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Utgåva 1

**Värmesystem i byggnader – Utformning och
installation av direktverkande rumsvärme-
system**

**Heating Systems in buildings – Design and
installation of direct electrical room heating
systems**

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Postadress: SIS Förlag AB, 118 80 STOCKHOLM
Telefon: 08 - 555 523 10. *Telefax:* 08 - 555 523 11
E-post: sis.sales@sis.se. *Internet:* www.sis.se

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English Version

Heating Systems in buildings - Design and installation of direct electrical room heating systems

Systèmes de chauffage dans les bâtiments - Conception et installation des systèmes de chauffage électrique direct

Heizungssysteme in Gebäuden - Planung und Einbau von elektrischen Direkt-Raumheizungen

This European Standard was approved by CEN on 14 February 2005.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN 14337:2005 (E)

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Foreword

This document (EN 14337:2005) has been prepared by Technical Committee CEN/TC 228 "Heating Systems in Buildings", the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

The subjects covered by CEN/TC 228 are the following:

- design of heating systems (water based, electrical etc.);
- installation of heating systems;
- commissioning of heating systems;
- instructions for operation, maintenance and use of heating systems;
- methods for calculation of the design heat loss and heat loads;
- methods for calculation of the energy performance of heating systems.

Heating systems also include the effect of attached systems such as hot water production systems.

All these standards are systems standards, i.e. they are based on requirements addressed to the system as a whole and not dealing with requirements to the products within the system.

Where possible, reference is made to other European or International Standards, a.o. product standards. However, use of products complying with relevant product standards is no guarantee of compliance with the system requirements.

The requirements are mainly expressed as functional requirements, i.e. requirements dealing with the function of the system and not specifying shape, material, dimensions or the like.

The guidelines describe ways to meet the requirements, but other ways to fulfil the functional requirements might be used if fulfilment can be proved.

Heating systems differ among the member countries due to climate, traditions and national regulations. In some cases requirements are given as classes so national or individual needs may be accommodated.

In cases where the standards contradict with national regulations, the latter should be followed.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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1. Scope

This document specifies the design criteria for electrical heating systems in individual and collective residential buildings, the commercial and industrial building sector.

This document covers fixed electrical heaters which emit heat directly into space by use of electricity only.

The following systems are included:

- electric instantaneous heating systems:
 - natural or fan convector heaters;
 - radiant panels;
 - radiators / resistance heaters;
 - ceiling heating;
 - infra-red and quartz linear heaters;
 - thin slab floor heating;
 - wall heating.
- electric non-instantaneous heating systems:
 - full slab floor heating;
 - room storage heaters;
 - room storage fan heaters.

This document does not cover radiant electric fires, movable heaters or electric heating systems that require a transfer medium outside of the appliance to deliver heat into the space. Examples of such systems include:

- air conditioning or cooling systems;
- unitary heat pumps;
- window, through the wall and split system;
- warm air distribution systems;
- central storage serving hot water radiator or warm air systems;
- hot water production, either storage or direct;
- any individual appliance serving more than one room.

Requirements for installation, commissioning, and operation maintenance and use of direct electrical heating systems are excluded from this document.

This document does not overwrite national regulations.

This document does not override or add to requirements in appliance standards.

2. Normative references

The following referenced documents are indispensable for the application 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 12098-3, *Controls for heating systems - Part 3: Outside temperature compensated control equipment for electrical heating systems*

prEN 12098-4, *Controls for heating systems - Part 4: Optimum start-stop control equipment for electrical systems*

prEN 12098-5, *Controls for heating systems - Part 5: Start-stop schedulers for heating systems*

EN 12170, *Heating systems in buildings – Procedure for the preparation of documents for operation, maintenance and use – Heating systems requiring a trained operator*

EN 12171, *Heating systems in buildings – Procedure for the preparation of documents for operation, maintenance and use – Heating systems not requiring a trained operator*

EN 12831, *Heating systems in buildings - Method for calculation of the design heat load*

EN 14335, *Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies*

EN 60531, *Household electric thermal storage room heaters - Methods of measuring the performance* (IEC 60531:1999 modified)

EN 60675, *Household electric direct-acting room heaters - Methods for measuring performance* (IEC 60675:1994)

EN ISO 7730, *Moderate thermal environments – Determination of the PMV and PPD indices and specification of the conditions for thermal comfort* (ISO 7730:1994)

prHD 60364-1, *Electrical installations of buildings – Part 1: Fundamental principles, assessment of general characteristics, definitions*

3. Terms and definitions

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

3.1

central control

method of controlling the heat flow to a heat emission system by varying the power input

3.2

design heat load

required heat flow necessary to achieve the specified design conditions

3.3

design heat loss

quantity of heat per unit time leaving the building to the external environment under specified design conditions

3.4

external design temperature

external air temperature which is used for the calculation of the design heat loss

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3.5

external air temperature

air temperature outside the building

3.6

heat gain

quantity of heat generated within or entering into the heated space from heat sources other than the heating system

3.7

heating period

time when heating is needed to maintain the internal design temperature

3.8

internal design temperature

operative temperature at the center of the zone, used for the calculation of the design heat loss

3.9

local control

method of controlling the heat flow to a heat emission system locally on the basis of the temperature of the heated space

3.10

operating temperature(s)

temperature(s) at which the system (or parts of the system) is designed to be operated

3.11

operative temperature

arithmetic average of the air temperature and the mean radiant temperature

3.12

temperature control

method of controlling the system temperature in a zone or heated space by automatic means (setting of temporary override of the control is possible)

3.13

timing control

operation which switches heating modes to affect the heating control system according to a program

3.14

optimization of timing control

optimum start-up and shut-down times in order to reduce energy consumption and to take into account where necessary variations in tariffs without reducing thermal comfort defined by the user.

3.15

zone

space or groups of spaces with similar thermal characteristics

3.16

zone control

local control of a zone consisting of more than one space