

Collection of comments and suggestions on EPB Standard:

EN 16798-5-1:2017

***Energy performance of buildings – Ventilation for buildings –
Part 5-1: Calculation methods for energy requirements of
ventilation and air conditioning systems (Modules M5-6, M5-8,
M6-5, M6-8, M7-5, M7-8) – Method 1: Distribution and
generation***

Date of report: 2022-10-03

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Distribution: Public

More info: www.epb.center

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1 Introduction

The EPB Center is a user platform for the EPB Standards and EPB Technical Reports, in short "the EPB documents". These EPB documents are developed and published by CEN and ISO, the European and international standards bodies. Therefore the EPB Center works closely with experts active in CEN and ISO. Among various other activities, the EPB Center collects questions and comments on these EPB documents.

Based on the enquiries and suggestions received, the EPB Center experts prepare, to the best of their knowledge, clarifications and/or proposals for corrections.

1. Clarifications are given in the form of short texts, directly shown on the website (FAQ). When necessary, the short answer is complemented by a more extensive explanation as a [pdf] file.
2. Proposals (comments and suggestions) that could be taken into consideration in the context of future revisions of EPB documents are published in the form of the CEN/ISO commenting table. This standardized format ensures an efficient communication with CEN or ISO committees. For each EPB document for which there is feedback, there is an autonomous file.

The present document is one of the series of proposals mentioned under point 2.

The comments and suggestions are published anonymously for reasons of privacy. The EPB Center reviews and (optionally) generalises each received comment and adds a proposal. The EPB Center experts aim at the best possible support for the implementation and application of the EPB documents in practice.

Acknowledgement

Although the issues are published anonymously, the EPB Center gratefully acknowledges all contributions.

Inform CEN and ISO

The EPB Center will, at the appropriate time, forward all clarifications and proposals to the relevant CEN or ISO committee(s) for potential use in future updates of the EPB documents.

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To see whether there already exist clarifications and/or a comment table for any of the other EPB documents, please consult the following webpage: https://epb.center/support/epbcenter_commentfiles/

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Additional feedback on an EPB standard or technical report can be submitted via the [contact form](#) on the EPB Center website. Please describe the issue clearly.

NOTE 1 Also technologies not yet covered by the EPB standard can be reported. Please describe the technology clearly, e.g. via a link to a webpage. If possible, also add existing (for instance national) assessment methodologies for the technology (by means of web links, etc.).

NOTE 2 If a specific EPB standard or technical report is under review or other ballot, comments or suggestions should be communicated directly to the National Standards Bodies who are preparing the votes.

2 Table with comments and proposed changes

NOTE ISO Commenting template guidelines can be found at:

<https://helpdesk-docs.iso.org/article/299-commenting-template-guidelines>

Comments and suggestions

Date: 2022-10-03

Document: EPB Center comment file

Project: EN 16798-5-1:2017

MB/NC ¹	Comment No (for ref.)	Clause/Subclause (e.g. 3.1)	Paragraph/Figure/Table/ (e.g. Table 1)	Type of comment ²	Comments	Proposed change	<i>In this EPB Center document, this column is for internal use only</i>
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EPB Center	1			ge	The following comments mainly stem from experience with the standard and contain corrections of errors found. Part of them have already been reported in the amendment pr 16798-5-1 A1:2019, which passed the Public Enquiry, but was abandoned due to administrative issues. More need for changes were found in the frame of the case studies carried out in the EPB.Center service contract and reported in the updated spreadsheet on the EPB.Center homepage.		
EPB Center	2	6.3.2.1	Table 5	te	There are hygroscopic plate heat recoveries on the market.	Consider additional type PLATE_HYG, including adequate data at all places where HEAT_REC_TYPE is referenced.	
EPB Center	3	6.3.2.2.2	Last paragraph before Table 10	te	Wrong reference to Table A.2 and B.3	In the absence of detailed information, duct leakage factors can be used depending on the duct air tightness class according to Table 10. Default tightness classes shall be defined according to the template given in Table A.3 , default values are given in Table B.3 .	
EPB Center	4	6.4.3.2.2	Formula (29b)	te	Error in formula, "+" sign to be replaced by multiplication sign	— If SUP_AIR_TEMP_CTRL = ODA_COMP (Variable set point with outdoor temperature compensation) $\vartheta_{SUP;ahu;req} = \min[\vartheta_{SUP;set,max}; \max(\vartheta_{SUP;set,min} ; f_e \cdot \vartheta_e + \Delta\vartheta_{off})] - \Delta\vartheta_{fan;SUP}$ (29b)	
EPB Center	5	6.4.3.1	Figure 1, legend	te	B "exhaust air fan" is named "extract fan" throughout the document	B extract fan	
EPB Center	6	6.4.3.2.1	Formulae (23d) and (24d)	te	The max. Flow rate must be limited to the design air flow rate of the AHU	Modify formula (23d) and (24d) to not exceed $Q_{V;SUP;ahu,nom}$ Or $Q_{V;ETA;ahu,nom}$	
EPB Cen	7	6.4.3.2.2	Formula (29c)	te	The required supply air temperature as input from Module M5-5 may exceed what the system is	Modify formula (29c) including limitation to $\vartheta_{SUP;set,min}$ and $\vartheta_{SUP;set,max}$	

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					able to provide and shall be limited.		
EPB Center	8	6.4.3.2.5	1 st paragraph	ed	Wrong clause referenced	Recirculation is only considered if located inside the heat recovery (downstream in the supply air) or without heat recovery. If located outside (upstream in the supply air), it is considered to serve for frost protection and is treated in 6.4.3.2.7 .	
EPB Center	9	6.4.3.2.5	1 st paragraph	te	No identifier for "inside heat recovery"	Add identifier for "inside heat recovery" (yes/no)	
EPB Center	10	6.4.3.2.5	Formula (36b)	te	Formula	Complement formula to $\chi_{SUP,RCA} = \min[\max(\vartheta_{SUP,hr,req}; \vartheta_{SUP,ahu,req}); (1 - f_{ODA,min}) \cdot \vartheta_{ETA,hrcin} + f_{ODA,min} \cdot \vartheta_{SUP,hr}]$	
EPB Center	11	6.4.3.2.6	Formula (41)		There is a different formula in EN 13053 in analogy to EN 308	Consider adaption to formula from EN 13053	
EPB Center	12	6.4.3.2.6	Explanation of $\eta_{xr,nom}$ in Formula (45)	Te	2 m/s not adequate, to be replaced by $v_{hr,nom}$	$\eta_{xr,nom}$ - is the nominal moisture recovery efficiency at $v_{hr,nom}$	
EPB Center	13	6.4.3.2.7	Formula (47b)	Te	Formula to be complemented by limit	Complement formula to $\vartheta_{ODA,fp} = \max[\vartheta_e; \dots]$	
EPB Center	14	6.4.3.2.7	Formula (49)	te	Wrong symbol (only in German version!)	$\vartheta_{EHA,hr,lim}$	
EPB Center	15	6.4.3.2.8	1 st paragraph	te	No identifier for "adiabatic cooling"	Add identifier for "adiabatic cooling" (yes/no)	
EPB Center	16	6.4.3.3.1	Formula (73) and formulae (74/75)	te	The functions $f_{\eta}(q_v)$ and $f_{\Delta p}(q_v)$ are not specified, and no rule is given how to generate it. In the meantime there are new ecodesign regulations and related standards, and the fan efficiency should be connected to these product data.	Consider to give specific functions making the link to product data from ecodesign regulation and related standard(s). Depending on the solution the sentence "In the absence of available data, default characteristic	

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					The sentence afterwards "In the absence of available data, default characteristic functions shall be defined on a national basis." Requires a national function, but is not reflected in Annex A/B	functions shall be defined on a national basis." May not be needed any more.	
EPB Center	17	6.4.3.3.3		te	Sensible and latent recovered heat not separate for reporting	Add formulae for separate values for sensible and latent recovered heat, and add to output table	
EPB Center	18	6.4.3.3.5		te	Sensible and latent heat to be extracted not separate for reporting	Add formulae for separate values for sensible and latent heat to be extracted, and add to output table	
EPB Center	19	6.4.3.3.10.1	Formula (88b)	te	Error in formula: must be referred to nominal air flow rate rather than actual, since part load reduction in bracket. Also, the case HEAT_REC_CTRL = HYDR is not covered and needs to be added here, assuming no pump reduction. Vent system operation factor to be added (running only when system operating).	<p>Change formula (88b) to:</p> <ul style="list-style-type: none"> — else if HEAT_REC_TYPE = PUMP_CIRC and HEAT_REC_CTRL = SPEED $W_{V,aux,hr} = f_{op,v} \cdot q_{V,SUP,ahu,nom} \cdot f_{ODA} \cdot P_{el,hr;pu,max} \cdot t_{ci} \cdot \left[\max \left(f_{pl,hr,min} ; \frac{Q_{hr}}{t_{ci} \cdot \Phi_{hr,max}} \right)^{2.5} \right]$ <ul style="list-style-type: none"> — else if HEAT_REC_TYPE = PUMP_CIRC and HEAT_REC_CTRL = HYDR $W_{V,aux,hr} = f_{op,v} \cdot q_{V,SUP,ahu,nom} \cdot f_{ODA} \cdot P_{el,hr;pu,max} \cdot t_{ci}$ <ul style="list-style-type: none"> — else $W_{V,aux,hr} = 0$	
EPB Cen	20	A.5.4 and B.5.4	Tables A.14 and B.14	Te	Wrong symbol	$\delta_{EHA,hr,lim}$, °C	

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EPB Center	21	B5.4	Table B.14	Ed	Wrong identifier ROT_SORBT	Correct to ROT_SORP																				
EPB Center	22	B4.4	Table B.6, 9 th line	te	Value for $p_{el,hr,pu,max}$ too big by factor 1000	Change value for $p_{el,hr,pu,max}$ from 0.03 to 3·10⁻⁵																				
EPB Center	23	B4.9	Table B.10	te	Values for $p_{el,HU,des}$ too big by factor 1000	Correct values for $p_{el,HU,des}$ to <table border="1"> <thead> <tr> <th>HUM_TYPE</th> <th>HUM_CTRL</th> <th>Specific energy $p_{el,HU,des}$ kWh/m³</th> </tr> </thead> <tbody> <tr> <td>CONTACT</td> <td>NO_CTRL</td> <td>1·10⁻⁵</td> </tr> <tr> <td rowspan="3">ROT_SPRA Y</td> <td>NO_CTRL</td> <td>2·10⁻⁴</td> </tr> <tr> <td>ON_OFF</td> <td>2·10⁻⁴</td> </tr> <tr> <td>SPEED</td> <td>2·10⁻⁴</td> </tr> <tr> <td>HI_PRES</td> <td>SPEED</td> <td>4·10⁻⁵</td> </tr> <tr> <td>HYBRID</td> <td>ON_OFF</td> <td>2·10⁻⁵</td> </tr> </tbody> </table>	HUM_TYPE	HUM_CTRL	Specific energy $p_{el,HU,des}$ kWh/m ³	CONTACT	NO_CTRL	1·10⁻⁵	ROT_SPRA Y	NO_CTRL	2·10⁻⁴	ON_OFF	2·10⁻⁴	SPEED	2·10⁻⁴	HI_PRES	SPEED	4·10⁻⁵	HYBRID	ON_OFF	2·10⁻⁵	
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HYBRID	ON_OFF	2·10⁻⁵																								
EPB Center	24	D.1.2.1	Formula D.5a	Te	Correct formula	— If HEAT_REC_TYPE = ROT_HYG $f_{\Delta x;x} = \max[0; 1 + C_6 \cdot (x_{ETA,hr,in} - x_{e,sat} - \Delta x_{e,nom}); C_7 + C_8 \cdot (x_{ETA,hr,in} - x_{e,sat} - \Delta x_{e,nom})]$ Delete Formula D.5c.																				
EPB Center	25	D.1.2.2	Formula D.8	Te	Correct wrong formula	The correction factor for the mass flow relation other than 1 is: $f_{q;x} = 1 - C_9 \cdot \frac{q_{V,ETA,ahu} - q_{V,SUP,ahu}}{q_{V,SUP,ahu} \cdot f_{ODA,min}}$																				

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EPB Center	26	D.2	Table D.1	te	Data to be corrected	<p>Table D.1 — Constants for the calculation</p> <table border="1"> <thead> <tr> <th rowspan="2">Parameter</th> <th colspan="3">HEAT_REC_TYPE</th> </tr> <tr> <th>ROT_N H</th> <th>ROT_HY G</th> <th>ROT_SOR P</th> </tr> </thead> <tbody> <tr> <td>C₃</td> <td colspan="3">1,018 2</td> </tr> <tr> <td>C₄</td> <td colspan="3">0,035 2</td> </tr> <tr> <td>C₅</td> <td colspan="3">0,276</td> </tr> <tr> <td>e₁</td> <td colspan="3">-2,7</td> </tr> <tr> <td>C₆</td> <td>248</td> <td>129</td> <td>16,4</td> </tr> <tr> <td>C₇</td> <td>-0,240</td> <td>0,476</td> <td>0,918</td> </tr> <tr> <td>C₈</td> <td>—</td> <td>23,8</td> <td>—</td> </tr> <tr> <td>$\Delta x_{e,nom}$</td> <td colspan="3">0,005 kg/kg dry air</td> </tr> <tr> <td>C₉</td> <td>0,1</td> <td>0,1</td> <td>0,1</td> </tr> <tr> <td>C₁₀</td> <td>-0,200</td> <td>-0,152</td> <td>-0,098</td> </tr> <tr> <td>C₁₁</td> <td>1,70</td> <td>1,53</td> <td>1,34</td> </tr> <tr> <td>C₁₂</td> <td colspan="3">1,053 3</td> </tr> <tr> <td>C₁₃</td> <td colspan="3">80 000</td> </tr> <tr> <td>C₁₄</td> <td colspan="3">15</td> </tr> </tbody> </table>	Parameter	HEAT_REC_TYPE			ROT_N H	ROT_HY G	ROT_SOR P	C ₃	1,018 2			C ₄	0,035 2			C ₅	0,276			e ₁	-2,7			C ₆	248	129	16,4	C ₇	-0,240	0,476	0,918	C ₈	—	23,8	—	$\Delta x_{e,nom}$	0,005 kg/kg dry air			C ₉	0,1	0,1	0,1	C ₁₀	-0,200	-0,152	-0,098	C ₁₁	1,70	1,53	1,34	C ₁₂	1,053 3			C ₁₃	80 000			C ₁₄	15			
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3 Longer explanations

3.1 General

These extra pages below the table (if any) are provided for more extensive explanation of specific comments or proposed changes.

NOTE When the table is provided to CEN or ISO, it will be handled automatically for the collation of comments submitted on CEN or ISO. In that case all the information that is not in the table itself will be lost and needs to be submitted separately.

<not applicable>