SLOVENSKI STANDARD
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Plinske toplotne črpalke endotermnega motorja - 1. del: Izrazi in definicije

Gas-fired endothermic engine heat pumps - Part 1: Terms and definitions

Gasbefeuerte endothermische Motor-Wärmepumpen - Teil 1: Begriffe

Pompes à chaleur à moteur endothermique alimenté au gaz - Partie 1 : Termes et définitions

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27.080	Toplotne črpalke	Heat pumps

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Gas-fired endothermic engine heat pumps - Part 1: Terms and definitions

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN 16905-1:2015) 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 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 16905-1, prEN 16905-2, prEN 16905-3, prEN 16905-4 and prEN 16905-5 have been prepared to address the essential requirements of the European Directive 2009/142/EC relating to appliances burning gaseous fuels (see prEN 16905-2, Annex ZA, for safety aspects and prEN 16905-5:2015, Annex ZA for rational use of energy aspects).

These documents 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/495; (see prEN 16905-3:2015, Annex ZA, prEN 16905-4:2015, Annex ZA, prEN 16905-5:2015, Annex ZA and prEN 16905-2, Annex ZB).

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

This European Standard 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.

This European Standard only applies to appliances having:

— gas fired endothermic engines under the control of fully automatic control systems;

— closed system refrigerant circuits in which the refrigerant does not come into direct contact with the fluid to be cooled or heated;

— where the temperature of the heat transfer fluid of the heating system (heating water circuit) does not exceed 105 °C during normal operation;

— where the maximum operating pressure in the

  — heating water circuit (if installed) does not exceed 6 bar

  — domestic hot water circuit (if installed) does not exceed 10 bar.

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

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

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

In the case of packaged units (consisting of several parts), this European 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 16905-1

This part of prEN 16905 specifies the terms and definitions of gas-fired endothermic engine driven heat pumps for heating and/or cooling mode including the engine heat recovery.

2 Normative references

Not applicable.

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Appliance and its constituents

3.1.1
air conditioner
encased assembly or assemblies designed as a unit to provide delivery of conditioned air to an enclosed space (room for instance) or zone

Note 1 to entry: It includes a refrigeration system for cooling and possibly dehumidifying the air.

Note 2 to entry: It can have means for heating, circulating, cleaning and humidifying the air. If the unit provides heating by reversing the refrigerating cycle, then it is a heat pump.

3.1.2
close control air conditioner
air conditioner to satisfy the requirements of the process carried out in the air conditioned room

3.1.3
control cabinet air conditioner
air conditioner to satisfy the requirements of the control cabinet

3.1.4
double-duct air conditioner
air conditioner in which, during cooling or heating, the condenser (or evaporator) intake air is introduced from the outdoor environment to the unit by a duct and rejected to the outdoor environment by a second duct, and which is placed wholly inside the place to be conditioned, near a wall

3.1.5
engine heat recovery
residual heat energy recovered from the engine by means of a heat exchanger

3.1.6
engine heat recovery heat exchanger
heat exchanger assembly which is designed to transfer the residual heat energy to the engine heat recovery medium

3.1.7
exhaust air
air from the air conditioned space entering the outdoor heat exchanger

3.1.8
brine
heat transfer medium that has a freezing point lower than the freezing point of water

3.1.9
gas carrying circuit
assembly of parts of the GEHP appliance that carry or contain supplied gas or process gas

Note 1 to entry: This circuit includes the gas circuit.

3.1.10
gas circuit
assembly of parts of the GEHP appliance that carry or contain the supplied gas between the gas inlet connection and the outlet of the safety shut-off valves

3.1.11
gas inlet connection
part of the GEHP appliance intended to be connected to the gas supply

3.1.12
gas rate adjuster
component allowing the gas rate of a gas mixture equipment to be brought to a predetermined value according to the supply conditions

Note 1 to entry: The action of operating this device is called “adjustment of the gas rate”.

Note 2 to entry: e.g. gas mixer.

3.1.13
GEHP appliance
gas-fired endothermic engine driven heat pump

3.1.14
heat pump
encased assembly or assemblies designed as a unit to provide delivery of heat

Note 1 to entry: It includes a refrigeration system for heating.

Note 2 to entry: It can have means for cooling, circulating, cleaning and dehumidifying the air. The cooling is by means of reversing the refrigerating cycle.

3.1.15
heat recovery
recovery of heat rejected by the unit whose primary control is in the cooling mode by means of either an additional heat exchanger (e.g. a liquid chiller with an additional condenser) or by transferring the heat through the refrigerating system for use by units whose primary control remains in heating mode (e.g. variable refrigerant flow with simultaneous cooling and heating operation)

3.1.16
heat recovery heat exchanger
heat exchanger assembly which is designed to transfer heat to the heat recovery medium

3.1.17
heat transfer medium
medium (water, air …) used for the transfer of the heat without changing the state

3.1.18
ignition device
any means (e.g. electrical, etc.) used to ignite the gas admitted to the internal combustion engine

3.1.19
indoor heat exchanger
heat exchanger which is designed to transfer heat between the refrigerant and the indoor heat transfer medium

Note 1 to entry: In the case of an air conditioner operating in the cooling mode, this is the evaporator. In the case of an air conditioner operating in heating mode, this is the condenser.

Note 2 to entry: In case the indoor heat transfer is water or brine, the indoor heat exchanger is also placeable at outdoor.

3.1.20
injector
component that admits gas into an internal combustion engine

3.1.21
internal combustion engine
mechanism delivering shaft power by the combustion of fuel in one or more cylinders in which working pistons reciprocate

3.1.22
outdoor heat exchanger
heat exchanger which is designed to transfer heat between any available heat source and the refrigerant

Note 1 to entry: In the case of an air conditioner operating in the cooling mode, this is the condenser. In the case of an air conditioner operating in heating mode, this is the evaporator.

3.1.23
primary function
main purpose for which the GEHP appliance is designed

Note 1 to entry: Both the heating and cooling functions of the GEHP appliance are classed as primary functions if they satisfy the rational use of energy requirements for those functions.

3.1.24
range-rating device
component on the GEHP appliance intended to be used by the installer to adjust the nominal heat input (value of the heat input at standard rating condition) of the GEHP appliance within the range of maximum and minimum heat inputs stated in the technical specifications/instructions, to suit the actual heat requirements of the installation

3.1.25
recycled air
air from the air conditioned space entering the indoor heat exchanger

3.1.26
sealing an adjuster or control device
arrangements made to make evident any attempt to change the set adjustment (e.g. breakage of the device or the sealing material)

Note 1 to entry: A sealed adjuster or control device is considered to be non-existent

3.1.27
secondary function
optional function of the GEHP appliance, such as heating or cooling, which is not expected to satisfy the rational use of energy requirements of a primary function

3.1.28
single-duct air conditioner
air conditioner in which, during cooling or heating, the condenser (or evaporator) intake air is introduced from the space containing the unit and discharged outside this space

3.1.29
water loop
closed circuit of water maintained with a temperature range on which the units in cooling mode reject heat and the units in heating mode take heat

3.2 Combustion products circuit

3.2.1
air supply and combustion products evacuation ducts
means for transporting combustion air to the internal combustion engine and the combustion products to the terminal or fitting piece

Note 1 to entry: it is necessary to distinguish between

— completely surrounded ducts: the combustion products evacuation duct is surrounded by combustion air throughout its length

— separate ducts: the combustion products evacuation duct and the combustion air supply duct are neither concentric nor completely surrounded ducts.

3.2.2
backflow valve
valve to prevent flue gas backflow

3.2.3
combustion chamber
enclosure inside which combustion of the air-gas mixture takes place

3.2.4
combustion circuit
circuit including the air supply duct and the combustion products circuit

3.2.5
combustion products circuit
circuit including the combustion chamber, the heat exchanger, the combustion products evacuation duct and either the fitting piece or the connection to the terminal, if any

3.2.6
terminal
part of the combustion circuit fitted external to the building which has the function of the air supply inlet and/or combustion products outlet of the appliance

3.2.7
terminal guard
device that protects the terminal from physical damage from outside influences

3.3 Adjusting, monitoring, control and safety devices

3.3.1
adjustable pressure regulator
pressure regulator fitted with a means of adjusting the downstream pressure

Note 1 to entry: This means is considered as an “adjusting device”.

3.3.2
adjustable control thermostat
control thermostat that permits the user to obtain setting temperatures between a minimum and a maximum value

3.3.3
air proving device
device intended to cause safety shutdown in the event of abnormal conditions of air admission or of combustion products evacuation