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Building environment design - Design, dimensioning, installation and control of embedded radiant heating and cooling systems - Part 2: Determination of the design heating and cooling capacity (ISO 11855-2:2012)

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NATIONAL FOREWORD

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See Eesti standard EVS-EN ISO 11855-2:2015 sisaldab Euroopa standardi EN ISO 11855-2:2015 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 11855-2:2015 consists of the English text of the European standard EN ISO 11855-2:2015.
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 05.08.2015.	Date of Availability of the European standard is 05.08.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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ICS 91.140.10, 91.140.30

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 11855-2

August 2015

ICS 91.140.10; 91.140.30

English Version

Building environment design - Design, dimensioning, installation and control of embedded radiant heating and cooling systems - Part 2: Determination of the design heating and cooling capacity (ISO 11855-2:2012)

Conception de l'environnement des bâtiments - Conception, dimensionnement, installation et contrôle des systèmes intégrés de chauffage et de refroidissement par rayonnement - Partie 2 : Détermination de la puissance calorifique et frigorifique à la conception (ISO 11855-2:2012)

Umweltgerechte Gebäudeplanung - Planung, Auslegung, Installation und Steuerung flächenintegrierter Strahlheizungs- und -kühlsysteme - Teil 2: Bestimmung der Auslegungs-Heiz- bzw. Kühlleistung (ISO 11855-2:2012)012)

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Ref. No. EN 11855-2:2015 E

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European foreword

The text of ISO 11855-2:2012 has been prepared by Technical Committee ISO/TC 205 “Building environment design” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 11855-2:2015 by Technical Committee CEN/TC 228 “Heating systems and water based cooling systems in buildings” the secretariat of which is held by DIN.

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 February 2016, and conflicting national standards shall be withdrawn at the latest by February 2016.

This standard is applicable for design, construction and operation of radiant heating and cooling systems. The methods defined in part 2 are intended to determine the design heating or cooling capacity used for the design and evaluation of the performance of the system.
For identifying product characteristics by testing and proving the thermal output of heating and cooling surfaces embedded in floors, ceilings and walls the standard series EN 1264 can be used.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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The text of ISO 11855-2:2012 has been approved by CEN as EN ISO 11855-2:2015 without any modification.

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Introduction

The radiant heating and cooling system consists of heat emitting/absorbing, heat supply, distribution, and control systems. The ISO 11855 series deals with the embedded surface heating and cooling system that directly controls heat exchange within the space. It does not include the system equipment itself, such as heat source, distribution system and controller.

The ISO 11855 series addresses an embedded system that is integrated with the building structure. Therefore, the panel system with open air gap, which is not integrated with the building structure, is not covered by this series.

The ISO 11855 series shall be applied to systems using not only water but also other fluids or electricity as a heating or cooling medium.

The object of the ISO 11855 series is to provide criteria to effectively design embedded systems. To do this, it presents comfort criteria for the space served by embedded systems, heat output calculation, dimensioning, dynamic analysis, installation, operation, and control method of embedded systems.

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

Part 2: Determination of the design heating and cooling capacity

1 Scope

This part of ISO 11855 specifies procedures and conditions to enable the heat flow in water based surface heating and cooling systems to be determined relative to the medium differential temperature for systems. The determination of thermal performance of water based surface heating and cooling systems and their conformity to this part of ISO 11855 is carried out by calculation in accordance with design documents and a model. This should enable a uniform assessment and calculation of water based surface heating and cooling systems.

The surface temperature and the temperature uniformity of the heated/cooled surface, nominal heat flow density between water and space, the associated nominal medium differential temperature, and the field of characteristic curves for the relationship between heat flow density and the determining variables are given as the result.

This part of ISO 11855 includes a general method based on Finite Difference or Finite Element Methods and simplified calculation methods depending on position of pipes and type of building structure.

The ISO 11855 series is applicable to water based embedded surface heating and cooling systems in residential, commercial and industrial buildings. The methods apply to systems integrated into the wall, floor or ceiling construction without any open air gaps. It does not apply to panel systems with open air gaps which are not integrated into the building structure.

The ISO 11855 series also applies, as appropriate, to the use of fluids other than water as a heating or cooling medium. The ISO 11855 series is not applicable for testing of systems. The methods do not apply to heated or chilled ceiling panels or beams.

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.

ISO 11855-1:2012, *Building environment design — Design, dimensioning, installation and control of embedded radiant heating and cooling systems — Part 1: Definition, symbols, and comfort criteria*

EN 1264-2, *Water based surface embedded heating and cooling systems — Part 2: Floor heating: Prove methods for the determination of the thermal output using calculation and test methods*

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