



**NSAI**  
Standards

Irish Standard Recommendation  
S.R. CEN/TR 15316-6-5:2017

Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 6-5: Explanation and justification of EN 15316-4-2, Module M3-8

**S.R. CEN/TR 15316-6-5:2017**

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NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

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## National Foreword

S.R. CEN/TR 15316-6-5:2017 is the adopted Irish version of the European Document CEN/TR 15316-6-5:2017, Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 6-5: Explanation and justification of EN 15316-4-2, Module M3-8

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TECHNICAL REPORT

CEN/TR 15316-6-5

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English Version

**Energy performance of buildings - Method for calculation  
of system energy requirements and system efficiencies -  
Part 6-5: Explanation and justification of EN 15316-4-2,  
Module M3-8**

Performance énergétique des bâtiments - Méthode de  
calcul des besoins énergétiques et des rendements des  
systèmes - Partie 6-5: Explication et justification de  
l'EN 15316-4-2, Module M3-8

Heizungsanlagen und Wasserbasierte Kühlanlagen in  
Gebäuden - Verfahren zur Berechnung der  
Energieanforderungen und Nutzungsgrade der  
Anlagen - Teil 6-9: Begleitende TR zur EN 15316-4-2  
(Wärmeerzeugung für die Raumheizung,  
Wärmepumpensysteme)

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword.....	4
Introduction .....	5
1 Scope .....	7
2 Normative references .....	7
3 Terms and definitions .....	7
4 Symbols and abbreviations .....	8
4.1 Symbols.....	8
4.2 Subscripts.....	8
5 Information on the method .....	8
5.1 General.....	8
6 Method description .....	9
6.1 Rationale .....	9
6.2 Time steps.....	10
6.3 Assumptions.....	10
6.4 Data input .....	10
6.4.1 Energy required.....	10
6.4.2 COP and thermal capacity .....	10
6.4.3 Other parameters and coefficients .....	11
6.5 Calculation methods.....	11
6.5.1 Calculation of COP and thermal capacity based on EN 14511 — Path A .....	11
6.5.2 Calculation of COP and thermal capacity based on EN 14825 (path B) .....	13
6.5.3 Time of operation of the heat pump in part load operation.....	13
6.5.4 Monthly and annual method .....	13
6.5.5 Auxiliary .....	14
6.6 Calculation information.....	14
7 Worked out example.....	14
7.1 Description .....	14
7.2 Calculation details .....	14
7.2.1 Example 1 – Path A - Hourly method based on a single reference value for COP and thermal capacity.....	14
7.2.2 Example 2 – Path B – Hourly method based on results at part load .....	14
7.2.3 Example 3 – Annual / Monthly method .....	15
7.3 Remarks and comments .....	15
8 Application range.....	15
8.1 Energy performance.....	15
8.2 Energy certificate .....	15
8.3 Inspection .....	15
8.4 System complexity .....	15
9 Regulation use.....	15
10 Information on the accompanying spreadsheet.....	15
11 Results of the validation tests.....	15

<b>12</b>	<b>Quality issues</b> .....	<b>15</b>
<b>Annex A</b> (informative)	<b>Calculation flowchart - Path A</b> .....	<b>16</b>
<b>Annex B</b> (informative)	<b>Path A - Calculation example</b> .....	<b>17</b>
<b>Annex C</b> (informative)	<b>Path B - Hourly method</b> .....	<b>31</b>
<b>C.1</b>	<b>Input data</b> .....	<b>31</b>
<b>C.2</b>	<b>- Calculation procedure</b> .....	<b>33</b>
<b>Annex D</b> (informative)	<b>Path B - monthly/annual method</b> .....	<b>35</b>
<b>D.1</b>	<b>Additional input data to Annex C</b> .....	<b>35</b>
<b>D.2</b>	<b>Example of results</b> .....	<b>36</b>
	<b>Bibliography</b> .....	<b>39</b>

## **CEN/TR 15316-6-5:2017 (E)**

### **European foreword**

This document (CEN/TR 15316-6-5:2017) 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.

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.

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* [2];
- 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* [3];
- 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 [4].

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 [3]):

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

**CEN/TR 15316-6-5:2017 (E)**

- 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 [5] that laid the foundation for the preparation of the set of EPB standards.

## 1 Scope

This Technical Report refers to EN 15316-4-2, covering module M3-8.

It contains information to support the correct understanding, use and national adaptation of EN 15316-4-2.

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 15316-4-2:2017, *Energy performance of buildings — Method for calculation of system energy requirements and system efficiencies — Part 4-2: Space heating generation systems, heat pump systems, Module M3-8-2, M8-8-2*

EN 15603, *Energy performance of buildings — Overall energy use and definition of energy ratings*

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

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 7345, EN 15603, EN 15316-4-2 and the following apply.

### 3.1

#### bivalent temperature

$\vartheta_{\text{biv,ref}}$

outdoor temperature **declared** by the supplier for heating at which the declared capacity for heating equals the part load for heating and below which the declared capacity for heating requires supplementary capacity for heating to meet the part load for heating, expressed in degrees Celsius

Note 1 to entry: This definition corresponds to the terms of EN 14825.

Note 2 to entry: In the context of EN 15316-4-2, the bivalent temperature  $\vartheta_{\text{biv}}$  is adapted to the thermal load of the building and is different from the EN 14825 conditions which means:

- 1) Input data consider temperatures, thermal capacities and COP based on the test conditions identified from EN 14825,
- 2) This EN 14825 bivalent temperature  $\vartheta_{\text{biv,ref}}$ ,  $\text{COP}_{\text{ref}}$  and thermal capacity data is used as part of the EN 14825 dataset to interpolate COP and capacity for each time step (operating condition) (using Path B)
- 3) EN 15316-4-2 determines a specific bivalent temperature for each time step (operating condition), which is different to the Manufacturer declared value (from EN 14825 data), to determine back-up requirement
- 4) Practically the bivalent temperature is a fixed value declared in the input data  $\vartheta_{\text{biv}}$  and use for control of the additional heating system when thermal capacity does not fulfill the thermal capacity required.

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