

norm**NEN-EN 16905-2**

Gasgestookte endotherme warmtepompen
aangedreven met motor - Deel 2: Veiligheid

Publicatie uitsluitend voor commentaar

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

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Voorbeeld
Preview

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 16905-2

August 2018

ICS 27.080

English Version

**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 draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 299.

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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Contents

Page

European foreword.....	6
1 Scope.....	7
1.1 Scope of prEN 16905.....	7
1.2 Scope of prEN 16905-2.....	7
2 Normative references.....	8
3 Terms and definitions.....	9
4 Classification.....	10
4.1 General.....	10
4.2 Classification of GEHP appliances.....	10
4.2.1 Classification of gases.....	10
4.2.2 Classification according to the unit structure.....	10
4.2.3 Classification according to the air blowing system.....	10
4.3 GEHP appliance classification according to the maximum water side operating pressure (PMS):.....	10
5 Design requirements.....	11
5.1 Structure.....	11
5.1.1 General.....	11
5.1.2 Structure of each part.....	12
5.1.3 Refrigerant circuit.....	14
5.1.4 Engine lubricant oil circuit.....	14
5.2 Material.....	14
5.2.1 General.....	14
5.2.2 Gas carrying circuit.....	14
5.2.3 Combustion products circuit.....	15
5.2.4 Thermal insulation material, etc.....	15
5.2.5 Vibration-proof material.....	15
5.2.6 Materials and thicknesses of walls or tubes under water pressure of pressure class 3	15
5.3 EMC / electrical requirements.....	21
5.3.1 Relevant for the Gas safety.....	21
5.3.2 Relevant for the EMC.....	21
6 Operational requirements.....	21
6.1 General requirements.....	21
6.2 Soundness.....	21
6.2.1 Soundness gas carrying circuit.....	21
6.2.2 Soundness of the heating water circuit.....	22
6.2.3 Soundness of the internal cooling circuit.....	22
6.3 Heat input at standard rating conditions.....	22
6.4 Limit temperatures.....	22
6.5 Limit operating conditions.....	23
6.5.1 Starting performance.....	23
6.5.2 Maximum operating performance (cooling mode).....	23
6.6 Insulation resistance.....	24
6.7 Transient overvoltage.....	24
6.8 Withstand voltage.....	24
6.9 Waterproof performance.....	24

6.10	Sound power level.....	24
6.11	Engine perform.....	25
6.11.1	General.....	25
6.11.2	Engine start up.....	25
6.11.3	CO concentration.....	25
6.11.4	NO _x concentration.....	25
6.11.5	Ignition.....	25
6.12	Power failure.....	26
6.13	Abnormalities.....	26
6.14	Starting current.....	26
7	Test methods.....	27
7.1	General test conditions.....	27
7.1.1	General.....	27
7.1.2	Characteristics of the reference and limit gases.....	27
7.1.3	Test procedures.....	27
7.1.4	Test room.....	27
7.1.5	Evacuation of the products of combustion.....	27
7.1.6	Test installation.....	28
7.1.7	Tolerances of measurements.....	28
7.2	Soundness.....	29
7.2.1	Soundness gas carrying circuit.....	29
7.2.2	Soundness of the heating water circuit.....	29
7.2.3	Soundness of the internal cooling circuits.....	30
7.3	Heat input at standard rating conditions.....	30
7.4	Limit temperatures.....	31
7.5	Limit operating conditions.....	31
7.5.1	Starting performance test.....	31
7.5.2	Maximum operating performance (cooling mode).....	32
7.6	Insulation resistance test.....	32
7.7	Transient overvoltage test.....	32
7.8	Withstand voltage test.....	33
7.9	Waterproof performance test.....	33
7.10	Sound power level test.....	33
7.11	Engine performance.....	33
7.11.1	Engine startup test.....	33
7.11.2	CO concentration test.....	33
7.11.3	NO _x concentration test.....	33
7.11.4	Ignition.....	33
7.12	Power failure test.....	34
7.13	Abnormalities test.....	34
7.14	Starting current test.....	34
8	Risk assessment.....	34
9	Marking and instructions.....	35
9.1	GEHP appliance marking.....	35
9.1.1	Data plate.....	35
9.1.2	Supplementary markings.....	36
9.1.3	Packaging.....	36
9.1.4	Warning on the GEHP appliance and the packaging.....	37
9.1.5	Other information.....	37
9.2	Installation instructions.....	37
9.2.1	Technical instructions.....	37

prEN 16905-2:2018 (E)

9.3	User's instructions	39
9.4	Gas conversion instructions	39
9.5	Presentation.....	40
Annex A (informative) Calculation of conversion of NO _x		41
A.1	General.....	41
Annex B (normative) Engine startup test method.....		42
B.1	General.....	42
B.2	Test condition.....	42
B.2.1	Power source.....	42
B.2.2	Test gas	42
B.3	Test method.....	42
B.3.1	Startup test	42
B.3.2	Confirmation test of back fire, etc.....	42
Annex C (normative) CO concentration test method.....		43
C.1	General.....	43
C.2	Test condition.....	43
C.2.1	General.....	43
C.2.2	Standard CO concentration test	44
C.2.3	Limit conditions.....	44
C.2.4	Special conditions	44
C.2.4.1	Incomplete combustion	44
C.2.4.2	Combustion test with flame in gas	44
C.2.5	Accuracies of measurement	44
Annex D (normative) NO _x concentration test method.....		46
D.1	Definitions	46
D.1.1	Engine rpm equivalent method.....	46
D.2	General.....	46
D.2.1	General.....	46
D.2.2	Test condition.....	46
D.2.3	Conversion.....	47
D.2.4	Accuracies of measurement	48
Annex E (normative) Power failure test method		49
E.1	General.....	49
E.2	Test method	49
Annex F (informative) Examples for marking		50
F.1	Data-plate (see 9.1.1).....	50
F.2	Additional data-plate (see 9.1.2)	50

Annex G (informative) Examples for NO_x calculation 51

G.1 Erpm equivalent calculation 51

G.2 NO_x ppm to mg/kWh conversation 51

G.3 Temperature and humidity correction formula calculation 51

Annex ZA (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 on appliances burning gaseous fuels aimed to be covered 52

Annex ZB (informative) Relationship between this European Standard and the requirements of Commission Regulation (EU) No 813/2013 aimed to be covered 55

Annex ZC (informative) Relationship between this European Standard and the requirements of Commission Regulation (EU) No 2016/2281 aimed to be covered 56

Bibliography 57

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Preview

prEN 16905-2:2018 (E)**European foreword**

This document (prEN 16905-2:2018) 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 document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request 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) and Regulation(s), see informative Annex ZA, Annex ZB and Annex ZC, which are integral parts of this document.

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.

prEN 16905-2:2018 has been prepared to address the essential requirements of the European Regulation (EU) 2016/426 relating to appliances burning gaseous fuels and repealing Directive 2009/142/EC (see Annex ZA).

EN 16905-1, prEN 16905-2:2018, EN 16905-3, EN 16905-4 and EN 16905-5 are linked to the Energy Related Products Directive (2009/125/EC) in terms of tests conditions, tests methods and seasonal performances calculation methods under Mandate M/535; (see EN 16905-3:2017, Annex ZA, EN 16905-4:2017, Annex ZA, EN 16905-5:2017, Annex ZA and prEN 16905-2:2018, Annexes ZB and ZC).

These documents will be reviewed whenever new mandates could apply.

1 Scope

1.1 Scope of prEN 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 437:2003+A1:2009.

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 prEN 16905-2

This part of prEN 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.

prEN 16905-2:2018 (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 437:2003+A1:2009, *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, *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*

prEN 12102-2:2017, *Air conditioners, liquid chilling packages, heat pumps 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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16905-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

prEN 16905-2:2018 (E)

- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 maximum water operating pressure PMS
 maximum water operating pressure at which the GEHP appliance can be used, in bars given by the symbol "PMS", followed by the equals sign, the numerical value and the unit "bar"

4 Classification**4.1 General**

GEHP appliances can be classified according to:

- the gases they use;
- the unit structure;
- air blowing system.

4.2 Classification of GEHP appliances**4.2.1 Classification of gases**

Gases are classified into three families, possibly divided into groups according to the value of the Wobbe index. Families and groups of gas used in this standard are in accordance with those of the EN 437:2003+A1:2009. This standard is for GEHP appliances working with 2nd and 3rd gas family only.

4.2.2 Classification according to the unit structure**4.2.2.1 Single split**

Single GEHP appliance in combination with single heating/cooling device to form a discrete matched functional unit.

4.2.2.2 Multi split

Single GEHP appliance with a single refrigerant circuit in combination with multiple heating/cooling devices.

4.2.3 Classification according to the air blowing system**4.2.3.1 Non ducted type**

Air introduced from the space containing the unit and discharged within the same space.

4.2.3.2 Ducted type

Air introduced from the space containing the unit and discharged outside this space.

4.3 GEHP appliance classification according to the maximum water side operating pressure (PMS):

- pressure class 1: PMS = 1 bar
- pressure class 2: PMS = 3 bar
- pressure class 3: 3 bar < PMS < 6 bar

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