Hoonete küttesüsteemid. Arvutusliku küttekoormuse arvutusmeetodid

Heating systems in buildings - Method for calculation of the design heat load

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA	NATIONAL FOREWORD
See Eesti standard EVS-EN 12831:2003 sisaldab Euroopa standardi EN 12831:2003 ingliskeelset teksti.	This Estonian standard EVS-EN 12831:2003 consists of the English text of the European standard EN 12831:2003.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 05.03.2003.	Date of Availability of the European standard is 05.03.2003.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Heating systems in buildings - Method for calculation of the design heat load

Systèmes de chauffage dans les bâtiments - Méthode de calcul des déperditions calorifiques de base

Heizungsanlagen in Gebäuden - Verfahren zur Berechnung der Norm-Heizlast

This European Standard was approved by CEN on 6 July 2002.

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 Management Centre 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 Management Centre has the same status as the official versions.

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

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

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FOREWORD

This document EN 12831:2003 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 September 2003, and conflicting national standards shall be withdrawn at the latest by March 2004.

This document includes one normative annex, annex D, and three informative annexes, annex A, B and C.

This document includes a Bibliography.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom.

INTRODUCTION

This standard specifies a calculation method for calculation of the heat supply needed under standard design conditions in order to make sure that the required internal design temperature is obtained.

This standard describes calculation of the design heat load:

- on a room by room or heated space by heated space approach, for the purpose of dimensioning the heat emitters;
- on a whole building or building entity approach, for the purpose of dimensioning the heat supply.

This standard also provides a simplified calculation method.

The set values and factors required for calculation of the heat load should be determined in a national annex to this standard. Annex D tabulates all factors, which may be determined on a national level and gives default values for cases where no national values are available.

1 - SCOPE

This standard specifies methods for calculating the design heat loss and the design heat load for basic cases at the design conditions.

Basic cases comprise all buildings:

- with a limited room height (not exceeding 5 m);
- assumed to be heated to steady state conditions under the design conditions.

Examples of such buildings are: residential buildings; office and administration buildings; schools; libraries; hospitals; recreational buildings; prisons; buildings used in the catering trade; department stores and other buildings used for business purposes; industrial buildings.

In the annexes, information is also given for dealing with the following special cases:

- high ceiling buildings or large enclosure;
- buildings where air temperature and mean radiant temperature differ significantly.

2 - NORMATIVE REFERENCES

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 673
Glass in building - Determination of thermal transmittance (U value) - Calculation method.

EN ISO 6946
Building components and building elements - Thermal resistance and thermal transmittance - Calculation method (ISO 6946:1996).

EN ISO 10077-1
Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Part 1: Simplified method (ISO 10077-1:2000).

prEN ISO 10077-2
Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Part 2: Numerical method for frames (ISO/DIS 10077-2:1998).

EN ISO 10211-1
Thermal bridges in building construction - Heat flows and surface temperatures - Part 1: General calculation methods (ISO 10211-1:1995).

EN ISO 10211-2
Thermal bridges in building construction - Calculation of heat flows and surface temperatures - Part 2: Linear thermal bridges (ISO 10211-2:2001).

EN ISO 10456
Building materials and products - Procedures for determining declared and design thermal values (ISO 10456:1999).

EN 12524
Building materials and products - Hygrothermal properties - Tabulated design values.

EN ISO 13370
Thermal performance of buildings - Heat transfer via the ground - Calculation methods (ISO 13370:1998).

EN ISO 14683
Thermal bridges in building construction - Linear thermal transmittance - Simplified methods and default values (ISO 14683:1999).