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Energy performance of buildings - Method for calculation of system energy performance and system efficiencies

Part 6-6: Explanation and justification of EN 15316-4-3, Module M3-8-3, M8-8-3

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National foreword

This Published Document is the UK implementation of CEN/TR 15316-6-6:2017.

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Heizungsanlagen und Wasserbasierte Kühlanlagen in Gebäuden - Verfahren zur Berechnung der Energieanforderungen und Nutzungsgrade der Anlagen - Teil 6-6: Begleitende TR zur EN 15316-4-3 (Wärmeerzeugungssysteme, thermische Solar- und Photovoltaikanlagen)

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European foreword

This document (CEN/TR 15316-6-6:2017) has been prepared by Technical Committee CEN/TC 228 “Heating systems and water based cooling systems in buildings”, the secretariat of which is held by DIN.

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This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Introduction

The set of EPB standards, technical reports and supporting tools

In order to facilitate the necessary overall consistency and coherence, in terminology, approach, input/output relations and formats, for the whole set of EPB-standards, the following documents and tools are available:

a) a document with basic principles to be followed in drafting EPB-standards: CEN/TS 16628:2014, Energy Performance of Buildings - Basic Principles for the set of EPB standards [1];

b) a document with detailed technical rules to be followed in drafting EPB-standards; CEN/TS 16629:2014, Energy Performance of Buildings - Detailed Technical Rules for the set of EPB-standards [2];

c) the detailed technical rules are the basis for the following tools:

    1) a common template for each EPB-standard, including specific drafting instructions for the relevant clauses;

    2) a common template for each technical report that accompanies an EPB standard or a cluster of EPB standards, including specific drafting instructions for the relevant clauses;

    3) a common template for the spreadsheet that accompanies each EPB standard, to demonstrate the correctness of the EPB calculation procedures.

Each EPB-standards follows the basic principles and the detailed technical rules and relates to the overarching EPB-standard, EN ISO 52000-1 [17].

One of the main purposes of the revision of the EPB-standards is to enable that laws and regulations directly refer to the EPB-standards and make compliance with them compulsory. This requires that the set of EPB-standards consists of a systematic, clear, comprehensive and unambiguous set of energy performance procedures. The number of options provided is kept as low as possible, taking into account national and regional differences in climate, culture and building tradition, policy and legal frameworks (subsidiarity principle). For each option, an informative default option is provided (Annex B).

Rationale behind the EPB technical reports

There is a risk that the purpose and limitations of the EPB standards will be misunderstood, unless the background and context to their contents – and the thinking behind them – is explained in some detail to readers of the standards. Consequently, various types of informative contents are recorded and made available for users to properly understand, apply and nationally or regionally implement the EPB standards.

If this explanation would have been attempted in the standards themselves, the result is likely to be confusing and cumbersome, especially if the standards are implemented or referenced in national or regional building codes.

Therefore each EPB standard is accompanied by an informative technical report, like this one, where all informative content is collected, to ensure a clear separation between normative and informative contents (see CEN/TS 16629 [2]):

— to avoid flooding and confusing the actual normative part with informative content,

— to reduce the page count of the actual standard, and

— to facilitate understanding of the set of EPB standards.

This was also one of the main recommendations from the European CENSE project [19] that laid the foundation for the preparation of the set of EPB standards.

1 Scope

This Technical Report refers to EN 15316-4-3, Modules 3-8 and 8-8.

It contains information to support the correct understanding, use and national adaptation of EN 15316-4-3.

This Technical Report does not contain any normative provision.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15316-4-3:2017, *Energy performance of buildings — Method for calculation of system energy requirements and system efficiencies — Part 4-3: Heat generation systems, thermal solar and photovoltaic systems, Module M3-8-3, M8-8-3, M11-8-3*

EN ISO 7345:1995, *Thermal insulation — Physical quantities and definitions (ISO 7345:1987)*

EN ISO 52000-1:2017, *Energy performance of buildings — Overarching EPB assessment — Part 1: General framework and procedures (ISO 52000-1:2017)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 7345:1995, EN ISO 52000-1:2017, EN 15316-4-3:2017 (the accompanied EPB standard) apply.

4 Symbols and subscripts

For the purposes of this document, the symbols and subscripts given in EN ISO 52000-1:2017 and in EN 15316-4-3:2017 apply.

5 Information on the methods

5.1 General

The standard describes six methods for solar applications for intended use in buildings. The methods one to three refer to solar thermal applications and the methods four to six refer to photovoltaic applications.

5.2 Solar thermal methods

Method 1 is used for solar thermal applications if (only) system test data according to EN 12976-2 is available. This is commonly the case for solar system types for which the component specifications cannot be determined separately. An example of this is a so called Integrated Collector Storage system (= ICS).

The system test result, the annual performance of the system, for the actual climate conditions is interpolated to the actual heat demand. Optionally the annual performance is distributed over the month, using the distribution of the solar irradiance on the collector plane as the key. The method 1 is limited to the generation of heat for the service domestic hot water production.