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Gas Infrastructure - Compressor stations - Functional requirements

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 12583:2022+A1:2024 sisaldab Euroopa standardi EN 12583:2022+A1:2024 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.11.2024.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 12583:2022+A1:2024 consists of the English text of the European standard EN 12583:2022+A1:2024.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 13.11.2024.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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ICS 23.140, 75.200

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EUROPEAN STANDARD

EN 12583:2022+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2024

ICS 23.140; 75.200

Supersedes EN 12583:2022

English Version

Gas Infrastructure - Compressor stations - Functional requirements

Infrastructures gazières - Stations de compression -
Prescriptions fonctionnelles

Gasinfrastruktur - Verdichterstationen - Funktionale
Anforderungen

This European Standard was approved by CEN on 20 March 2022 and includes Amendment 1 approved by CEN on 25 July 2024.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 12583:2022+A1:2024) 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of an identical text or by endorsement, at the latest by May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

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 includes Amendment 1 approved by CEN on 25 July 2024.

This document supersedes A1 EN 12583:2022 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 *deleted text* A1

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

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 onshore transmission network up to the inlet connection of gas appliances, including including A1 injection, transmission, compression, pressure control, storage, blending, gas treatment, odourisation, 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. A1 In preparing this document 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.

A1 Directive (EU) 2024/1788 A1 concerning common rules for the internal market in natural gas and the related Regulation A1 (EU) 2024/1789 A1 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 document accordingly, where required and appropriate.

In this edition of EN 12583 environmental aspects relevant to the design, construction and testing, operation and maintenance, decommissioning and disposal of compressor stations in the scope of this document are covered in accordance with CEN Guide 4 and CEN/TR 16388.

Directive ^(A1) (EU) 2018/2001, Articles 3 and 7 ^(A1) are with regard to the calculation of the share of energy from renewable sources and the contribution of hydrogen originating from renewable sources in the total fuel mix. In this respect CEN/TC 234 evaluated the indicated EU legislation and amended this document.

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, Turkey and the United Kingdom.

1 Scope

This document describes the specific functional requirements for the design, construction, operation, maintenance and disposal activities for safe and secure gas compressor stations.

This document applies to new gas compressor stations with a Maximum Operating Pressure (MOP) over 16 bar and with a total shaft power over 1 MW. For existing compressor stations, this document applies to new compressor units. Where changes/modifications to existing installations or gas composition take place, due account can be taken of the requirements of this document.

This document does not apply to gas compressor stations or compressor units operating prior to the publication of this document. For existing sites this document can be used as guidance.

The purpose of this document is to:

- ensure the health and safety of the public and all site personnel;
- cover environmental issues;
- avoid incidental damage to nearby property; and
- open the gas infrastructure to accommodate renewable gases, including a possible design for hydrogen.

This document specifies common basic principles for the gas infrastructure. Users of this document are expected to 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 above-mentioned basic principles.

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

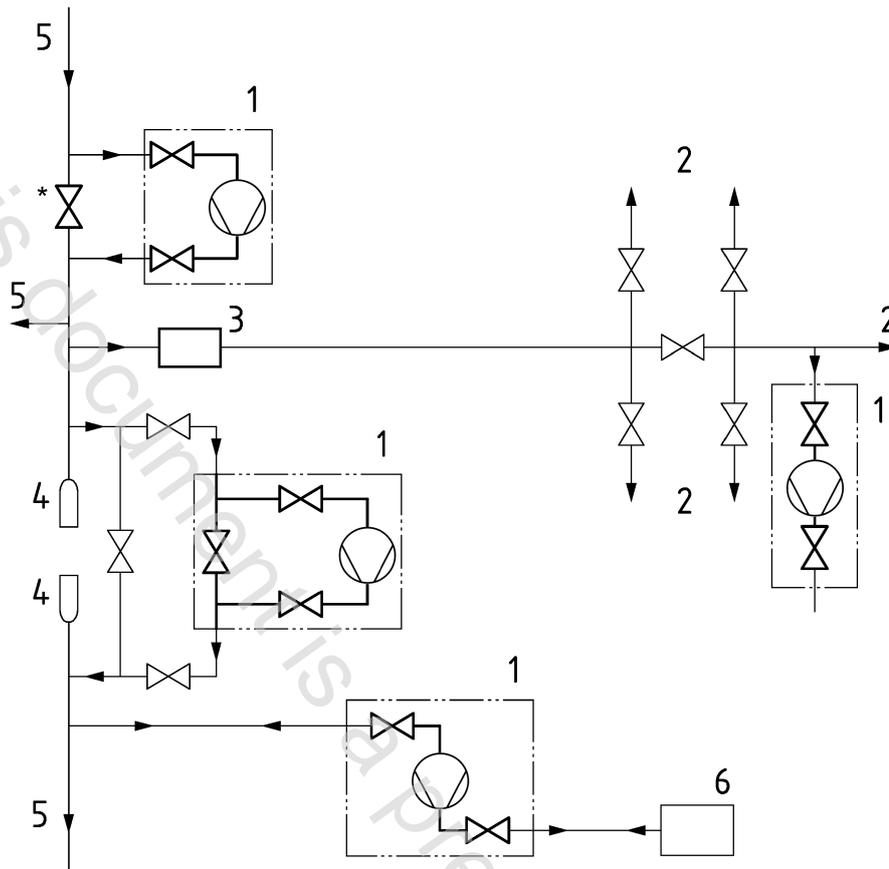
- clarification of all legislations/regulations applicable in a member state;
- if appropriate, more restrictive national requirements;
- a national contact point for the latest information.

This document does not apply to:

- off-shore gas compressor stations;
- gas compressor stations for compressed gas filling-stations;
- customer installations downstream of the point of custody transfer;
- design and construction of driver packages (see Annex C);
- mobile compressor equipment.

For supplies to utility services such as small central heating boilers reference is made to EN 1775.

Figure 1 shows a schematic representation of compressor stations in a gas infrastructure. For further information refer to Annexes A, B, C, D, E and F.



Key

- | | | | |
|---|---|---|-------------------|
| 1 | compressor station | 4 | pig traps |
| 2 | distribution system | 5 | transmission line |
| 3 | metering and/or pressure limiting or regulation station | 6 | storage facility |
| * | part of pipeline but operated by safety control systems | | |

NOTE Parts indicated in frames by thick lines are within the scope of this document.

Figure 1 — Schematic representation of compressor stations in the gas infrastructure

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 1012-3, *Compressors and vacuum pumps - Safety requirements - Part 3: Process compressors*

EN 14181, *Stationary source emissions - Quality assurance of automated measuring systems*

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

EN 12186, *Gas infrastructure - Gas pressure regulating stations for transmission and distribution - Functional requirements*

EN 12266-1, *Industrial valves - Testing of metallic valves - Part 1: Pressure tests, test procedures and acceptance criteria - Mandatory requirements*

EN 12266-2, *Industrial valves - Testing of metallic valves - Part 2: Tests, test procedures and acceptance criteria - Supplementary requirements*

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

EN 14505, *Cathodic protection of complex structures*

EN 60079-20-1, *Explosive atmospheres — Part 20-1: Material characteristics for gas and vapour classification — Test methods and data*

EN IEC 61000-6-2, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments*

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

EN 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems*

EN 61511 (all parts), *Functional safety - Safety instrumented systems for the process industry sector*

EN ISO 10437, *Petroleum, petrochemical and natural gas industries - Steam turbines - Special-purpose applications (ISO 10437)*

EN ISO 10439 (all parts), *Petroleum, chemical and gas service industries - Axial and centrifugal compressors and expander-compressors - Part 4: Expander-compressors (ISO 10439)*

EN ISO 13849-1, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1)*

ISO 3977-1, *Gas turbines — Procurement — Part 1: General introduction and definitions*

ISO 3977-2, *Gas turbines — Procurement — Part 2: Standard reference conditions and ratings*

ISO 13707, *Petroleum and natural gas industries — Reciprocating compressors*

3 Terms and definitions

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

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

alarm

signal provided to an operator which indicates the approach or the presence of an unwanted event