SLOVENSKI STANDARD
SIST EN 13215:2017/oprA1:2019

01-oktober-2019

Kondenzacijske enote za hladilne naprave - Ocenjevalni pogoji za razvrščanje, odstopanja (tolerance) in predstavitev podatkov o lastnostih, ki jih navede proizvajalec - Dopolnilo A1

Condensing units for refrigeration - Rating conditions, tolerances and presentation of manufacturer's performance data

Verflüssigungssätze für die Kälteanwendung - Nennbedingungen, Toleranzen und Darstellung von Leistungsdaten des Herstellers

Unités de condensation pour la réfrigération - Détermination des caractéristiques, tolérances et présentation des performances du fabricant

Ta slovenski standard je istoveten z: **EN 13215:2016/prA1**

ICS:

27.200	Hladilna tehnologija	Refrigerating technology

SIST EN 13215:2017/oprA1:2019 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
EN 13215:2016

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ICS 27.200

English Version

Condensing units for refrigeration - Rating conditions, tolerances and presentation of manufacturer's performance data

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Verflüssigungssätze für die Kälteanwendung - Nennbedingungen, Toleranzen und Darstellung von Leistungsdaten des Herstellers

This draft amendment is submitted to CEN members for second 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 13215:2016. 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

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European foreword

This document (EN 13215:2016/prA1:2019) 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 second CEN Enquiry.

This document will supersede EN 13215:2016/prA1:2018.

This document has been prepared under a mandate 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), see informative Annex ZA, which is an integral part of EN 13215:2016.

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

a) part load conditions according to M/495 “Standardisation mandate to CEN, CENELEC and ETSI under Directive 2009/125/EC relating to harmonised standards in the field of Ecodesign” are taken into account;

b) inclusion of the calculation of seasonal energy performance ratio (*SEPR*);

c) updated terms and definitions;

d) inclusion of refrigerant blends with temperature glide.

1 Modification to Clause 2, Normative references

Replace

"EN 378-1:2008+A2:2012, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria"*

with

"EN 378-1:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria".*

2 Modification to Clause 3, Terms and definitions

In the 1st paragraph, replace

"EN 378-1:2008+A2:2012"

with

"EN 378-1:2016".

Add the following new term after 3.1

3.2
evaporating temperature
t_o
temperature between the evaporating dew point and the evaporator inlet temperature of the refrigerant at the pressure of the condensing unit inlet, as calculated according to Annex B

Note 1 to entry: For refrigerants without glide the evaporating temperature is equal to the dew point temperature at the condensing unit inlet pressure.

and renumber the following terms and definitions accordingly up to 3.8.

Add the following new terms after 3.8:

3.9
glide
difference between dew point temperature and bubble point temperature at a given pressure

[SOURCE: EN 14511-1:2018, 3.46]

3.10
condensing temperature
arithmetic mean temperature between the condensing dew point and bubble point at the compressor discharge pressure.

3 Modification to 7.1, General

Add after the first paragraph:

"It shall be declared whether arithmetic mean temperature, thermodynamic mean temperature or dew point evaporating temperature is used, see also Annex B.

The manufacturer can choose to rate the condensing unit at dew point evaporating temperature even for refrigerant with a glide."

4 Modification to 7.3, Tabular or graphical form

In c), replace

"c) the evaporating temperature/suction dew point temperature, at intervals not greater than 5 K."

with

"c) the evaporating temperature, at intervals not greater than 5 K.".

5 Modification to 8.2, Standard reference points

Table 4, first column, second row, delete

"— **suction dew point**".

6 Modification to 8.4, Water cooled condensing units

Delete in the first sentence

"/dew point temperature"

And replace in the same sentence

"compressor discharge pressure"

with

"condensing unit outlet pressure".

7 Addition of a new Annex B

Add the following new Annex B:

"

Annex A
(normative)

Determination of evaporating temperature with refrigerant mixtures

For refrigerants with glide the evaporating temperature is the arithmetic mean of the evaporator inlet temperature and dew point temperature at the condensing unit inlet pressure with the following assumptions: isenthalpic expansion from condensing unit outlet temperature to the condensing unit inlet pressure, isobaric evaporation, no suction line pressure drop and temperature changes of the refrigerant are linear with the enthalpy during evaporation and effects of oil circulation are ignored.

The determination of the inlet temperature in the area of two phases is done by linear interpolation between dew point and bubble point temperature at evaporating pressure, via the enthalpy at the expansion device inlet.

$$t_{om} = \frac{t_{o1} + t_{oD}}{2} \tag{A.1}$$

$$t_{o1} = t_{oB} + \left(t_{oD} - t_{oB}\right) \cdot \frac{h_{EX} - h_{oB}}{h_{oD} - h_{oB}} \tag{A.2}$$

where

t_{om} is the arithmetic mean evaporating temperature, expressed in degree Celsius (°C) ;

t_{o1} is the temperature at the inlet of the evaporator at unit inlet pressure, expressed in degree Celsius (°C);

t_{oD} is the temperature of the evaporating dew point at unit inlet pressure, expressed in degree Celsius (°C);

t_{oB} is the temperature of the bubble point at unit inlet pressure, expressed in degree Celsius (°C);

h_{EX} is the enthalpy at the expansion device inlet, expressed in Joule per kilogram (J/kg);

h_{oB} is is the enthalpy at the bubble point at condensing unit inlet pressure, expressed in Joule per kilogram (J/kg);

h_{oD} is is the enthalpy at the dew point at condensing unit inlet pressure, expressed in Joule per kilogram (J/kg).

For many refrigerant blends, the linear interpolation is a good approximation. For refrigerants with temperature glide larger than 7 K, from bubble point to dew-point at evaporating pressure, the linear interpolation might deviate significantly from the thermodynamic mean evaporating temperature $t_{o,th}$, expressed in °C.

$$t_{o,th} = \frac{\Delta h}{\Delta s} - 273{,}15\,\mathrm{K} = \frac{h_{oD} - h_{EX}}{s_{oD} - s_{o1}} - 273{,}15\,\mathrm{K} \tag{A.3}$$