GAASISEADMED. SOOJUSE JA ELEKTRI KOOSTOOTMISSEADE NIMISOOJUSSISENDIGA KUNI 70 KW

Gas appliances - Combined heat and power appliance of nominal heat input inferior or equal to 70 kW

EESTI STANDARDIKESKUS
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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50465:2015 sisaldab Euroopa standardi EN 50465:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 50465:2015 consists of the English text of the European standard EN 50465:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.01.2015.	Date of Availability of the European standard is 23.01.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 27.070, 97.100.20

EUROPEAN STANDARD

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EN 50465

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Supersedes EN 50465:2008

English Version

Gas appliances - Combined heat and power appliance of nominal heat input inferior or equal to 70 kW

Appareils à gaz - Appareils produisant de la chaleur et de l'électricité combinées dont le débit calorifique nominal est inférieur ou égal à 70 kW

Gasgeräte - Geräte zur Kraft-Wärme-Kopplung mit einer Nennwärmebelastung kleiner oder gleich 70 kW

This European Standard was approved by CENELEC on 29 October 2014. CEN and CENELEC 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 and CENELEC 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 and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 50465:2015) has been prepared by CEN/CLC Joint Working Group FCGA, "Fuel cell gas appliances".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2015-10-29
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2017-10-29

This document supersedes EN 50465:2008.

EN 50465:2015 includes the following significant technical changes with respect to EN 50465:2008:

– inclusion of requirements for „Stirling Engine“ and „Internal Combustion Engine“;

– modification of requirements for fuel cell heating appliances to reflect experience since the first edition;

– partly adaptation to EN 15502-1 and EN 15502-2-1, especially to reflect the new requirements for air proving devices;

– introduction of additional types of combustion air and flue duct systems;

– modification of the total efficiency calculation;

– modifications of NO_X weighting and calculation.

Micro-cogeneration is also known as micro combined heat and power [mCHP]. mCHP is an efficient way to deliver heating, cooling and electricity. It is based on the simultaneous production of electrical and thermal energy, both of which are used. The central and most fundamental principle of mCHP is that in order to maximize the many benefits that arise from it, systems should be based according to the heat demand of the application.

A fuel cell, Stirling engine and internal combustion engine are just some of the significant technologies to be the thermal heart of a mCHP appliance.

mCHP appliances that are already established in the market are used to provide central heating and domestic hot water in residential buildings.

Due to the development of new technology other solutions than those described in this European Standard are possible if these solutions provide at least an equivalent level of safety.

Matters related to quality assurance systems, tests during production, and certificates of conformity of auxiliary devices are not dealt with in this European Standard.

Due to the change in scope to include technologies in addition to fuel cells, the title of this European Standard has been changed from “fuel cell gas heating appliance” into “combined heat and power appliance”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

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

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.The essential requirements of EC Directive 2009/142/EC relating to "rational use of energy" is defined by the maximum quantity of energy recovered (thermal and electrical energy output) from the gas energy input.

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1 Scope

This European Standard specifies the requirements and test methods for the construction, safety, fitness for purpose, rational use of energy and the marking of a micro combined heat and power appliance; (hereafter referred to as “mCHP appliance”).

This European Standard applies to mCHP appliances of types B_{22}, B_{23}, B_{32}, B_{33}, B_{52}, B_{53}, C_1, C_3, C_{42}, C_{43} C_{52}, C_{53}, C_{62}, C_{63}, C_{82}, C_{83} and C_9 based on the classifications of CEN/TR 1749:

- that use one or more supplied gases of the three gas families at the pressures stated in EN 437,
- where the temperature of the heat transfer fluid of the heating system (heating water circuit) does not exceed 105 ºC during normal operation,
- where the maximum operating pressure in the
    - heating water circuit does not exceed 6 bar,
    - domestic hot water circuit (if installed) does not exceed 10 bar,
- which are either intended to be installed indoors or outdoors in a partially protected place,
- which are intended to produce hot water either by the instantaneous or storage principle,
- which have a maximum heat input (based on net calorific value) not exceeding 70 kW,
- which are designed for sealed or open water systems.

NOTE 1 For applications where the maximum allowable water temperature exceeds 110 ºC or where volume multiplied by maximum allowable pressure exceeds 50 bar litres, further requirements may be necessary to comply with the essential requirements of Directive 97/23/EC (Pressure Equipment Directive (PED)).

NOTE 2 For mCHP appliances with constructions that might not be fully covered by this European Standard or by another specific standard, the risk associated with the alternative construction will be assessed.

NOTE 3 prEN 13203-4 will specify the assessment of energy consumption for domestic hot water production of gas combined heat and power appliances (mCHP).

This European Standard does not contain the requirements necessary for appliance capable of producing electrical energy without using the thermal energy.

This European Standard does not cover all the requirements for mCHP appliances that are intended to be connected to gas grids where the quality of the distributed gas is likely to vary to a large extent over the lifetime of the appliance (see Annex DD).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 88-1, *Pressure regulators and associated safety devices for gas appliances – Part 1: Pressure regulators for inlet pressures up to and including 500 kPa*

EN 125, *Flame supervision devices for gas burning appliances – Thermoelectric flame supervision devices*

EN 126, *Multifunctional controls for gas burning appliances*

EN 161, *Automatic shut-off valves for gas burners and gas appliances*

EN 298, *Automatic burner control systems for burners and appliances burning gaseous or liquid fules*

EN 437:2003+A1:2009, *Test gases – Test pressures – Appliance categories*

EN 513, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors - Determination of the resistance to artificial weathering*

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 573-1, *Aluminium and aluminium alloys – Chemical composition and form of wrought products – Part 1: Numerical designation system*

EN 1057, *Copper and copper alloys – Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1092 (all parts), *Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories, PN designated*

CR 1404, *Determination of emissions from appliances burning gaseous fuels during type-testing*

EN 1561, *Founding – Grey cast irons*

EN 1856-1:2009, *Chimneys – Requirements for metal chimneys – Part 1: System chimney products*

EN 1856-2:2009, *Chimneys – Requirements for metal chimneys – Part 2: Metal flue liners and connecting flue pipes*

EN 10029, *Hot-rolled steel plates 3 mm thick or above – Tolerances on dimensions and shape*

EN 10088-1, *Stainless steels – Part 1: List of stainless steels*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads – Part 1: Taper external threads and parallel internal threads; Dimensions, tolerances and designation*

EN 10226-2, *Pipe threads where pressure tight joints are made on the threads – Part 2: Taper external threads and taper internal threads – Dimensions, tolerances and designation*

EN 12067-2, *Gas/air ratio controls for gas burners and gas burning appliances – Part 2: Electronic types*

EN 13203-1, *Gas-fired domestic appliances producing hot water – Appliances not exceeding 70 kW heat input and 300 l water storage capacity – Part 1: Assessment of performance of hot water deliveries*

EN 13216-1:2004, *Chimneys – Test methods for system chimneys – Part 1: General test methods*

EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests*

EN 13611, *Safety and control devices for gas burners and gas burning appliances – General requirements*

EN 14459, *Control functions in electronic systems for gas burners and gas burning appliances – Methods for classification and assessment*

EN 14471:2013, *Chimneys – System chimneys with plastic flue liners – Requirements and test methods*

EN 50090 (all parts), *Home and Building Electronic Systems (HBES)*

EN 50438, *Requirements for micro-generating plants to be connected in parallel with public low-voltage distribution networks*

CLC/TS 50549-1, *Requirements for the connection of generators above 16 A per phase – Part 1: Connection of the LV distribution system*

EN 55014-1, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission (CISPR 14-1)*

EN 55014-2, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard (CISPR 14-2)*

EN 60335-1, *Household and similar electric appliances – Safety – Part 1: General requirements (IEC 60335-1)*

EN 60335-2-102, *Household and similar electrical appliances – Safety – Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections (IEC 60335-2-102)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN 60730-2-9, *Automatic electrical controls for household and similar use – Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9)*

EN 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase) (IEC 61000-3-2)*

EN 61000-3-3, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection (IEC 61000-3-3)*

EN 61000-3-11, *Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current ≤ 75 A and subject to conditional connection (IEC 61000-3-11)*

EN 61000-3-12, *Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase (IEC 61000-3-12)*

EN 61000-6-1, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1)*

EN 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3)*

EN 62282-3-100:2012, *Fuel cell technologies – Part 3-100: Stationary fuel cell power systems – Safety (IEC 62282-3-100:2012)*

EN ISO 178, *Plastics – Determination of flexural properties (ISO 178)*

EN ISO 179-1, *Plastics – Determination of Charpy impact properties – Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 527-1, *Plastics – Determination of tensile properties – Part 1: General principles (ISO 527-1)*

EN ISO 527-2, *Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 1183 (all parts), *Plastics – Methods for determining the density of non-cellular plastics (ISO 1183)*

EN ISO 2553, *Welding and allied processes – Symbolic representation on drawings - Welded joints (ISO 2553)*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes (ISO 3166-1)*

EN ISO 4063, *Welding and allied processes – Nomenclature of processes and reference numbers (ISO 4063)*

EN ISO 8256, *Plastics – Determination of tensile-impact strength (ISO 8256)*

EN ISO 9969, *Thermoplastics pipes – Determination of ring stiffness (ISO 9969)*

EN ISO 16852, *Flame arresters – Performance requirements, test methods and limits for use (ISO 16852)*

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 37, *Rubber, vulcanized or thermoplastic – Determination of tensile stress-strain properties*

ISO 188, *Rubber, vulcanized or thermoplastic – Accelerated ageing and heat resistance tests*

ISO 262, *ISO general purpose metric screw threads – Selected sizes for screws, bolts and nuts*

ISO 815 (all parts), *Rubber, vulcanized or thermoplastic – Determination of compression set*

ISO 857-1, *Welding and allied processes – Vocabulary – Part 1: Metal welding processes*

ISO 857-2, *Welding and allied processes – Vocabulary – Part 2: Soldering and brazing processes and related terms*

ISO 1817, *Rubber, vulcanized or thermoplastic – Determination of the effect of liquids*

ISO 2781, *Rubber, vulcanized or thermoplastic – Determination of density*

ISO 6914, *Rubber, vulcanized or thermoplastic – Determination of ageing characteristics by measurement of stress relaxation in tension*

ISO 7619 (all parts), *Rubber, vulcanized or thermoplastic – Determination of indentation hardness*