SLOVENSKI STANDARD
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Ploskovni sistemi za ogrevanje in hlajenje z vodo - 1. del: Definicije in simboli

Water based surface embedded heating and cooling systems - Part 1: Definitions and symbols

Raumflächenintegrierte Heiz- und Kühlsysteme mit Wasserdurchströmung - Teil 1: Definitionen und Symbole

Systèmes de surfaces chauffantes et rafraîchissantes hydrauliques intégrées - Partie 1: Définitions et symboles

Ta slovenski standard je istoveten z: **prEN 1264-1**

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01.040.91	Gradbeni materiali in gradnja (Slovarji)	Construction materials and building (Vocabularies)
01.075	Simboli za znake	Character symbols
91.140.10	Sistemi centralnega ogrevanja	Central heating systems

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Will supersede EN 1264-1:2011

English Version

Water based surface embedded heating and cooling systems - Part 1: Definitions and symbols

Systèmes de surfaces chauffantes et rafraîchissantes hydrauliques intégrées - Partie 1: Définitions et symboles

Raumflächenintegrierte Heiz- und Kühlsysteme mit Wasserdurchströmung - Teil 1: Definitionen und Symbole

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 130.

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

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European foreword

This document (prEN 1264-1:2020) has been prepared by Technical Committee CEN/TC 130 “Space heating appliances without integral heat sources”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1264-1:2011.

This document, *Water based surface embedded heating and cooling systems,* consists of the following parts:

— *Part 1: Definitions and symbols;*

— *Part 2: Floor heating: Methods for the determination of the thermal output using calculations and experimental tests*;

— *Part 3: Dimensioning;*

— *Part 4: Installation;*

— *Part 5: Determination of the thermal output for wall and ceiling heating and for floor, wall and ceiling cooling.*

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

a) Clarified the scope;

b) Improved wording, especially the term “prove method”;

c) Specified the definition of embedded heating and cooling systems;

d) Expanded the types of embedded heating and cooling systems;

e) Deleted, modified and added of several terms and definitions;

f) Updated references.

1 Scope

EN 1264 covers surface embedded heating and cooling systems installed in buildings, residential and non-residential (e.g. office, public, commercial and industrial buildings) and focuses on systems installed for the purpose of thermal comfort.

EN 1264 applies to water based heating and cooling systems embedded into the enclosure surfaces of the room to be heated or to be cooled. It also applies as appropriate to the use of other heating media instead of water.

EN 1264 applies to identify standardized product characteristics by calculation and testing the thermal output of heating for technical specifications and certification. For the design, construction and operation of these systems, EN ISO 11855 applies.

The systems covered in EN 1264 are adjoined to the structural base of the enclosure surfaces of the building, mounted directly or with fixing supports. It does not cover ceiling systems mounted in a suspended ceiling with a designed open air gap between the system and the building structure which allows the thermally induced circulation of the air. The thermal output of these systems can be determined according to ISO 18566, EN 14037 and EN 14240.

EN 1264-1 describes system types and characteristics of water based surface embedded radiant heating and cooling systems.

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 1264-2, *Water based surface embedded heating and cooling systems — Part 2: Floor heating: Methods for the determination of the thermal output using calculations and experimental tests*

prEN 1264-4:2019, *Water based surface embedded heating and cooling systems — Part 4: Installation*

EN ISO 11855, *Building environment design — Design, dimensioning, installation and control of embedded radiant heating and cooling systems*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at http://www.iso.org/obp

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

3.1
Surface embedded heating and cooling system

Note1 to entry For the definition of the different system types, see Annex A.

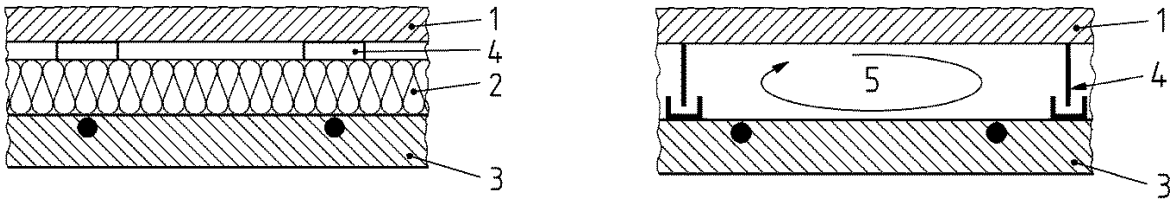
3.1.1
surface embedded heating and cooling system
heating or cooling installation embedded into the enclosure surfaces of the room which is adjoined to the structural base of the enclosure surfaces of the building, directly mounted or with fixing supports, without any open air gap consisting of circuits of pipes, circuit distributors, and control equipment

Note 1 to entry: The system can be embedded in the floor, wall or ceiling.

3.1.2
open air gap
designed air inclusions between the heated or cooled surface and the structural base of the building which is large enough to enable thermally induced air circulation

Note 1 to entry: The designed open air gap supports the thermal exchange between the system and the room

Note 2 to entry: Wall and ceiling systems can have air inclusions due to fixing supports, see Figure 1. These are not regarded as open air gaps when the separated inclusions act as a thermal insulation without internal air circulation.



Key

1 structural base / ceiling
2 insulation layer
3 heating/cooling panel
4 fixing supports
5 open air gap

Figure 1 — Open air gap

3.1.3
circuit
section of pipes connected to circuit distributor which can be independently switched and controlled

3.1.4
circuit distributor
common connection point for several circuits

3.1.5
thermal diffusion device
component in contact with the pipe having a high thermal conductivity in order to improve the thermal distribution

3.1.6
thermal diffusion layer
layer for transferring the thermal energy between the pipes and the surface and storing thermal energy

3.1.7
system insulation
insulation with the thermal resistance $R_{\lambda,ins}$ to limit the heat loss of heating and cooling systems

Note 1 to entry: According to prEN 1264 4:2019, Table 1 and Table 3

3.1.8
interior walls
partitions of rooms within dwellings or similar used room groups

3.2
supplementary heating equipment
additional heating facility, e.g. convectors, radiators with the additional required thermal output and possibly with its own control equipment

3.3
Parameters of design

3.3.1
standard heat load in a floor heated room
$Q_{N,f}$
rate of heat loss from the building to the outside and to neighbouring rooms under standardized conditions, depending on the regional climatic data, the location, its use and the thermal properties of the building

Note 1 to entry: When calculating the standard heat load, the thermal output from the embedded heating systems in the neighbouring room is not taken into account.

3.3.2
standard cooling load
$Q_{C,f}$
rate of heat input into the building from the external environment and neighbouring rooms under standardized conditions and depending on the regional climatic data, location, its use and thermal properties of the building

3.3.3
additional thermal output
Q_{out}
thermal output of supplementary heating equipment

Note 1 to entry: $Q_{out} = Q_{N,f} - Q_F$

3.3.4
heating/cooling surface
A_F
area of surface covered by the heating or cooling system, including a perimeter strip whose width should be half of one spacing, but not exceeding 0,150 m

3.3.5
furniture area
area of the floor surface not covered by a heating or cooling system, intended for permanent placement of furnishings forming part of the building

3.3.6
peripheral area
A_R
floor surface heated to a higher temperature and generally an area of 1,0 m maximum in width along exterior walls.

Note 1 to entry: It is not an occupied area.

3.3.7
occupied area
A_A
area within the heated or cooled floor surface occupied for long periods

Note 1 to entry: In case of floor heating, it consists of the heating floor surface less the peripheral area.

3.3.8
standard indoor room temperature
ϑ_i
resultant indoor temperature defined as the average of the dry air temperature and the mean radiant temperature

Note 1 to entry: The resultant temperature is considered as the relevant for thermal comfort assessment and heat loss calculations. This value of internal temperature ϑ_i is used for the calculation method [1], [2].

3.3.9
regional dew point
$\vartheta_{Dp,R}$
dew point specified depending on the climatic conditions of the region

3.3.10
design dew point
$\vartheta_{Dp,des}$
dew point determined for the design

3.4
Thermal output

3.4.1
specific thermal output of floor heating systems
q
thermal output of floor heating systems divided by the surface area

3.4.2
specific thermal output of embedded heating systems
q_H
thermal output of embedded heating systems divided by the surface area

Note 1 to entry: For floor heating, index H is not used.

3.4.3
specific thermal output of embedded cooling systems
q_C
thermal output of embedded cooling systems divided by the surface area

3.4.4
limit of specific thermal output of floor heating systems
q_G
specific thermal output at which the permissible maximum floor surface temperature is achieved

Note 1 to entry: In the case of floor heating, this means the maximum value of surface temperature $\vartheta_{F,max}$ within the range of temperature distribution.

3.4.5
maximum limit of specific thermal output of floor heating systems
$q_{G,max}$
limit of specific thermal output of floor heating systems, calculated in accordance with the Basic Characteristic Curve due to maximum floor surface temperature $\vartheta_{F,max}$ together with isothermal surface temperature distribution

3.4.6
standard thermal output of floor heating systems
q_N
limit of specific thermal output of floor heating systems achieved without floor covering

3.4.7
standard specific thermal output of embedded heating systems
$q_{H,N}$
specific thermal output of embedded heating systems achieved with standard temperature difference between heating medium and room

Note 1 to entry: For heating systems (other than floor heating), $\Delta\vartheta_{H,N}$ = 10 K is valid.

3.4.8
standard specific thermal output of embedded cooling systems
$q_{C,N}$
specific thermal output of embedded cooling systems achieved with standard temperature difference between room and cooling medium

Note 1 to entry: For cooling systems, $\Delta\vartheta_{C,N}$ = 8 K is valid.

3.4.9
design value of specific thermal output of floor heating systems
q_{des}
amount due to the room, calculated with the standard heat load, divided by the heating floor surface area

3.4.10
maximum value of specific thermal output
q_{max}
highest design value q_{des} within q_G of specific thermal output in circuits operated at the same design flow temperature

3.4.11
downward specific heat loss of floor heating systems
q_u
specific thermal output throughout the floor construction, to rooms beyond, the ground or cold void

3.4.12
design thermal output of floor heating systems
q_F
sum of thermal output based on output of each area in relation to the total room floor area

3.4.13
design value of specific cooling load
$q_{C,Ld,des}$
standard cooling load divided by the cooling surface

3.4.14
design specific thermal output of cooling systems
$q_{C,des}$
value of specific thermal output achieved with design value of average temperature difference between room and cooling medium

3.5
Surface temperatures

3.5.1
maximum floor surface temperature
$\vartheta_{F,max}$

maximum temperature permissible for physiological reasons, for calculation of the limit curves, which may occur at a point on the floor in the occupied or peripheral area

Note 1 to entry: $\vartheta_{F,max}$ limits the thermal output. In this case the highest point surface temperature on the floor need to be taken.

3.5.2
average surface temperature
$\vartheta_{F,m}$
average temperature of the activated surface area for each circuit

3.5.3
average temperature difference between surface and room
difference $\vartheta_{F,m} - \vartheta_i$ between the average temperature of the heating or cooling surface and the standard indoor room temperature

Note 1 to entry: This determines the specific thermal output for heating and cooling.

3.6
Temperatures of the heating/cooling medium

NOTE In this standard series, the denotations medium and water are used as synonym.

3.6.1
temperature difference between heating medium and room
$\Delta\vartheta_H$
average difference between the temperatures of the heating medium and the standard indoor room temperature determined in a logarithmic equation

Note 1 to entry: See prEN 1264-2:2019, Formula (1).

3.6.2
limit value of temperature difference between heating medium and room
$\Delta\vartheta_{H,G}$
temperature difference between heating medium and room at which the permissible maximum floor surface temperature is achieved

Note 1 to entry: $\Delta\vartheta_{H,G}$ is determined by the specific thermal output q_G, see prEN 1264-2:2019, Formula (20).

3.6.3
standard temperature difference between heating medium and room for floor heating systems
$\Delta\vartheta_N$
limit value of temperature difference $\Delta\vartheta_{H,G}$ between heating medium and room floor heating systems without floor covering

Note 1 to entry: $\Delta\vartheta_N$ is determined by the standard specific thermal output q_N.

3.6.4
standard temperature difference between heating medium and room for heating systems with the exception of floor heating
$\Delta\vartheta_{H,N}$
standard value set at 10 K

3.6.5
design temperature difference between heating medium and room of floor heating systems
$\Delta\vartheta_{H,des}$

value of temperature difference between heating medium and room taking into account the thermal resistance of the chosen floor covering, at q_{max}

3.6.6
heating circuit design temperature difference between heating medium and room of floor heating systems
$\Delta\vartheta_{H,j}$
value of temperature difference between heating medium and room with the thermal resistance of the chosen floor covering, at a required value of specific thermal output q_j which is less than maximum value of specific thermal output q_{max}

3.6.7
design temperature difference between flow of heating medium and room of floor heating systems
$\Delta\vartheta_{V,des}$
value of temperature difference between flow of heating medium and room with the thermal resistance of the chosen floor covering, at maximum value of specific thermal output q_{max}

3.6.8
design flow temperature of floor heating systems
$\vartheta_{V,des}$
value of flow water temperature with the thermal resistance of the chosen floor covering, at maximum value of specific thermal output q_{max}