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Gas-fired endothermic engine driven heat pumps - Part 2: Safety

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Gas-fired endothermic engine driven heat pumps - Part 2: Safety

Pompes à chaleur à moteur endothermique alimenté
au gaz - Partie 2: Sécurité

Gasbefeuerte endothermische Motor-Wärmepumpen -
Teil 2: Sicherheit

This European Standard was approved by CEN on 4 November 2019.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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EN 16905-2:2020 (E)

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EN 16905-2:2020 (E)**European foreword**

This document (EN 16905-2:2020) has been prepared by Technical Committee CEN/TC 299 “Gas-fired sorption appliances, indirect fired sorption appliances, gas-fired endothermic engine heat pumps and domestic gas-fired washing and drying appliances”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by July 2020 and conflicting national standards shall be withdrawn at the latest by July 2020.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This standard comprises the following parts under the general title, *Gas-fired endothermic engine driven heat pumps*:

- *Part 1: Terms and definitions;*
- *Part 2: Safety;*
- *Part 3: Tests conditions;*
- *Part 4: Tests methods;*
- *Part 5: Calculation of seasonal performances in heating and cooling mode.*

These documents will be reviewed whenever new mandates could apply.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

1.1 Scope of EN 16905

This European Standard specifies the requirements, test methods and test conditions for the rating and performance calculation of air conditioners and heat pumps using either air, water or brine as heat transfer media, with gas-fired endothermic engine driven compressors when used for space heating, cooling and refrigeration, hereafter referred to as "GEHP appliance".

This European Standard only applies to GEHP appliances with a maximum heat input (based on net calorific value) not exceeding 70 kW at standard rating conditions.

This standard only applies to GEHP appliances under categories I_{2H}, I_{2E}, I_{2Er}, I_{2R}, I_{2E(S)B}, I_{2L}, I_{2LL}, I_{2ELL}, I_{2E(R)B}, I_{2ESi}, I_{2E(R)}, I_{3P}, I_{3B}, I_{3B/P}, II_{2H3+}, II_{2Er3+}, II_{2H3B/P}, II_{2L3B/P}, II_{2E3B/P}, II_{2ELL3B/P}, II_{2L3P}, II_{2H3P}, II_{2E3P} and II_{2Er3P} according to EN 437:2018.

This standard only applies to GEHP appliances having:

- a) gas fired endothermic engines under the control of fully automatic control systems;
- b) closed system refrigerant circuits in which the refrigerant does not come into direct contact with the fluid to be cooled or heated;
- c) where the temperature of the heat transfer fluid of the heating system (heating water circuit) does not exceed 105 °C during normal operation;
- d) where the maximum operating pressure in the
 - 1) heating water circuit (if installed) does not exceed 6 bar
 - 2) domestic hot water circuit (if installed) does not exceed 10 bar.

This European Standard applies to GEHP appliances only when used for space heating or space cooling or for refrigeration, with or without heat recovery.

The GEHP appliances having their condenser cooled by air and by the evaporation of external additional water are not covered by this European Standard.

Packaged units, single split and multisplit systems are covered by this European Standard. Single duct and double duct units are covered by this European Standard.

The above GEHP appliances can have one or more primary or secondary functions.

This European Standard is applicable to GEHP appliances that are intended to be type tested. Requirements for GEHP appliances that are not type tested would need to be subject to further consideration.

In the case of packaged units (consisting of several parts), the standard applies only to those designed and supplied as a complete package.

NOTE All the symbols given in this text are used regardless of the language used.

1.2 Scope of EN 16905-2

This part of EN 16905 specifies the safety requirements, the safety test conditions and the safety test methods of gas-fired endothermic engine driven heat pumps for heating and/or cooling mode including the engine heat recovery.

EN 16905-2:2020 (E)**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.

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

EN 378-2, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation*

EN 437:2018, *Test gases — Test pressures — Appliance categories*

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

EN 1561:2011, *Founding — Grey cast irons*

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

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 12102-1:2017, *Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors — Determination of the sound power level — Part 1: Air conditioners, liquid chilling packages, heat pumps for space heating and cooling, dehumidifiers and process chillers*

EN 12102-2:2019, *Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors — Determination of the sound power level — Part 2: Heat pump water heaters*

EN 14800, *Corrugated safety metal hose assemblies for the connection of domestic appliances using gaseous fuels*

EN 16436-1, *Rubber and plastics hoses, tubing and assemblies for use with propane and butane and their mixture in the vapour phase — Part 1: Hoses and tubings*

EN 16905-1, *Gas-fired endothermic engine driven heat pumps — Part 1: Terms and definitions*

EN 16905-3:2017, *Gas-fired endothermic engine driven heat pumps — Part 3: Test conditions*

EN 16905-4:2017, *Gas-fired endothermic engine driven heat pumps — Part 4: Test methods*

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*

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

EN 60335-2-40:2003, *Household and similar electrical appliances — Safety — Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers (IEC 60335-2-40:2002)*

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, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 61000-3-2, *Electromagnetic compatibility (EMC) — Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 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 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 7010, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010)*

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

ISO/TR 25901-3, *Welding and allied processes — Vocabulary — Part 3: Welding processes*

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