
Toplotne črpalke z električnimi kompresorji - Preskušanje, vrednotenje lastnosti in zahteve za označevanje naprav za pripravo tople sanitarne vode - Dopolnilo A1

Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units

Wärmepumpen mit elektrisch angetriebenen Verdichtern - Prüfungen, Leistungsbemessung und Anforderungen an die Kennzeichnung von Geräten zum Erwärmen von Brauchwarmwasser

Pompes à chaleur avec compresseur entraîné par moteur électrique - Essais, détermination des performances et exigences pour le marquage des appareils pour eau chaude sanitaire

Ta slovenski standard je istoveten z: EN 16147:2017/prA1

ICS:

23.140	Kompresorji in pnevmatični stroji	Compressors and pneumatic machines
27.080	Toplotne črpalke	Heat pumps
91.140.65	Oprema za ogrevanje vode	Water heating equipment

SIST EN 16147:2017/oprA1:2020 en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
EN 16147:2017
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ICS

English Version

Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units

Pompes à chaleur avec compresseur entraîné par moteur électrique - Essais, détermination des performances et exigences pour le marquage des appareils pour eau chaude sanitaire

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This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 113.

This draft amendment A1, if approved, will modify the European Standard EN 16147:2017. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 16147:2017/prA1:2020) has been prepared by Technical Committee CEN/TC 113 “Heat pumps and air conditioning units”, the secretariat of which is held by UNE.

This document is currently submitted to the CEN Enquiry.

For relationship with EU Directive(s), see informative Annexes ZA, ZB, ZC and ZD, which are an integral part of this document.

The main changes with respect to the previous edition are listed below:

- a) correction of the calculation of η_{wh} for heat pump water heaters and heat pump combination water heaters;
- b) correction of the calculation of the annual consumption of electric energy;
- c) completion of Annexes ZA, ZB, ZC and ZD in line with the standardization requests M/534 (water heaters) and M/535 (space heaters).

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EN 16147:2017/prA1:2020 (E)

1 Modifications of Clause 2, “Normative references”

Replace

“EN 14511-1, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 1: Terms, definitions and classification*

EN 14511-2, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 2: Test conditions*

EN 14511-3, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 3: Test methods*

EN 60204-1, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1)*

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

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)”*

with

“EN 14511-1:2018, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 1: Terms, definitions and classification*

EN 14511-2:2018, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 2: Test conditions*

EN 14511-3:2018, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 3: Test methods*

EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016)*

prEN 60335-2-40:2020, *Household and similar electrical appliances - Safety - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers (IEC 60335-2-40:2018)*

EN 61000-3-11:2019, *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 61000-3-11:2017)”*

and use dated references throughout the document accordingly.

2 Modifications to 7.13, Water heating energy efficiency η_{wh}

Replace the whole subclause 7.13.2 with the following:

“7.13.2 Calculation of η_{wh} for heat pump water heaters and heat pump combination water heaters

7.13.2.1 Calculation of η_{wh} for heat pump water heaters

The water heating energy efficiency for heat pump water heaters is defined in Formula (26) and shall be expressed in %:

$$\eta_{wh} = \frac{Q_{ref}}{(CC \times Q_{elec}) \times (1 - SCF \times smart) + Q_{cor}} \quad (26)$$

where

- η_{wh} is the water heating energy efficiency expressed in %;
- Q_{ref} is the reference energy content of the considered load profile in kWh;
- Q_{elec} is the daily electrical energy consumption in kWh;
- CC is the conversion coefficient, equal to 2,5;
- SCF is the smart control factor as determined according to 7.11.2;
- Q_{cor} is the ambient correction term as determined according to 7.12 in kWh.
- $smart$ is an indicator of the smart control compliance of the product.

If the value of SCF is greater or equal to 0,07 and the requirement under 7.11.2.9 is fulfilled then the value of $smart$ shall be 1. In all other cases, the value of $smart$ shall be 0.

7.13.2.1 Calculation of η_{wh} for heat pump combination water heaters

The water heating energy efficiency for heat pump combination heaters is defined in Formula (27) and shall be expressed in %:

$$\eta_{wh} = \frac{Q_{ref}}{(CC \times Q_{elec})} \quad (27)$$

where

- η_{wh} is the water heating energy efficiency expressed in %;
- Q_{ref} is the reference energy content of the considered load profile in kWh;
- Q_{elec} is the daily electrical energy consumption in kWh;
- CC is the conversion coefficient, equal to 2,5”;

EN 16147:2017/prA1:2020 (E)

Replace the whole subclause 7.13.3 with the following:

“7.13.3 Calculation of the Annual Consumption of electric energy**7.13.3.1 Calculation of Annual Consumption of electric energy for heat pump water heaters**

The annual electrical energy consumption (*AEC*) for heat pump water heaters in kWh/a and rounded to the nearest integer shall be calculated using Formula (28):

$$AEC = 0,6 \times 366 \times \left(Q_{\text{elec}} \times (1 - SCF \times smart) + \frac{Q_{\text{cor}}}{CC} \right) \quad (28)$$

7.13.3.2 Calculation of Annual Consumption of electric energy for heat pump combination water heaters

The annual electrical energy consumption (*AEC*) for heat pump combination water heaters in kWh/a and rounded to the nearest integer shall be calculated using Formula (29):

$$AEC = 220 \times Q_{\text{elec}} \quad (29)''$$

Review the numbering of the Formula in subclause 7.14.1.

3 Modification of Annexes ZA, ZB, ZC and ZD

Replace Annexes ZA, ZB, ZC and ZD with the following:

“

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Annex ZA (informative)

Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EU) No 814/2013 aimed to be covered

This European standard has been prepared under a Commission's standardization request M/534 (Ecodesign Water Heaters) to provide one voluntary means of conforming to the ecodesign requirements of Commission Regulation (EU) No 814/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks.

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding ecodesign requirements of that Regulation and associated EFTA Regulations.

Table ZA.1 — Correspondence between this European Standard and Commission Regulation (EU) No 814/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks and Commission's standardization request M/534 (Ecodesign Water Heaters)

Ecodesign requirements of Regulation No 814/2013	Clause(s)/subclause(s) of this EN	Remarks/Notes
Annex II, 1.3	7.10	
Annex II, 1.1	7.13	
Annex II, 1.2	7.6	
Annex II, 1.4	7.14.1	"For rated heat output" definition and calculation
Annex II, 1.6	9	In particular refer to Table 10 and Table 12.
Annex II, 1.6 d)	11	
Annex III	5	
Annex III, 2	7.3	
Annex III, 2	7.9	
Annex III, 3 and 6	7.11	
Annex III, 5	6.5.1	
Annex III, 6	7.6	
Annex III, 6	7.10	
Annex III, 6	7.13	
Annex IV, 2 and 3	7.13	