

Systemes d'alimentation en gaz - Stations de compression -Prescriptions fonctionelles

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12583

August 2000

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English version

**Gas supply systems - Compressor stations - Functional
requirements**

Systèmes d'alimentation en gaz - Stations de compression
- Prescriptions fonctionnelles

Gasversorgungssysteme - Gasverdichterstationen -
Funktionale Anforderungen

This European Standard was approved by CEN on 4 February 2000.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 234 "Gas supply", 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of an identical text or by endorsement, at the latest by February 2001, and conflicting national standards shall be withdrawn at the latest by February 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

There is a complete suite of functional standards prepared by CEN/TC 234 "Gas Supply" to cover all parts of the gas supply system from the input of gas to the transport system up to the inlet connection of the gas appliances, whether for domestic, commercial or industrial purposes.

In preparing this standard a basic understanding of gas supply by the user has been assumed.

Gas supply systems are complex and the importance on safety of their 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 recognised standards of gas engineering and the specific requirements imposed by the legal structures of the member countries.

This European Standard supersedes all other European standard for gas compressor stations for gas supply systems above 16 bar.

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1 Scope

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

This European standard applies to gas compressor stations with a Maximum Operating Pressure (MOP) over 16 bar and with a total shaft power over 1 MW.

This European standard need not be applied to gas compressor stations operating prior to the publication of this standard.

For gas compressor stations already in service, this standard applies by analogy only to the parts of the stations to be modified, extended or disposed. This standard can also be applied at any time to areas of operation and maintenance.

The purpose of this European standard is to ensure the safety of the public and the safety of all the personnel involved, to cover environmental issues and avoid damage to property.

This European Standard specifies common basic principles for gas supply systems. Users of this European Standard should be aware that more detailed national standards and/or codes of practice may exist in the CEN member countries.

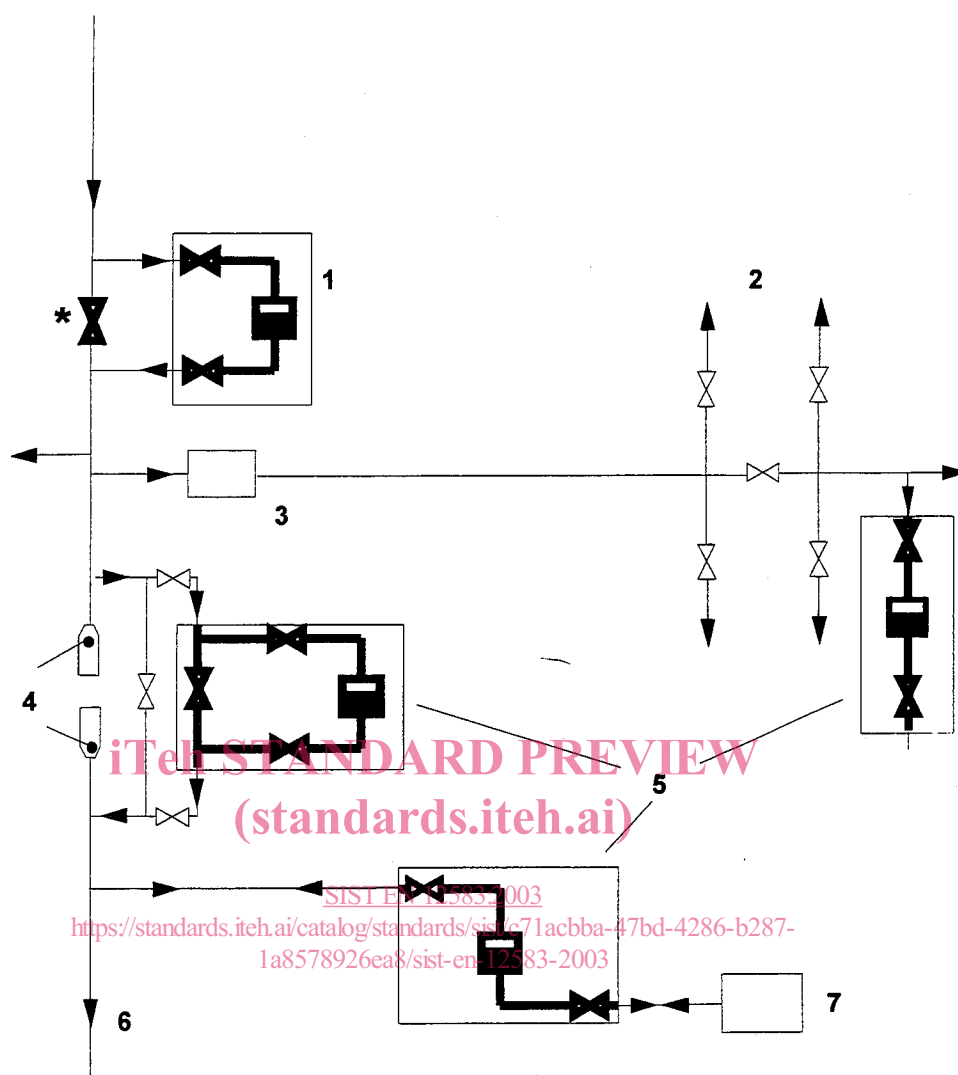
This European Standard is intended to be applied in association with the national standards and/or codes of practice setting out the above mentioned principles.

In the event of conflicts in terms of more restrictive requirements in the national legislation/regulation with the requirements of this standard, the national legislation/regulation shall take precedence.

This standard does not apply to :

- off-shore gas compressor stations;
- gas compressor stations for compressed natural gas filling-stations

Figure 1 shows a schematic representation of compressor stations in a gas supply system.



Key

- 1 Compressor station
- 2 Distribution system
- 3 Metering and/or pressure limiting or regulation station
- 4 Pig's traps
- 5 Compressor station
- 6 Transmission line
- 7 Storage facility

NOTE Parts indicated in frames by thick lines are within the scope of this standard
 (* part of pipeline but operated by SCS)

Figure 1 - Schematic representation of compressor stations in a gas supply system

2 Normative reference

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 954-1 *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design*

EN 1012-1 *Compressors and vacuum pumps - Safety requirements - Part 1: Compressors*

EN 1594 *Gas supply systems - Pipelines for maximum operating pressure over 16 bar - Functional requirements*

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

EN 12732 *Gas supply systems - Welding steel pipework - Functional requirements*

EN 50081-2 *Electromagnetic compatibility - Generic emission standard - Part 2: Industrial environment*

EN 50082-2 *Electromagnetic compatibility - Generic immunity standard - Part 2: Industrial environment*

EN 60079-10 *Electrical apparatus for explosive gas atmospheres - Part 10: Classification of hazardous areas (IEC 60079-10:1995)*

EN ISO 9000-1 *Quality management and quality assurance standards - Part 1: Guidelines for selection and use (ISO 9000-1:1994)*

EN ISO 9001 *Quality systems - Model for quality assurance in design/development, production, installation and servicing (ISO 9001:1994)*

EN ISO 9002 *Quality systems - Model for quality assurance in production, installation and servicing (ISO 9002:1994)*

EN ISO 9003 *Quality systems - Model for quality assurance in final inspection and test (ISO 9003:1994)*

EN ISO 9004-1 *Quality management and quality system elements - Part 1: Guidelines (ISO 9004-1:1994)*

EN ISO 14001 *Environmental management systems - Specification with guidance for use*

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 10437 *Petroleum and natural gas industries - Special-purpose steam turbines for refinery service*

ISO/ DIS 10439:1996 *Centrifugal compressors for general refinery service in the petroleum and natural gas industries (API STD 617)*

ISO/ DIS 13707:1996 *Reciprocating compressors for the petroleum and natural gas industries*

3 Definitions

For the purposes of this European standard the following definitions apply.

3.1

Gas compressor station

An installation used for:

- transporting gas in pipelines;
- compressing gas from a pipeline to a gas storage facility or vice versa.

More than one of the above functions could be done simultaneously or alternatively.

3.2 Gas

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

3.3

Gas supply system

A pipeline system including pipework and associated stations or plants for the transmission and distribution of gas.

3.4

Control room

A room housing the control system from which the station personnel can, when necessary, take action on the process.

3.5

Remote Control Centre

A continuously manned (24 hours) operating centre, from which the gas supply system, including stations, are remotely supervised and/or controlled.

3.6

Station auxiliary equipment

All plant and equipment which supports the prime mover and gas compressor.

Example Electrical power, lighting, gas treatment systems

3.7

Station control system

SCS

A system to monitor, control and protect the compressor station and supervises the unit control system (UCS). In addition it can interface with the remote control centre (RCC).

3.8

Station or Unit recycle line

A portion of piping to convey gas from the discharge to the suction side of a station or a compressor unit.

3.9

Suction pipework

Pipework upstream of the compressor.

3.10

Isolation valves

A valve system which permits isolation of a part or the complete gas compressor station.

3.11

Services pipework

Pipework in which fluids other than the gas are conveyed.

EXAMPLE Air, oil, water or steam.

3.12

Vent system

A system including pipework, valves, silencer, if any, and stack to convey gas to a safe location.

3.13

Compressor unit

A set of prime mover (driver), gas compressor, control system and their auxiliary equipment which includes unit valves and associated pipework to compress gas (see Annex D).

3.14

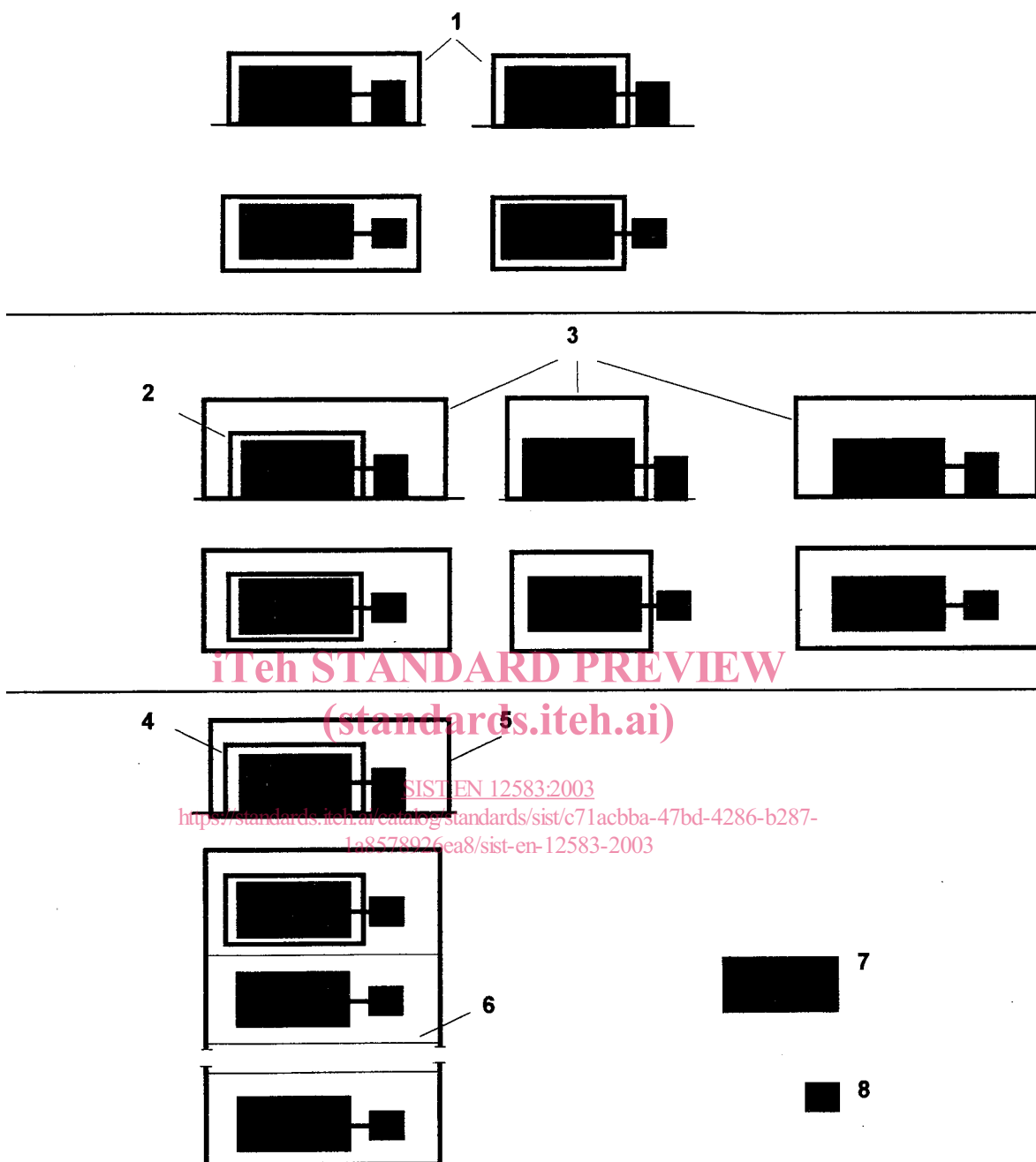
Compressor unit building

A structure where one or more drivers with compressors and auxiliary equipment are installed.

Operation and maintenance are normally carried out inside the building.

Enclosures could be installed inside the compressor unit building to confine part of a compressor unit.

Temporary shields could be installed to isolate a compressor unit during maintenance. (see Fig. 2)



Key

- 1 Enclosure
- 2 Enclosure
- 3 Building
- 4 Enclosure
- 5 Building
- 6 Walls or shields
- 7 Driver
- 8 Compressor

Figure 2 - Compressor-unit housing

3.15

Compressor unit housing

A structure to contain the compressor unit which can consist of compressor unit building, enclosure or a combination of both (see figure 2).

3.16

Enclosure

A structure (a close framework) to surround a driver and/or a compressor and some of their auxiliary equipment in order to protect them from outside influence and avoid possible hazards to personnel.

(see Figure 2)

3.17

Fuel gas system

A system which conditions the fuel gas prior to it entering the prime mover. It can consist of gas filtration, scrubbing, heating, pressure regulating, metering and compression.

3.18

Unit Control System

UCS

A system to start, stop, monitor, control and protect the compressor unit.

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3.19

Compressor surge

A flow and/ or pressure instability in the machine.

3.20

Commissioning

Activities required to fill pipework, equipment and assemblies with gas for the first time and carry out test runs to check the system's integrity.

3.21

Decommissioning

The activities required to take out of service any pipework, stations, equipment or assemblies filled with gas and to disconnect them from the system.

3.22

Disposal

Activities to be performed after components of a decommissioned gas compressor station has been dismantled.

3.23**Occupier**

The person who manages and controls the work in a compressor station. That person may be a company, an individual manager or the owner.

3.24**Test pressure****TP**

Pressure to which the gas supply system is subjected to ensure that it can be operated safely.

3.25**Maximum incidental pressure****MIP**

The maximum pressure which a gas system can experience during a short time, limited by the safety devices.

3.26**Temporary operating pressure****TOP**

Pressure at which a system can be operated temporarily under control of the regulating devices.

3.27**Design pressure****DP**

The pressure on which design calculations are based.

3.28**Maximum operating pressure****MOP**

The maximum pressure at which a system can be operated continuously under normal conditions.

NOTE Normal conditions are: no fault in any device or stream.

3.29**Operating pressure****OP**

The pressure which occurs within a system under normal operating conditions.

3.30**Settling out pressure****SOP**

Resulting pressure in the pipework and equipment after the compressor station or the compressor unit(s) are isolated without depressurisation.