SLOVENSKI STANDARD
SIST EN ISO 15112:2019

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Nadomešča:
SIST EN ISO 15112:2014

Zemeljski plin - Določevanje energijske vrednosti (ISO 15112:2018)

Natural gas - Energy determination (ISO 15112:2018)

Gaz naturel - Détermination de l'énergie (ISO 15112:2018)

Ta slovenski standard je istoveten z: EN ISO 15112:2018

ICS:

75.060	Zemeljski plin	Natural gas

SIST EN ISO 15112:2019 **en,fr,de**

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English Version

Natural gas - Energy determination (ISO 15112:2018)

Gaz naturel - Détermination de l'énergie (ISO 15112:2018)

This European Standard was approved by CEN on 27 October 2018.

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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 ISO 15112:2018) has been prepared by Technical Committee ISO/TC 193 "Natural gas" in collaboration with Technical Committee CEN/TC 238 “Test gases, test pressures, appliance categories and gas appliance types” the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 ISO 15112:2014.

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Endorsement notice

The text of ISO 15112:2018 has been approved by CEN as EN ISO 15112:2018 without any modification.

INTERNATIONAL STANDARD

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Natural gas — Energy determination

Gaz naturel — Détermination de l'énergie

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 193, *Natural gas*.

This third edition cancels and replaces the second edition (ISO 15112:2011), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Figures 7 and 8 have been redrafted;

— Clause 9 has been updated;

— Annex K has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Since the early 1 800s, it has been general practice for manufactured gas and, subsequently, natural gas to be bought and sold on a volumetric basis. Much time and effort has therefore been devoted to developing the means of flow measurement.

Because of the increasing value of energy and variations in gas quality, billing on the basis of thermal energy has now become essential between contracting partners and the need to determine calorific value by measurement or calculation has led to a number of techniques. However, the manner in which calorific value data are applied to flow volume data to produce the energy content of a given volume of natural gas has been far from a standardized procedure.

Energy determination is frequently a necessary factor wherever and whenever natural gas is metered, from production and processing operations through to end-user consumption. This document has been developed to cover aspects related to production/transmission and distribution/end user. It provides guidance to users of how energy units for billing purposes are derived, based on either measurement or calculation or both, to increase confidence in results for contracting partners.

Other standards relating to natural gas, flow measurement, calorific value measurement, calculation procedures and data handling with regard to gas production, transmission and distribution involving purchase, sales or commodity transfer of natural gas can be relevant to this document.

This document contains eleven informative annexes.

Natural gas — Energy determination

1 Scope

This document provides the means for energy determination of natural gas by measurement or by calculation, and describes the related techniques and measures that are necessary to take. The calculation of thermal energy is based on the separate measurement of the quantity, either by mass or by volume, of gas transferred and its measured or calculated calorific value. The general means of calculating uncertainties are also given.

Only systems currently in use are described.

NOTE Use of such systems in commercial or official trade can require the approval of national authorization agencies, and compliance with legal regulations is required.

This document applies to any gas-measuring station from domestic to very large high-pressure transmission.

New techniques are not excluded, provided their proven performance is equivalent to, or better than, that of those techniques referred to in this document.

Gas-measuring systems are not the subject of this document.

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.

ISO 6976, *Natural gas — Calculation of calorific values, density, relative density and Wobbe index from composition*

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:

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

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

3.1
accuracy of measurement
closeness of the agreement between the result of a measurement and a true value of the measurand

[SOURCE: ISO/Guide 98-3:2008, definition B.2.14]

3.2
adjustment
<of a measuring instrument> of bringing a measuring instrument into a state of performance suitable for its use

Note 1 to entry: Adjustment may be automatic, semi-automatic or manual.

3.3
assignment method
<energy determination> method to derive a calorific value to be applied to the gas passing specified interfaces having only volume measurements

3.4
availability
probability, at any time, that the measuring system, or a measuring instrument forming part of the measuring system, is functioning according to specifications

[SOURCE: EN 1776:1998]

3.5
bias
systematic difference between the true energy and the actual energy determined of the gas passing a gas-measuring station

3.6
calibration
set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values obtained using working standards

[SOURCE: ISO 14532:2014, definition 2.5.1.1, modified — Definition has been slightly changed and Notes to entry have been removed.]

3.7
superior calorific value
energy released as heat by the complete combustion in air of a specified quantity of gas, in such a way that the pressure, p_1, at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature, T_1, as that of the reactants, all of these products being in the gaseous state except for water formed by combustion, which is condensed to the liquid state at T_1

[SOURCE: ISO 14532:2014, definition 2.6.4.1, modified — Definition has been slightly reworded and Notes to entry have been removed.]

3.8
inferior calorific value
energy released as heat by the complete combustion in air of a specified quantity of gas, in such a way that the pressure, p_1, at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature, T_1, as that of the reactants, all of these products being in the gaseous state

[SOURCE: ISO 14532:2014, definition 2.6.4.2, modified — Definition has been slightly reworded and Notes to entry have been removed.]

3.9
calorific value station
installation comprising the equipment necessary for the determination of the calorific value of the natural gas in the pipeline

3.10
adjusted calorific value
calorific value measured at a measuring station compensated for the time taken for the gas to travel to the respective volume-measuring station

3.11
corrected calorific value
result of correcting a measurement to compensate for systematic error

3.12
declared calorific value
calorific value that is notified in advance of its application to interfaces for the purpose of energy determination

3.13
representative calorific value
calorific value which is accepted to sufficiently approximate the actual calorific value at an interface

3.14
charging area
set of interfaces where the same method of energy determination is used

3.15
conversion
determination of the volume under reference conditions from the volume under operating conditions

3.16
correction
value added algebraically to the uncorrected result of a measurement to compensate for systematic error

Note 1 to entry: The correction is equal to the negative of the estimated systematic error.

Note 2 to entry: Since the systematic error cannot be known perfectly, the correction cannot be complete, see Annex I.

3.17
correction factor
numerical factor by which the uncorrected result of a measurement is multiplied to compensate for a systematic-error object

Note 1 to entry: Since the systematic error cannot be known perfectly, the correction cannot be complete, see Annex I.

3.18
determination
set of operations that are carried out on an object in order to provide qualitative or quantitative information about this object

Note 1 to entry: In this document, the term “determination” is only used quantitatively.

3.19
direct measurement
measurement of a property from quantities which, in principle, define the property

Note 1 to entry: For example, the determination of the calorific value of a gas using the thermoelectric measurement of the energy released in the form of heat during the combustion of a known amount of gas.

[SOURCE: ISO 14532:2014, definition 2.2.1.2, modified — The word “that” has been replaced by “which” in the definition.]

3.20
energy
product of gas quantity (mass or volume) and calorific value under given conditions

Note 1 to entry: The energy may be called energy amount.

Note 2 to entry: Energy is usually expressed in units of megajoules.