

**BS EN 1776:2015**



**BSI Standards Publication**

# **Gas infrastructure — Gas measuring systems — Functional requirements**

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**National foreword**

This British Standard is the UK implementation of EN 1776:2015. It supersedes BS EN 1776:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GSE/33/-/5, Gas Measurement (Revision of EN 1776).

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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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.

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

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## European foreword

This document (EN 1776:2015) 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of an identical text or by endorsement, at the latest by June 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

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 1776:1998.

This document has been prepared under the mandate M/017 given to CEN by the European Commission and the European Free Trade Association.

This version of the standard comprises a major revision of EN 1776:1998. The scope of the standard is expanded and now includes also gas measuring systems in light industry, commercial as well as residential use. For this purpose the document has been restructured and amended.

This European Standard has in part been developed in response to the work of the European Standards Organisations (CEN/CENELEC/ETSI) under the Commission Mandate M/441. The standard should be read in conjunction with CEN/CLC/ETSI TR 50572, *Functional Reference Architecture for Communications in Smart Metering Systems* and EN 16314, *Gas meters – Additional functionalities* (often referred to as a smart gas meter).

Directive 2009/73/EC concerning common rules for the internal market in natural gas and the related Regulation (EC) No 715/2009 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.

This European Standard covers the environmental aspects relevant to the design, construction, operation, and maintenance and commissioning/decommissioning of gas measuring systems, where appropriate, in accordance with CEN Guide 4 and CEN/TR 16388.

In preparing this European Standard, a basic understanding of gas infrastructure by the user has been assumed.

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.

## **Introduction**

This European Standard specifies different classes of measuring systems, each having their own specific requirements.

By nature, a measuring system is an aggregate of several components. In this European Standard, it is assumed that each component is in full compliance with applicable CEN or ISO standards, if any.

This European Standard allows the user to choose between different accuracy classes of measuring systems, the choice of which can be justified on economic grounds.



## 1 Scope

This European Standard specifies functional requirements for the design, construction, testing, commissioning/decommissioning, operation, maintenance and, where appropriate, calibration, together with suitable documented provisions for all new gas measuring systems and any major changes of existing systems.

This European Standard also specifies accuracy classes of measuring systems and thresholds applicable to these classes. Demonstration of compliance is achieved through the selection, installation and operation of appropriate measurement instruments, together with suitable documented provisions for calculations. Examples of demonstration of compliance are provided for each accuracy class; however, they are not prescriptive solutions.

This European Standard is applicable for gases of the 2nd family as classified in EN 437. It is also applicable for treated non-conventional combustible gases complying with EN 437 and for which a detailed technical evaluation of the functional requirements (such as injected biomethane) is performed ensuring there are no other constituents or properties of the gases that can affect the metrological and physical integrity of the measuring systems.

This European Standard can also be used as a guideline for 1st and 3rd family gases as classified in EN 437; however additional considerations should be taken with regard to the different constituents and physical characteristics of the gas family.

This European Standard is not applicable for raw or sour gases.

This European Standard is not applicable for gas measurement in CNG filling station.

This European Standard gives guidelines when designing, installing and operating gas meters with additional functionalities (smart gas meters).

Communication protocols and interfaces for gas meters and remote reading of gas meters are outside the scope of this European Standard and are covered by the appropriate parts of EN 13757, which provide a number of protocols for meter communications. Supervisory control and data acquisition protocols (SCADA) are also not covered by this European Standard.

Unless otherwise specified all pressures used in this European Standard are gauge pressures.

For associated pressure regulating systems the requirements of EN 12186 and/or EN 12279 apply.

For requirements on design, housing, lay-out, materials for components, construction, ventilation, venting and overall safety of gas measuring systems within the scope of this European Standard, EN 15001, EN 12186, EN 12279 and/or EN 1775 apply additionally, where relevant.

This European Standard specifies common basic principles for gas infrastructure. 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 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 European Standard, national legislation/regulation takes precedence as illustrated in CEN/TR 13737-1 and CEN/TR 13737-2.

CEN/TR 13737 (all parts) gives:

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