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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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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 (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

Note 1 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.

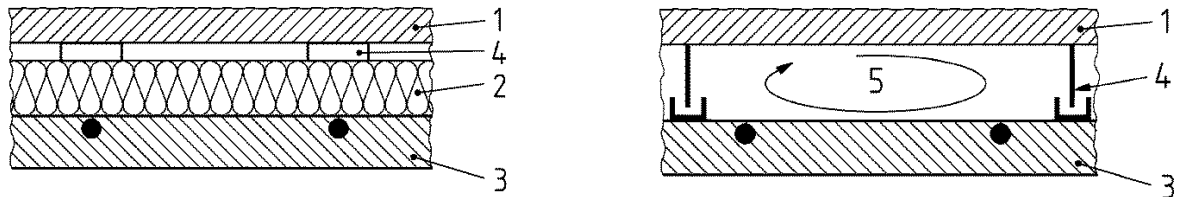
### 3.1.2

#### 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.