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English Version

**Explanation of the general relationship between various
European standards and the Energy Performance of Buildings
Directive (EPBD) - Umbrella Document**

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Foreword

This document (CEN/TR 15615:2008) has been prepared by CEN/BT/TF 173, the secretariat of which is held by CMC.

This report refers to EU Directive 2002/91/EC of December 2002 on the Energy Performance of Buildings.

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 the European standards mentioned in this report.

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Introduction

Directive 2002/91/EC on the Energy Performance of Buildings (the EPBD) requires several different measures to achieve prudent and rational use of energy resources and to reduce the environmental impact of the energy use in buildings.

This is to be accomplished by increased energy efficiency in both new and existing buildings. One tool for this will be the application by Member States of minimum requirements on the energy performance of new buildings and for large existing buildings that are subject to major renovation (EPBD Articles 4, 5 and 6). Other tools will be energy certification of buildings (Article 7) and inspection of boilers and air-conditioning systems (Articles 8 and 9).

A basic requirement for measures in Articles 4, 5, 6 and 7 is the existence of a general framework for a methodology of calculation of the total energy performance of buildings, as set out in Article 3 and the Annex to the Directive.

This technical report describes the European standards (ENs) that are intended to support the EPBD by providing the calculation methods and associated material to obtain the overall energy performance of a building.

In Annex A the standards concerned are arranged in a hierarchical fashion. Section 1 lists standards concerned with overall energy performance in support of Articles 4 to 7 of the Directive. Sections 2 to 5 list the standards relating to specific aspects or modules of building energy performance which contribute to the overall calculation. The content of the individual standards is summarised in Annex B.

Annex C provides a list of definitions, and Annex D a list of principal symbols, that are used consistently in the standards. It is intended that these annexes will form the basis of a future trilingual standard covering common definitions and symbols for energy calculations.

Explanation of the general relationship between various European standards and the Energy Performance of Buildings Directive (EPBD)

1 Relationship of the standards to the EPBD

1.1 Overview

The calculation methodology follows the framework set out in the Annex to the EPBD¹. The various standards used in this process are listed in Annex A. Many of the standards deal with specific aspects of the calculation (e.g. fabric losses, air changes, energy use for lighting, system performance): these aspects are drawn together in the following items:

EN number	Content
EN 15603	Energy use, for space heating, cooling, ventilation, domestic hot water and lighting, inclusive of system losses and auxiliary energy; and definition of energy ratings
EN 15217	Ways of expressing energy performance (for the energy certificate) and ways of expressing requirements (for regulations); content and format of energy performance certificate
EN 15378	Boiler inspections
EN 15240	Air-conditioning inspections
EN ISO 13790	Energy needs for heating and cooling (taking account of losses and gains)

The main goal of these standards is to facilitate the implementation of the Directive in Member States. In consequence they do not prescribe a single definition of energy rating or the expression of energy performance, but rather give a limited number of options. Similarly the items on inspections offer various levels of inspection. It is up to national bodies to select one or more of the options given, depending on the purpose of the calculation and the type and complexity of the buildings and their services.

The four main components set out in the Directive relate to

- calculation methodology;
- minimum energy performance requirements;
- energy performance certificate;
- inspections of boilers and air-conditioning.

Figure 1 illustrates how the standards are related to articles of the EPBD defining these requirements.

1.2 Calculation methodology

The standards providing the calculation methodology are indicated in Figure 1, either explicitly or by reference to Annex A.

The calculation methodology is used to determine the data for energy certificates. EN ISO 13790 allows for different levels of complexity:

- simplified monthly or seasonal calculation;

¹ Directive 2002/91/EC on the Energy Performance of Buildings

- simplified hourly calculation;
- detailed calculation,

which can be chosen according to relevant criteria related to the purpose of the calculation, such as new or existing buildings or type and/or complexity of the building and its services. The calculations are based on specified boundary conditions of indoor climate (EN 15251) and external climate. The simplified calculation methods are fully specified in the EN ISO 13790. The detailed calculation methods are not fully specified in EN ISO 13790, but any implementation needs to be validated according to the criteria in EN 15265 and the input and boundary conditions are to be consistent with the fully specified methods. Zoning arrangements (applicable to all calculation methods) are described in EN ISO 13790.

The characteristics of the technical building systems are included via:

- heating systems, EN 15316-1, EN 15316-2-1, EN 15316-2-3, EN 15316-4 (various parts) and EN 15377;
- cooling systems, EN 15243;
- domestic hot water, EN 15316-3 (various parts);
- ventilation, EN 15241;
- lighting, EN 15193;
- integrated building automation and controls, EN 15232.

1.3 Energy performance certificate

The indicative content of the energy performance certificate is set out in EN 15217. This standard also includes the definition of the energy performance indicator and different options for the energy performance classification.

EN 15603 provides ratings to define energy performance. The categories for the purposes of certification are:

- calculated rating, based on calculated energy use under standardised occupancy conditions²;
- measured rating, based on metered energy³.

1.4 Periodic inspections of boilers and air-conditioning systems

These standards provide guidelines for the inspection of boilers and heating systems (EN 15378), ventilation systems (EN 15239) and air-conditioning systems (EN 15240). They provide for different levels of inspection.

2) Also known as "asset rating"

3) Also known as "operational rating"