

New health & comfort promoting CEN standard



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In June 2015 the European Commission took the initiative to revise the European Performance of Buildings Directive (EPBD). The new version of the Directive (also referred to as 'EPBD recast') is first and foremost meant to improve the energy performance of both new and existing buildings within the EU. With as end-goal: a decarbonized EU building stock in 2050.

The EPBD recast will lead to the introduction of and ameliorations in energy efficiency requirements in national building codes. EU countries have until 10 March 2020 to write the new and revised provisions into national law.

In the context of this CEN/CENELEC has developed a set of new EPBD standards (see also the article 'The 2nd recast of the Energy Performance of Buildings Directive (EPBD)' by Jaap Hogeling and Anita Derjanecz (REHVA journal, issue 2, 2018). Most of these standards focus on aspects directly related to energy performance like methods to calculate energy use, inspection protocols or definition of e.g. climatic (outdoor) conditions.

What many don't know is that the Commission also asked CEN/CENELEC to (re)develop a standard that describes health and comfort related performance criteria that should be used in the context of energy calculations and assessments. The final version of this 'EPBD-IEQ' standard (IEQ stands

for 'Indoor Environmental Quality') was officially published this spring (01-05-2019) under the name 'EN 16798-1:2019', full title: 'Energy performance of buildings – Ventilation for buildings – Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics – Module M1-6'.

EN 16798-1:2019 replaces EN 15251 and it focuses on parameters at category I, II, III level – sometimes also level IV (level I is best, III / IV is worst) for thermal environment, indoor air quality, lighting and acoustics. The standard explains how to use these parameters for building system design and energy performance calculations. It is part of a general series, EN 16798, that addresses overall aspects of building ventilation from the point of view of energy performance.

Besides the standard, a Technical Report, 16789-2, is also being developed to support and explain the background of EN 16798-1.

Table 1 describes some of the aspects and criteria used in EN 16798-1. The criteria are meant to be used in standard energy calculations for offices, schools, dwellings and other indoor environments that are primarily meant for human occupancy. The standard does so not by specifying design methods - leaving manufacturers free to provide their own - but instead it gives parameters that needs to be respected in the design and operation of heating, cooling, ventilation and lighting systems.

EN 16798-1 is a non-obligatory standard in the EPB standard series but EU member states can use elements from the standard to improve their national building codes. The standard gives guideline values that can be included in case e.g. a local building code does not have requirements meant to avoid that new or renovated buildings will be under-ventilated or have overheating problems or e.g. installation noise issues.

The overall objective in the long run is not just to make the EU building stock energy-neutral, the end goal

should be to realize buildings that score well both in terms of energy performance and health performance. This new standard was developed to do just that: to guarantee that wellbeing and comfort of building occupants is systematically taken into account when new and existing buildings are (re)designed to improve their energy efficiency.

EN 16798-1:2019 ‘Energy performance of buildings – Ventilation for buildings, Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics’ can be ordered via your National Standardization Body.

This article is partly based upon a news item entitled ‘New CEN standard: EN 16798-1:2019 on how to assess the energy performance of buildings’ on www.cen.eu and an article by Bjarne Olesen entitled ‘Indoor environmental input parameters for the design and assessment of energy performance of buildings’ published in issue 6, 2017 of the REHVA journal. ■

Table 1. Example criteria from EN 16798-1:2019.

IEQ aspect	Building/space type	Category			Remark
		I	II	III	
Temperature range winter	Residential buildings (bedrooms)	21-25 °C	20-25 °C	18-25 °C	These are operative temperatures, assuming clo value of 0.5 in summer and 1.0 in winter, with activity level of 1.2 met
	Offices (landscape layout)	21-23 °C	20-24 °C	19-25 °C	
	Schools (classrooms)	21-23 °C	20-24 °C	19-25 °C	
Temperature range summer	Residential buildings (bedrooms)	23,5-25,5 °C	23-26 °C	22-27 °C	Additionally, also adaptive (less strict) upper temperature limits are defined
	Offices (landscape layout)	23,5-25,5 °C	23-26 °C	22-27 °C	
	Schools (classrooms)	23,5-25,5 °C	23-26 °C	22-27 °C	
Maximum CO ₂ level (delta CO ₂ conc.)	Residential buildings (bedrooms)	380	550	950	These are allowable ppm levels above outdoor levels
	Offices (landscape layout)	550	800	1 350	
	Schools (classrooms)	550	800	1 350	
Minimum lighting level E _m	Residential buildings (living room)	–			Values are in line with EN 12464-1
	Offices (landscape layout)	500 lux			
	Schools (classrooms)	500 lux			
Maximum system noise level L _{AeQ}	Residential buildings (bedrooms)	25 dB	30 dB	35 dB	
	Offices (landscape layout)	35 dB	40 dB	45 dB	
	Schools (classrooms)	30 dB	34 dB	38 dB	