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National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 15255:2007

ICS 91.140.99
91.120.10

ENERGY PERFORMANCE OF BUILDINGS - SENSIBLE ROOM COOLING LOAD CALCULATION - GENERAL CRITERIA AND VALIDATION PROCEDURES

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EUROPEAN STANDARD

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Performance thermique des bâtiments - Calcul de la charge de refroidissement en chaleur sensible d'un local - Critères généraux et procédures de validation

Wärmetechnisches Verhalten von Gebäuden - Berechnung der wahrnehmbaren Raumkühllast - Allgemeine Kriterien und Validierungsverfahren

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Foreword

This document (EN 15255:2007) has been prepared by Technical Committee CEN/TC 89 “Thermal performance of buildings and building components”, the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association (Mandate M/343), and supports essential requirements of EU Directive 2002/91/EC on the energy performance of buildings (EPBD). It forms part of a series of standards aimed at European harmonisation of the methodology for the calculation of the energy performance of buildings. An overview of the whole set of standards is given in prCEN/TR 15615.

Attention is drawn to the need for observance of EU Directives transposed into national legal requirements. Existing national regulations (with or without reference to national standards) may restrict for the time being the implementation of this European Standard.

This European Standard is one of a series of standards on general criteria and validation procedures for transient calculation methods for the design and the evaluation of the thermal and energy performance of buildings and building components. No existing European Standard is superseded.

The target audience of this European Standard are software developers of building simulation tools and policy makers in the building regulation sector. The standard specifies the boundary conditions and the simplifications needed to reach calculation results for the building part which are comparable.

It needs to be emphasized that there exist more sophisticated energy simulation methods and procedures including interactions with the heating, cooling, ventilating and lighting systems which may be used for the design and optimization process of a building but are not in line with existing European Standards.

This European Standard provides the means (in part) to assess the contribution that building products and services make to energy conservation and to the overall energy performance of buildings.

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

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Introduction

The proper design and sizing of air conditioning systems requires the calculation of the cooling load in the space to be conditioned (room cooling load). The variables affecting the room cooling load calculation are numerous, often difficult to define precisely and always intricately inter-related. Many cooling load components vary widely in magnitude during a 24-hour period.

Since these cyclic changes are often out of phase with each other, they need to be analyzed to establish the maximum room cooling load for a building or zone. The maximum cooling capacity for a zoned building is the largest hourly total of the simultaneous zone loads throughout a design day; but it needs to handle the peak cooling load for each zone at its peak hour. This means that a calculation method needs to be able to determine the cooling load of each zone throughout the calculation period.

A large number of calculation methods are available in Europe. These methods generally are based on different solution techniques that include simplifications of the real phenomena. According to those simplifications they are able to consider specific or general situations. One specific situation is represented by the calculation of the maximum peak load of a single zone for convective source with the control of the air temperature.

This European Standard includes the criteria and the level of input and output data required for a simplified calculation method of the cooling load of a single room.

A simplified load calculation method is given in the informative Annex A.

Any calculation method satisfies the standard if it complies with the assumptions, data requirements and the validation procedures described in Clause 7.

The series of European Standards, giving general criteria and validation procedures for the building part of energy simulation models for the different calculation subjects, are listed below.

European Standard	Subject
EN ISO 13791 EN ISO 13792	Temperature calculations (air and operative)
EN 15255	Load calculations (sensible cooling)
EN 15265	Energy need calculations (heating and cooling)

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