

<b>STN</b>	<b>Energetická hospodárnosť budov Metóda výpočtu energetických požiadaviek systému a účinnosti systému Časť 5: Vykurovanie a skladovacie systémy úžitkovej teplej vody (nie chladenie)</b>	<b>STN EN 15316-5</b>  06 0237
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Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 5: Space heating and DHW storage systems (not cooling), Module M3-7, M8-7

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

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EUROPEAN STANDARD

**EN 15316-5**

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**Energy performance of buildings - Method for calculation  
of system energy requirements and system efficiencies -  
Part 5: Space heating and DHW storage systems (not  
cooling), Module M3-7, M8-7**

Performance énergétique des bâtiments - Méthode de calcul des besoins énergétiques et des rendements des systèmes - Partie 5 : Systèmes de stockage pour le chauffage et l'eau chaude sanitaire (sans refroidissement), Module M3-7, M8-7

Energetische Bewertung von Gebäuden - Verfahren zur Berechnung der Energieanforderungen und Nutzungsgrade der Anlagen - Teil 5: Raumheizung und Speicher für erwärmtes Trinkwasser (keine Kühlung), Modul M3-7, M8-7

This European Standard was approved by CEN on 27 February 2017.

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

<b>Contents</b>		<b>Page</b>
European foreword.....		5
Introduction .....		6
1	Scope.....	8
2	Normative references.....	10
3	Terms and definitions .....	10
4	Symbols and abbreviations .....	11
4.1	Symbols.....	11
4.2	Subscripts.....	11
5	Description of the methods .....	11
5.1	Output of the method.....	11
5.2	Extension of the method.....	11
5.3	Technologies covered and schematisation of the hot water storage system.....	12
5.4	Principles for hot water storage systems.....	13
6	Calculation of storage systems .....	14
6.1	Output data.....	14
6.2	Calculation time steps .....	17
6.3	Input data.....	17
6.3.1	Source of data .....	17
6.3.2	Product data.....	17
6.3.3	System design data .....	19
6.3.4	Control.....	19
6.3.5	Operating conditions .....	19
6.3.6	Constants and physical data.....	20
6.4	Calculation procedure .....	21
6.4.1	Applicable time-step.....	21
6.4.2	Operating conditions calculation .....	21
6.4.3	Energy calculation (storage modelled with multi volumes - Method A) .....	21
6.4.4	Simplified calculation procedure (storage modelled with a single volume - Method B) ..	26
6.4.5	Thermal losses .....	28
6.4.6	Calculation of the auxiliary energy.....	28
6.4.7	Recoverable, recovered thermal losses .....	28
7	Quality control .....	29
8	Compliance check.....	29
Annex A (informative) Template for input data and choices .....		31
A.1	Model information .....	31
A.2	Product description data.....	31
A.2.1	Storage type.....	31
A.2.2	Type of energy use (services).....	31
A.2.3	Storage fuel.....	31
A.2.4	CE marking.....	32

<b>A.2.5</b>	<b>Dimension</b> .....	<b>32</b>
<b>A.2.6</b>	<b>Energy input/output</b> .....	<b>32</b>
<b>A.2.7</b>	<b>Multiple energy input/output</b> .....	<b>33</b>
<b>A.2.8</b>	<b>Stand-by thermal losses</b> .....	<b>33</b>
<b>A.2.9</b>	<b>Factors for energy recovery</b> .....	<b>34</b>
<b>A.3</b>	<b>Design data</b> .....	<b>35</b>
<b>A.3.1</b>	<b>Localization</b> .....	<b>35</b>
<b>A.3.2</b>	<b>Hydraulic connection</b> .....	<b>35</b>
<b>A.3.3</b>	<b>Storage control type</b> .....	<b>35</b>
<b>A.3.3.1</b>	<b>Type of control</b> .....	<b>35</b>
<b>A.3.3.2</b>	<b>Adaptation of thermal losses for monthly or annual step time</b> .....	<b>36</b>
<b>A.4</b>	<b>Operative conditions for method A - hourly calculation time step</b> .....	<b>36</b>
<b>A.5</b>	<b>Operative conditions for Method B - bin, monthly or annual calculation time step</b> .....	<b>37</b>
<b>Annex B</b>	<b>(informative) Default Input data</b> .....	<b>38</b>
<b>B.1</b>	<b>Model information</b> .....	<b>38</b>
<b>B.2</b>	<b>Product description data</b> .....	<b>38</b>
<b>B.2.1</b>	<b>Storage type</b> .....	<b>38</b>
<b>B.2.2</b>	<b>Type of energy use (services)</b> .....	<b>38</b>
<b>B.2.3</b>	<b>Storage fuel</b> .....	<b>38</b>
<b>B.2.4</b>	<b>CE marking</b> .....	<b>38</b>
<b>B.2.5</b>	<b>Dimension</b> .....	<b>38</b>
<b>B.2.6</b>	<b>Energy input/output</b> .....	<b>38</b>
<b>B.2.7</b>	<b>Multiple energy input/output</b> .....	<b>39</b>
<b>B.2.8</b>	<b>Stand-by thermal losses</b> .....	<b>39</b>
<b>B.2.9</b>	<b>Factors for energy recovery</b> .....	<b>41</b>
<b>B.3</b>	<b>Design data</b> .....	<b>41</b>
<b>B.3.1</b>	<b>Localization</b> .....	<b>41</b>
<b>B.3.2</b>	<b>Hydraulic connection</b> .....	<b>41</b>
<b>B.3.3</b>	<b>Storage control type</b> .....	<b>41</b>
<b>B.3.3.1</b>	<b>Type of control</b> .....	<b>41</b>
<b>B.3.3.2</b>	<b>Adaptation of thermal losses for monthly or annual step time</b> .....	<b>41</b>
<b>B.4</b>	<b>Operative conditions for method A - hourly calculation time step</b> .....	<b>41</b>
<b>B.5</b>	<b>Operative conditions for Method B - bin, monthly or annual calculation time step</b> .....	<b>42</b>

<b>Annex C (normative) Selection of methods .....</b>	<b>43</b>
<b>C.1 Method A - Model based on a representation of stratified temperature in the storage.....</b>	<b>43</b>
<b>C.1.1 Applicability of the stratified model .....</b>	<b>43</b>
<b>C.1.2 Selection of the number of volumes to model the storage unit.....</b>	<b>43</b>
<b>C.2 Method B - Model based on a representation of an homogenous temperature in the storage ` .....</b>	<b>43</b>
<b>Annex D (informative) Alternative presentation for Method A.....</b>	<b>44</b>
<b>D.1 Step 2 - Direct withdrawal of a heat quantity (volume to withdraw) .....</b>	<b>44</b>
<b>D.1.1 General.....</b>	<b>44</b>
<b>D.1.2 Additional .....</b>	<b>46</b>
<b>D.2 Step 3 - Temperature of the storage after volume withdrawal .....</b>	<b>46</b>
<b>D.3 Step 6 - indirect heat input and output .....</b>	<b>47</b>
<b>D.4 Rearrange temperatures in the storage to a natural state.....</b>	<b>49</b>
<b>D.5 Heat exchanger - additional .....</b>	<b>50</b>
<b>D.5.1 General.....</b>	<b>50</b>
<b>D.5.2 Indirect heat input in the storage, using a solar collector loop.....</b>	<b>50</b>
<b>D.5.3 Indirect heat output from the storage to the space heating service.....</b>	<b>51</b>
<b>Bibliography.....</b>	<b>52</b>

## European foreword

This document (EN 15316-5:2017) 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.

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 November 2017 and conflicting national standards shall be withdrawn at the latest by November 2017.

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.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

This European Standard is part of a series of standards aiming at international harmonization of the methodology for the assessment of the energy performance of buildings, called “set of EPB standards”.

All EPB standards follow specific rules to ensure overall consistency, unambiguity and transparency.

All EPB standards provide a certain flexibility with regard to the methods, the required input data and references to other EPB standards, by the introduction of a normative template in Annex A and Annex B with informative default choices.

EPB standards deal with energy performance calculation and other related aspects (like system sizing) to provide the building services considered in the EPBD.

This standard specifies two methods to take into account the energy performance of storage systems for heating of domestic hot water coupled to generation system(s) producing hot water or using independent energy input to the storage unit. This standard presents two methods applicable to the different technologies of water based storage system and related controls systems:

- method A applies when the hot water is thermally stratified;
- method B applies when the hot water contained in the storage unit(s) is thermally homogeneous.

The standard covers typically hourly time-step but can be adapted to different time steps accordingly with the scenarios used for energy use and energy delivered.

The subjects covered by CEN/TC 228 are the following:

- design of heating systems (water based, electrical etc.);
- installation of heating systems;
- commissioning of heating systems;
- instructions for operation, maintenance and use of heating systems;
- methods for calculation of the design heat loss and heat loads;
- methods for calculation of the energy performance of heating systems.

For the correct use of this standard, Annex A is to be used to specify the choices with the required input data for use with method A (hourly calculation time step) or Method B (other calculation time steps). Default values for use of the Method A and B monthly and annual methods are provided in Annex B. In case the standard is used in the context of national or regional legal requirements, mandatory choices may be given at national or regional level for such specific applications, in particular for the application within the context of EU Directives transposed into national legal requirements. These choices can be made available as National Annex or as separate (e.g. legal) document. It is expected, if the default values and choices in Annex A are not followed due to national regulations, policy or traditions, that:

- either the national standardization body will consider the possibility to add or include a National Annex in agreement with the template of Annex A;
- or the national or regional authorities will, in the building regulations, reference the standard and prepare data sheets containing the national or regional choices and values, in agreement with the template of Annex A.

Heating systems also include the effect of attached systems such as hot water production systems.



All these standards are systems standards, i.e. they are based on requirements addressed to the system as a whole and not dealing with requirements to the products within the system.

Where possible, reference is made to other European or International Standards, a.o product standards. However, use of products complying with relevant product standards is no guarantee of compliance with the system requirements.

The requirements are mainly expressed as functional requirements, i.e. requirements dealing with the function of the system and not specifying shape, material, dimensions or the like.

The guidelines describe ways to meet the requirements, but other ways to fulfil the functional requirements might be used if fulfilment can be proved.

Heating systems differ among the member countries due to climate, traditions and national regulations. In some cases, requirements are given as classes so national or individual needs may be accommodated.

In cases where the standards contradict with national regulations, the latter should be followed.

Table 1 shows the relative position of this standard within the EPB standards.

## 1 Scope

This European Standard covers energy performance calculation of water based storage sub-systems used for heating, for domestic hot water or for combination of these.

This standard does not cover sizing or inspection of such storage systems.

Table 1 shows the relative position of this standard within the set of EPB standards in the context of the modular structure as set out in EN ISO 52000-1.

NOTE 1 In CEN ISO/TR 52000-2, the same table can be found with, for each module, the numbers of the relevant EPB standards and accompanying Technical Reports that are published or in preparation.

NOTE 2 The modules represent EPB standards, although one EPB standard may cover more than one module and one module may be covered by more than one EPB standard, for instance a simplified and a detailed method respectively. See also Clause 2 and Tables A.1 and B.1.

**Table 1 — Position of this standard, within the modular structure of the set of EPB standards**

Overarching		Building (as such)		Technical Building Systems										
	Descriptions		Descriptions		Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic Hot water	Lighting	Building automation & control	Electricity production
sub 1		M1	sub 1	M2	sub 1	M3	M4	M5	M6	M7	M8	M9	M10	M11
1	General		1	General	1	General	15316-1				15316-1			
2	Common terms and definitions; symbols, units and subscripts		2	Building Energy Needs	2	Needs					12831-3			
3	Applications		3	(Free) Indoor Conditions without Systems	3	Maximum Load and Power	12831-1				12831-3			
4	Ways to Express Energy Performance		4	Ways to Express Energy Performance	4	Ways to Express Energy Performance	15316-1				15316-1			
5	Building Functions and Building Boundaries		5	Heat Transfer by Transmission	5	Emission and control	15316-2	15316-2						
6	Building Occupancy and Operating Conditions		6	Heat Transfer by Infiltration and Ventilation	6	Distribution and control	15316-3	15316-3			15316-3			
7	Aggregation of Energy Services and Energy Carriers		7	Internal Heat Gains	7	Storage and control	15316-5				15316-5			

Overarching			Building (as such)		Technical Building Systems											
	Descriptions			Descriptions		Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic Hot water	Lighting	Building automation & control	Electricity production	
sub 1		M1	sub 1	M2	sub 1		M3	M4	M5	M6	M7	M8	M9	M10	M11	
8	Building Partitioning		8	Solar Heat Gains	8	Generation										
					8-1	Combustion boilers	15316-4-1					15316-4-1				
					8-2	Heat pumps	15316-4-2					15316-4-2				
					8-3	Thermal solar Photovoltaics	15316-4-3					15316-4-3			15316-4-3	
					8-4	On-site cogeneration	15316-4-4					15316-4-4			15316-4-4	
					8-5	District heating and cooling	15316-4-5	15316-4-5				15316-4-5			15316-4-5	
					8-6	Direct electrical heater	15316-4-9					15316-4-6				
					8-7	Wind turbines	15316-4-10								15316-4-7	
					8-8	Radiant heating, stoves	15316-4-8									
9	Calculated Energy Performance		9	Building Dynamics (thermal mass)	9	Load dispatching and operating conditions										
10	Measured Energy Performance		10	Measured Energy Performance	10	Measured Energy Performance	15378-3					15378-3				
11	Inspection		11	Inspection	11	Inspection	15378-1					15378-1				
12	Ways to Express Indoor Comfort		12	-	12	BMS										
13	External Environment Conditions															
14	Economic Calculation	15459-1														

NOTE The shaded modules are not applicable.

## 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 15316-1, *Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 1: General and Energy performance expression, Module M3-1, M3-4, M3-9, M8-1, M8-4*

EN 15316-3, *Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 3: Space distribution systems (DHW, heating and cooling), Module M3-6, M4-6, M8-6*

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)*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**