

GAASKÜTUSEL SISEPÕLEMISMOOTORIGA
SOOJUSPUMBAD. OSA 5: KÜTTE- JA JAHUTUSREŽIIMI
SESOONSE SOORITUSVÕIME ARVUTAMINE

Gas-fired endothermic engine driven heat pumps - Part
5: Calculation of seasonal performances in heating and
cooling mode

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16905-5:2022 sisaldab Euroopa standardi EN 16905-5:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 16905-5:2022 consists of the English text of the European standard EN 16905-5:2022.
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 and Accreditation.
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English Version

Gas-fired endothermic engine driven heat pumps - Part 5: Calculation of seasonal performances in heating and cooling mode

Pompes à chaleur à moteur endothermique alimenté
au gaz -Partie 5 : Calcul des performances saisonnières
en modes chauffage et refroidissement

Gasbefeuerte endothermische Motor-Wärmepumpen -
Teil 5: Berechnung der saisonalen Effizienzkennzahlen
im Heiz- und Kühlmodus

This European Standard was approved by CEN on 28 November 2022.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 16905-5:2022) 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of an identical text or by endorsement, at the latest by June 2023, and conflicting national standards shall be withdrawn at the latest by June 2023.

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 16905-5:2017.

EN 16905-5:2022 includes the following significant technical changes with respect to EN 16905-5:2017:

- technical changes throughout the draft and in Annex ZA, Annex ZB and Annex ZC in order to align the text with the Ecodesign Requirements stated in Commission Regulation (EU) No 2016/426.

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) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, Annex ZB and Annex ZC, which are integral parts of this document.

EN 16905 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.*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

Introduction

This document specifies the calculation of seasonal performances in heating and cooling mode 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”.

Single split and multisplit systems are covered by this document.

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

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

EN 16905-5:2022 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 EN 16905-4:—¹, Annex ZA). EN 16905-1:2017, EN 16905-2:—², EN 16905-3:2017, EN 16905-4:—¹ and EN 16905-5:2022 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:—¹, Annex ZA, EN 16905-5:2022, Annex ZA and EN 16905-2:—², Annexes ZB and ZC).

These documents will be reviewed whenever new mandates could apply.

¹ Under preparation. Stage at the time of publication: prEN 16905-4:2022.

² Under preparation. Stage at the time of publication: prEN 16905-2:2021.

1 Scope

This part of EN 16905 specifies the calculation of the seasonal performance factor for gas-fired endothermic engine driven heat pumps for heating and/or cooling mode including the engine heat recovery, to be used outdoors.

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

This document only applies to 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 437:2021.

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

This document 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.

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 16905-1:2017, *Gas-fired endothermic engine driven heat pumps — Part 1: Terms and definitions*

EN 16905-4:—¹, *Gas-fired endothermic engine driven heat pumps — Part 4: Test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16905-1:2017 apply.

ISO and IEC maintain terminology 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/>