for renewable gas, natural gas and hydrogen and the related Regulation (EU) 2024/1789 [10] on the internal markets for renewable gas, natural gas and hydrogen also aim at technical safety (security) including technical reliability of the European gas and hydrogen system. These aspects and Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources [5] are also in the focus 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.

This document has been adapted to the requirements of the Regulation (EU) 2024/1787 on the reduction of methane emissions in the energy sector [8].

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

This document supports the mainstreaming climate adaptation into European standards according to the European Climate Law ((EU) 2021/1119 [6]) and the 2021 EU Adaptation Strategy for adaptation to climate change.

This document specifies common basic principles for the gas infrastructure. Users of this document are expected be aware that more detailed national standards and/or codes of practice can exist in the CEN member countries.

This document 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 document.

1 Scope

This document specifies the functional requirements relevant for design, materials, construction, testing, operation and maintenance of gas pressure control stations to ensure their reliability in terms of safety of the station itself and the downstream system and continuity of service.

This document is applicable for gas pressure control stations which are part of gas transmission or distribution systems for hydrogen, and hydrogen rich, and methane rich gases. Additional requirements in the case of gases heavier than air and/or toxic or corrosive gases are not covered by this document.

This document does not apply to gas pressure control stations in operation prior to the publication of this document. However, Annex D of this document can be used as guidance for the evaluation of stations in operation prior to the publication of this document, regarding the change of the type of gas, e.g. repurposing for the use with hydrogen.

The stations covered by this document have a maximum upstream operating pressure, which does not exceed 100 bar. For higher maximum upstream operating pressures, this document can 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 2000 kW based on the gross calorific value or less, EN 12279 applies.

This document contains the basic system requirements for gas pressure control stations. 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 control and measuring stations, the additional requirements of EN 1776 can apply.

The requirements in this document 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 applicable national standards.

The requirements of this document 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 objective of this document 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 and safety management during the design, construction, operation and maintenance.

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 334, *Gas pressure regulators for inlet pressures up to 10 MPa (100 bar)*

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 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 12007-3, *Gas infrastructure — Pipelines for maximum operating pressure up to and including 16 bar — Part 3: Specific functional requirements for steel*

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

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

EN 14382, *Gas safety shut-off devices for inlet pressures up to 10 MPa (100 bar)*

EN 17649, *Gas infrastructure — Safety Management System (SMS) and Pipeline Integrity Management System (PIMS) — Functional requirements*

EN ISO 4126-1, *Safety devices for protection against excessive pressure — Part 1: Safety valves (ISO 4126-1)*

EN ISO 4126-4, *Safety devices for protection against excessive pressure — Part 4: Pilot-operated safety valves (ISO 4126-4)*

EN ISO 4126-5, *Safety devices for protection against excessive pressure — Part 5: Controlled safety pressure relief systems (CSPRS) (ISO 4126-5)*

EN ISO 80079-36, *Explosive atmospheres — Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirements (ISO 80079-36)*

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

EN IEC 60079-14, *Explosive atmospheres — Part 14: Electrical installation design, selection and installation of equipment, including initial inspection*

EN IEC 61000-6-4, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments*

EN IEC 61340-5-1, *Electrostatics — Part 5-1: Protection of electronic devices from electrostatic phenomena — General requirements*

EN IEC 62443 (all parts), *Security for industrial automation and control systems*

3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the following terms, definitions, symbols and abbreviations apply. Annex A provides a glossary and gives translation to French and German.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/ui

— IEC Electropedia: available at https://www.electropedia.org/