
Sistemi oskrbe s plinom – Plinovodi z delovnim tlakom, večjim od 0,5 bar, za industrijsko rabo in rabo v javnih prostorih - 1. del: Podrobne funkcionalne zahteve za načrtovanje, materiale, gradnjo, nadzor in preskušanje

Gas supply systems - Gas installation pipework with an operating pressure greater than 0,5 bar for industrial, commercial and non-domestic gas installations - Part 1: Detailed functional requirements for design, materials, construction, inspection and testing

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**Gas Supply Systems - Gas installation pipework with an
operating pressure greater than 0,5 bar for industrial,
commercial and non-domestic gas installations - Part 1: Detailed
functional requirements for design, materials, construction,
inspection and testing**

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 234.

If this draft becomes a European Standard, 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.

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Foreword

This document (prEN 15001-1:2004) has been prepared by Technical Committee CEN/TC 234 "Gas supply", the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Annexes A to E are informative.

This standard includes requirements concerning current design practice and reflects the state of the art at the time of publication. It provides clear solutions for users of the standard. Other design solutions and construction materials, as well as new developments, can be used if equal or greater safety than that required by this EN can be demonstrated or established.

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 transmission 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.

1 Scope

This standard specifies detailed functional requirements for the design, selection of materials, construction, inspection and testing of industrial gas installations and assemblies with an operating pressure greater than 0,5 bar and of non-industrial gas installations with an operating pressure greater than 5 bar in buildings and areas intended for domestic, commercial, public and mixed uses, starting from the gas supplier's behind the network operator's point of delivery up to the inlet connection to the gas appliance; normally the inlet isolation valve. This standard also covers the inlet connection to the gas appliance comprising of the pipework that does not fall within the scope of the appliance standard.

This standard applies to gas installations operating at ambient temperatures between -20°C and 40°C and operating pressures up to and including 60 bar. For operating conditions outside these limitations, reference should be made to EN 13480 for metallic pipework.

For industrial gas installations up to and including 0,5 bar and for non-industrial (domestic and commercial) gas installations up to and including 5 bar in buildings and areas intended for domestic, commercial, public and mixed use, EN 1775 applies.

For gas installations that do not fall within the scope of EN 1775 or other European standards, this standard applies.

In this standard, the term "gas" refers to combustible gases, which are gaseous at 15°C and 1 013 mbar absolute atmospheric pressure. These gases are commonly referred to as manufactured gas, natural gas or Liquefied Petroleum Gas (LPG). They are also referred to as first, second or third family gases (see table 1 of EN 437:1993).

LPG storage vessels (including all ancillaries fitted directly to storage vessels) are excluded. Also excluded are LPG installations and sections of LPG installations operating at vapour pressure.

In this standard, all pressures are gauge pressures unless otherwise stated.

This standard has been harmonised to address the essential safety requirements of the Pressure Equipment Directive (PED, 97/23/EC) for the joining of gas installation pipework (assemblies) falling within the scope of the PED. However "...this Directive does not cover the assembly of pressure equipment on the site and under the responsibility of the user, as in the case of industrial installations." (PED, Preamble, 5th recital, last paragraph).

Although in this respect, the standard takes into account the essential safety requirements of the PED, no inference can be drawn from this as to whether or not the installation or parts of the installation falls within the scope of the PED. Reference should be made to the PED and national legislation.

For gas installations within the scope of this standard, national legislation and regulations have to be taken into account.

Functional requirements for commissioning, operation and maintenance of industrial gas installations and assemblies with an operating pressure greater than 0,5 bar and of gas installations greater than 5 bar in buildings and areas intended for domestic, commercial, public and mixed uses are described in WI 002340027, part 2 of this standard.

2 Normative references

The following referenced documents are indispensable for the application 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.

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EN 1714 : 2000, *Non-destructive examination of welds – Ultrasonic examination of welded joints.*

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ISO 9329-4 : 1994, *Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 4: Austenitic stainless steels.*

MSS SP 97 : 1995, *Integrally reinforced forged branch outlet fittings - socket welding, threaded and butt-welding ends*

SAE J429 : 1999, *Mechanical and Material Requirements for Externally Threaded Fasteners.*

SAE J995 : 1999, *Mechanical and Material Requirements for Steel Nuts.*

3 Terms and definitions

3.1 Definitions relating to pressure

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

3.1.1

pressure

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

3.1.2

design pressure (DP)

pressure at which the design calculations are based

3.1.3

maximum incidental pressure (MIP)

maximum pressure which pipework can experience during a short time, limited by the safety devices

3.1.4

operating pressure (OP)

pressure which occurs within pipework under normal operating conditions

3.1.5

maximum operating pressure (MOP)

maximum pressure at which pipework can be operated under normal operating conditions

3.1.6

tightness test pressure

pressure applied to pipework during tightness testing

3.1.7

strength test pressure (STP)

pressure applied to pipework during strength testing

3.1.8

combined test pressure (CTP)

pressure applied to a system during combined (i.e. tightness and strength) testing

3.2 Definitions relating to the gas installation

3.2.1

pipework

assembly of components

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3.2.2 components

any item from which a gas supply system or installation is constructed. A distinction is drawn between the following groups of components:

- ancillaries (for example; pressure regulators, valves, safety devices, expansion joints, and insulating joints);
- pipes, including bends made from pipe;
- instrumentation pipework;
- fittings (for example; reducers, tees, factory-made elbows, flanges, dome ends, welding stubs, and mechanical joints)

3.2.3 point of delivery

point of transfer of ownership of gas from the supplier to the user

NOTE This can be at a means of isolation or at the meter outlet connection.

3.2.4 user(s)

person(s) responsible for the safety of the gas installation and associated risks on a site

NOTE Normally the user will be the site occupier or owner. It should be assumed that every user has a responsibility for work performed on their site, whether or not the work is performed directly for the user or not. This does not mean that they cannot take advice from an independent specialist.

3.2.5 installation pipework

pipework downstream of the point of delivery terminating at the appliance inlet connection

NOTE This pipework is normally the property of the customer

3.2.6 pipework

assembly of pipes and fittings

3.2.7 ventilated space

space where the air is continuously changed by natural or mechanical means

3.2.8 safety zone

area around the pipework from which persons who are not involved in the strength test are excluded during testing

3.2.9 equipotential bond

means of ensuring that metallic gas pipework and other metallic parts of the building are at the same potential

NOTE For safety reasons, this equipotential bonding is connected to earth.

3.2.10 duct

space specifically designed and constructed for the passage of building services

EXAMPLE Building services include, gas pipework, water systems, power and telecommunication cables.

3.2.11

ventilation duct

duct forming part of the structure of the building and intended exclusively for ventilation purposes

3.3 Definition relating to means of isolation

3.3.1

means of isolation

device which is intended to interrupt the gas flow in pipework

EXAMPLE Manually operable valve.

3.4 Definitions relating to jointing methods

3.4.1

joint

means of joining elements of a gas installation

3.4.2

flanged joint

joint in which gas tightness is achieved by compression of a gasket between the faces of two flanges

3.4.3

threaded joint

joint in which gas tightness is achieved by metal-to-metal contact within threads with the assistance of a sealant

3.4.4

mechanical joint

joint in which gas tightness is achieved by compression, with or without a seal

NOTE

This joint can be easily disassembled and reassembled.

3.4.5

brazed joint

joint formed by brazing

3.4.6

welded joint

joint formed by welding

3.4.7

electrofusion joint

joint formed between polyethylene components using fittings which have an integrated electric heating element

3.4.8

butt fusion joint

joint formed between polyethylene components where the two pipe ends are heated and brought together to be fused directly without the use of a separate fitting or filler material

3.5 Definitions relating to components

3.5.1

regulator

device which reduces the gas pressure to a set value and maintains it within prescribed limits

3.5.2**appliance connection**

flexible pipe or length of rigid pipework connecting an appliance's means of isolation with the appliance inlet connection

3.5.3**insulating joint**

fitting installed to insulate electrically one section of pipework from another

3.5.4**sleeve**

protective pipe through which a gas pipe passes

3.5.5**vent line**

pipework connected to a safety or control device to release gas at a safe position

3.5.6**safety relief device**

device designed to release gas in the event of an unacceptable pressure being detected within the system it protects

3.5.7**safety slam shut device**

device designed to quickly shut off the gas flow in the event of an unacceptable pressure being detected within the system it protects

3.5.8**instrumentation pipework**

pipework required for the proper functioning of the ancillaries installed within the pressure regulating installation

EXAMPLES

Sensing, measuring, auxiliary and sampling lines

3.5.9**DN**

alphanumeric designation of size for components of a pipework system, which is used for reference purposes. It comprises the letters DN followed by a dimensionless whole number, which is directly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

NOTE 1 The number following the letters DN does not represent a measurable value and should not be used for calculation purposes except where specified.

NOTE 2 Where DN designation is used, any relationship between DN and component dimensions are given, e.g. DN/OD or DN/ID.

3.6 Definitions relating to tests**3.6.1****strength test**

specific procedure intended to verify that the pipework meets the requirements for mechanical strength

3.6.2**tightness test**

specific procedure intended to verify that the pipework meets the requirements for tightness