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The set of CEN standards developed to support the implementation of the EPBD in the EU Member States

This report gives an overview of the standards as they are being developed under the EU Mandate to CEN. It also gives some information on the CEN standardisation work, how to participate and where to retrieve the information.

The EPBD requires that the EU Member States regulate

- minimum energy performance requirements for new buildings;
- energy performance certificates for buildings;
- economically feasible energy saving measures to be considered economically feasible sustainable energy applications to be considered; and
- regular inspection and advice for improvement for boilers / heat generators and heating systems and cooling and AC systems.
- This shall be performed in a technically solid and transparent manner and be monitored by the MS's.
- The used methods shall be reliable to guarantee that the calculated and reported values and advices will lead to the expected energy savings within the expected feasibility.

1 > How is the CEN work organised?

CEN is the European Association of national standardisation institutes, the so called National Standards Bodies (NSB's). These NSB's are responsible for the contact with the interested market parties and experts preparing the CEN standards in the same way they do when preparing national standards. Members of CEN-Technical Committees (CEN-TC's) are nominated by the NSB's. The TC's decide on the scope and content of a standard. The actual work is done in smaller CEN-TC-Working Groups whose expert members are nominated by NSB's. In most countries the NSB organises a national mirror group to monitor and support the work of a CEN-TC. This was also done in the EPBD program of CEN. Because in this case the work covers 5 CEN-TC's, some NSB's organised a special mirror group to follow the work on the total EPBD CEN program.

Members who participate to CEN-TC-WG's are involved in the details of the standard development. They should contribute themselves, as expert, and be motivated to find the right expertise in their own network.

Once a draft standard is approved by the responsible CEN-TC, it goes out as draft standard ("prEN") for Public Enquiry. The comments are prepared via the NSB's. The working group prepares the replies to the comments and prepares a new draft standard which, once approved again by the CEN-TC goes out as final draft for Final Vote. The time between publishing the prEN and publishing the final standard is usually between 21 and 30 months.

2 > How and where do I obtain EN standards?

EN's or prEN's (draft EN's) or EN-ISO standards are officially published by CEN in Brussels but can only be obtained from the NSB's. The CEN website provides the contacts and has also a search engine to see which standard activities are in progress and the existing and draft standards available.

Are they only available in English?

It is a fact that in general most of the preparatory work in the TC's and WG's is in English. The underlying documentation, the preliminary drafts, are in English. When publishing a draft standard (prEN) it is up to DIN and AFNOR to decide if they want to translate and provide CEN with a German or French version. The time schedules allow for 2 months making this translation available. It is up to the NSB's to decide if other national language versions will be produced. This decision will only be taken if this is required by the users. If this group is a small expert group of, for example, software developers this seems not likely. But when the standard is referred in a more general way for a bigger target group, translation should be considered by the NSB.

3 > What is the relation with the national and international (ISO) standards?

National standards

There is an agreement between CEN and the national standards bodies that before starting national standardisation work CEN standardisation work shall be considered. If there is already CEN work started, this line shall be followed and national work should not be done. It is called a "Stand still". After the EN's are published, existing and possibly conflicting national standards shall be withdrawn within a certain time frame. If national legislation is referring to these national standards, the NSB can get some years to repair this. A three to five years period is considered as the maximum deviation period in which national standards shall be withdrawn.

ISO standards

There is an agreement between CEN and ISO saying that they shall not work on the same Work Items. New work can only be started in CEN if it is not already on the ISO program and reverse. CEN-TC's are encouraged to seek contact with related ISO-TC's, e.g. CEN-TC89 and ISO-TC163, to agree on possible parallel voting. This means that the EN may become an ISO-EN if accepted by ISO. Existing EN's will by preference be maintained by related ISO-TC's. Only when related ISO-TC's are not interested or not giving it enough priority, the CEN-TC will continue the normal 5 years maintenance schedule or faster if needed.

4 > Harmonisation

To support the open EU market, more and more standards have been prepared as EN's. For building products this is even a requirement based on EU mandates to CEN according to the EU-CPD (Construction Product Directive). To stimulate an open EU market, construction products shall only be specified according to mandatory, so-called "harmonised" EN (or EN-ISO) standards.

The EPBD stimulates EN standards for the energy calculation procedures for buildings and their systems, and all related performance prescriptive standards needed to specify buildings and systems in relation to the Energy Performance of Buildings Directive. The European Commission gave a mandate to CEN in order to speed up the development of standards needed

The Technical Committees of CEN that are involved in the preparation of the EPBD related standards

- CEN/TC 89 Thermal performance of buildings and building components
- CEN/TC 156 Ventilation for buildings
- CEN/TC 169 Light and lighting
- CEN/TC 228 Heating systems in buildings
- CEN/TC 247 Building automation, controls and building management

for the EPBD implementation.

CEN didn't start this work from scratch. Already existing CEN Technical Committees have been quite active during the last 15 years preparing international standards in this field. These TC's have been involved in developing the CEN program to support the implementation of the EPBD.

The process is being overseen by CEN/BT WG 173, Energy performance of buildings project group. It's task is to coordinate the work and to ensure that standards prepared in different committees interface with each other in a suitable way.

5 > The EU Mandate to CEN

The European Commission decided after consultation of the Member States experts, interest groups and CEN, that there was an urgent need for standards to support the EPBD. The aim is to offer within a short period (2004-2006) a clear and consistent set of standards as basis for the national procedures in the Member States. In particular the Member States with a very limited experience in the field of the EPBD could benefit from this.

On the long term, harmonisation of the standards will also be attractive for all Member States. The maintenance and further development costs will be lower compared with the situation where all NSB's have to do this on their own. In addition, there is great advantage in having harmonised standards throughout Europe. The widescale implementation of new technical solutions, equipment and systems will become easier if the performance is calculated in a similar way. This means that the industry may have a bigger market throughout Europe which may also benefit their opportunities on the world market.

The development of CEN standards may lead to CEN-ISO standards. The ISO standards are widely accepted and may even increase the market opportunities of the European industry.

Regional differences in climate, building tradition and user behaviour in Europe will have impact on the input data and consequently on the energy performance. These differences will also lead to different choices when it comes to finding the optimum balance between accuracy and simplicity. The standards developed under the EPBD have to be flexible enough to accommodate these differences.

6 > The set of EPBD CEN Standards

The set of CEN-EPBD standards consists of 43 titles or parts and can be grouped as follows:

1. The building physics standards, e.g. describing the calculation of heat transfer by transmission and ventilation, load and summer temperature, solar transmittance and the calculation of the energy need for heating and cooling of the building.
2. In the second group there are standards on the description and properties (classification) of ventilation systems plus cooling and air conditioning systems.
3. The third group is focussing on the description of space heating and domestic hot water systems:
 - The generation efficiency.
 - The emission efficiency.
 - Domestic hot water systems.

- > Low temperature heating and cooling systems integrated in building elements (embedded systems).
- 4. A series of supporting standards on:
 - > Lighting systems for buildings (including the effect of daylight)
 - > Controls and automation for building services
 - > Classification of the indoor environment
 - > Financial economic evaluation of sustainable energy applications.
- 5. A set of standards on inspection:
 - > Boilers and heating systems
 - > Cooling- and AC systems
 - > Ventilation systems.
- 6. And, last but not least, the two key standards on expressing energy performance and for energy certification of buildings, the overall energy use, primary energy and CO₂ emissions, the assessment of energy use and definition of energy performance ratings.

7 > Current status of the EPBD CEN standards and where to obtain?

Most of the EPBD CEN standards are currently available as drafts (prEN). Some are already finalised as EN or EN-ISO standards. The standards and draft standards can be ordered from the National Standards Body (see <http://www.cenorm.be/>).

The in total 43 standards or parts are available and listed in the appendix. The total set contains 2000 pages. It is expected that on the basis of the results of the public enquiry major changes will be made. Thus the standards, to be published for formal Vote by the beginning of 2007, may be different from the current prEN's. Some standards will be merged, definitions and expressions will become better harmonised in the coming months. Some of the informative parts will be deleted. But the core content will not change, so it is of interest to use the current set of prEN's to get a good idea of the final set to be published in 2007.

As usual, prEN's are published in English and, by choice of DIN and AFNOR, also published in a German or French. It is up to the other NSB's to decide if national language versions will be produced, depending on the target group as explained above.

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APPENDIX

List of EPBD STANDARDS

List of Mandated Work Items and standards related to the EPBD, the list of the prEN's under the EPBD Mandate as they have been published for public enquiry.

Official reactions on the prEN should be sent to the National Standard Body (Member Body; MB) in the CEN member states. All the official comments will be processed by the MB's and sent to CEN in Brussels. CEN will analyse the voting results and send it to the responsible CEN/TC secretariat. After this the CEN Working Group responsible for that prEN will start the analysis and the preparation of the final version of the standard to be voted for Formal Vote within one year. During this revision process comments given to related standards have to be taken in account as well.

WI -nr	Title	prEN number	End of Enquiry
32	Umbrella document, Overview of relations between EPBD standards	CEN Technical Report	
1.	<i>Energy performance of buildings - Methods of expressing energy performance and for energy certification of buildings</i> (merged with WI-3) CONTENT: Defines: a) Global indicators to express the energy performance of whole buildings, including heating, ventilation, air conditioning, domestic hot water and lighting systems. This includes the different possible indicators as well as a method to normalize them b) Ways to express energy requirements for the design of new buildings or renovation of existing buildings c) Procedures to define reference values and benchmark d) Ways to design energy certification schemes	prEN15217	2005-09-06
2.	<i>Energy performance of buildings - Overall energy use, primary energy and CO₂ emissions</i> CONTENT: Collates results from other standards that specify calculation of energy consumption within a building; accounts for energy generated in the building, some of which may be exported for use elsewhere; presents summary in tabular form of the overall energy use of the building. Specifies calculation of primary energy consumption and carbon dioxide emission for the building as a whole; gives general principles for the calculation of primary energy factors and carbon dioxide emission factors.	prEN15315	2005-12-28
3.	Energy performance of buildings - Ways of expressing energy performance of buildings (merged with WI-1)	See WI-1	
4.	<i>Energy performance of buildings -Assessment of energy use and definition of ratings</i> CONTENT: Defines the uses of energy to be taken into account for setting energy performance ratings for new and existing buildings, and provides: a) A method to compute the asset rating, a standard energy use that does not depend on occupant behaviour, actual weather and other actual (environment or input) conditions. b) A method to assess the operational rating, based on the delivered energy. c) A methodology to improve confidence in the building calculation model by comparison with actual energy consumption. d) A method to assess the energy effectiveness of possible improvements	prEN15203	2005-09-06
5.	<i>Energy performance of buildings - Inspection of boilers and heating systems.</i> CONTENT: Specifies inspection procedures and optional measurement methods for the assessment of energy performance of existing boilers and	prEN15378	2006-04-06

WI -nr	Title	prEN number	End of Enquiry
	heating systems. Includes boilers for heating, domestic hot water or both; and boilers fired by gas, liquid or solid fuel (including biomass). Also includes heat distribution network, including associated components and controls; heat emitters, including accessories; and space heating control system.		
6	<i>Ventilation for Buildings - Energy performance of buildings - Guidelines for the inspection of air-conditioning systems.</i> CONTENT: Describes the common methodology for inspection of air conditioning systems in buildings for space cooling and or heating from an energy consumption standpoint. The purpose is to assess the energy performance and proper sizing of the system, including: conformity to the original and subsequent design modifications, actual requirements and the present state of the building; correct system functioning; function and settings of various controls; function and fitting of the various components; power input and the resulting energy output	prEN15240	2005-09-28
7.	<i>Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 1: General</i> CONTENT: Standardises the required inputs, the outputs and the structure of the calculation method for system energy requirements. Energy performance may be assessed either by values of the system efficiencies or by values of the system losses due to inefficiencies. Based on an analysis of the following parts of a space heating and domestic hot water system: - the emission system energy performance including control; - the distribution system energy performance including control; - the storage system energy performance including control; - the generation system energy performance including control (e.g. boilers, solar panels, heat pumps, cogeneration units).	prEN15316-1	2005-12-28
8.	<i>Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 2.1: Space heating emission systems</i> CONTENT: Energy performance may be assessed either by values of the heat emission system performance factor or by values of the heat emission system losses due to inefficiencies. Method is based on an analysis of the following characteristics of a space heat emission system including control: - non-uniform space temperature distribution; - emitters embedded in the building structure; - control of the indoor temperature	prEN15316-2-1	2006-03-20
9.	<i>Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 2.2: Space heating generation systems:</i> <i>Part 2.2.1. Combustion systems (Boilers)</i> <i>Part 2.2.2. Heat pump systems</i> <i>Part 2.2.3. Thermal Solar systems (including DHW)</i> <i>Part 2.2.4 The performance and quality of CHP electricity and heat (incl on-site and micro-CHP).</i> <i>Part 2.2.5. The performance of quality district heating and large volume systems.</i> <i>Part 2.2.6. The performance of other renewable heat and electricity.</i> <i>Part 2.2.7. Biomass combustion systems</i> CONTENT: Provides methods for system efficiencies and/or losses and auxiliary energy. Consists of seven parts:	prEN15316-4-1 4-2 4-3 4-4 4-5 4-6 4-7	2006-03-20 2006-03-20 2006-03-20 2006-03-20 2006-03-20 2006-03-20 2006-06-26
10.	<i>Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 2.3: Space heating distribution systems</i> CONTENT: Provides a methodology to calculate/estimate the heat emission of water based distribution systems for heating and the auxiliary demand as well as the recoverable heat emission and auxiliary demand.	prEN15316-2-3	2006-03-20

WI -nr	Title	prEN number	End of Enquiry
11.	<p><i>Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 3. Domestic hot water systems:</i></p> <p><i>Part 3-1-1 Characterisation of needs (tapping patterns)</i></p> <p><i>Part 3-1-2 Distribution</i></p> <p><i>Part 3-1-3 Storage and generation</i></p> <p>CONTENT: Calculation of energy requirements for domestic hot water heating systems including control, for all building types. In three parts:</p>	<p>prEN15316-</p> <p>3-1</p> <p>3-2</p> <p>3-3</p>	<p>2005-12-28</p> <p>2005-12-28</p> <p>2005-12-28</p>
12.	<p><i>Ventilation for Buildings - Calculation of room temperatures and of load and energy for buildings with room conditioning systems</i></p> <p>CONTENT: Defines procedures to calculate temperatures, sensible loads and energy demands for rooms; latent room cooling and heating load, the building heating, cooling, humidification and dehumidification loads and the system heating, cooling, humidification and dehumidification loads. Gives general hourly calculation method, and simplified methods.</p>	prEN15243	2005-11-19
13.	<p><i>Energy performance of buildings - Energy requirements for lighting - Part1 : Lighting energy estimation</i> (a part 2 with additional data is proposed)</p> <p>CONTENT: Specifies the calculation methodology for the evaluation of the amount of energy used for lighting in the building and provides the numeric indicator for lighting energy requirements used for certification purposes. Also provides a methodology for the calculation of dynamic lighting energy use for the estimation of the total energy performance of the building</p>	prEN15193-1	2005-08-17
14.	<p><i>Energy performance of buildings - Calculation of energy use for space heating and cooling -</i> (with extension of scope of EN ISO 13790; 2001)</p> <p>CONTENT: Gives calculation methods for assessment of the annual energy use for space heating and cooling of a residential or a non-residential building, or a part of it. Includes the calculation of heat transfer by transmission and ventilation of the building when heated or cooled to constant internal temperature; the contribution of internal and solar heat sources to the building heat balance; the annual energy needs for heating and cooling; the annual energy required by the heating and cooling systems of the building for space heating and cooling; the additional annual energy required by a ventilation system. Building can have several zones with different set-point temperatures, and can have intermittent heating and cooling. Calculation period is one month or one hour or (for residential buildings) the heating or cooling season. Provides common rules for the boundary conditions and physical input data irrespective of the chosen calculation approach.</p>	prEN-ISO 13790	2005-10-05
15.	<p>Thermal performance of buildings - Calculation of energy use for space heating - Simplified method <i>(will be superseded by WI 14)</i></p>	See 14	
16.	<p><i>Thermal performance of buildings - Sensible room cooling load calculation - General criteria and validation procedures</i></p> <p>CONTENT: Sets out the level of input and output data, and prescribes the boundary conditions required for a calculation method of the sensible cooling load of a single room under constant or/and floating temperature taking into account the limit of the peak cooling load of the system. It includes a classification scheme of the calculation method and the criteria to be met by a calculation method in order to comply with this standard. Purpose is to validate calculation methods used to evaluate the maximum cooling load for equipment selection and HVAC system design; evaluate the temperature profile when the cooling capacity of the system is reduced; provide data for evaluation of the optimum possibilities for load reduction; allow analysis of partial loads as required for system design, operation and control.</p>	prEN15255	2005-11-19

WI -nr	Title	prEN number	End of Enquiry
17.	<i>Thermal performance of buildings - Calculation of energy use for space heating and cooling - General criteria and validation procedures</i> CONTENT: Specifies the assumptions, boundary conditions and validation tests for a calculation procedure for the annual energy use for space heating and cooling of a building (or of a part of it) where the calculations are done on an hourly basis. Does not impose any specific numerical technique. Purpose of this standard is to validate calculation methods used to describe the energy performance of each room of a building; provide energy data to be used as interface with system performance analysis (HVAC, lighting, domestic hot water, etc).	prEN15265	2005-12-16
18.	Ventilation for buildings - Calculation methods for the determination of air flow rates in dwellings including infiltration (To be replaced by w.i. 19)	- see 19	
19.	<i>Ventilation for buildings - Calculation methods for the determination of air flow rates in buildings including infiltration.</i> (The items 18 and 19 are merged) CONTENT: Describes method to calculate the ventilation air flow rates for buildings to be used for applications such as energy calculations, heat and cooling load calculation, summer comfort and indoor air quality evaluation. Applies to mechanically ventilated buildings; passive ducts; hybrid systems switching between mechanical and natural modes; window opening by manual operation for airing or summer comfort issues	prEN15242	2005-10-28
20.	<i>Ventilation for buildings - Calculation methods for energy requirements due to ventilation systems in buildings</i> (merged with 21) CONTENT: Describes method to calculate the energy impact of ventilation systems (including airing) in buildings to be used for applications such as energy calculations, heat and cooling load calculation. Its purpose is to define how to calculate the characteristics (temperature , humidity) of the air entering the building, and the corresponding energy required for its treatment as the auxiliary electrical energy required.	prEN15241	2005-10-28
21.	Ventilation for buildings - Calculation methods for energy requirements due to ventilation systems in dwellings. (merged with 20)	- see 20	
22.	<i>Calculation methods for energy efficiency improvements by the application of integrated building automation systems</i> CONTENT: Defines and specifies the performance of standardised energy saving and optimisation functions and routines of Building Automation and Control Systems (BACS) and Technical Building Management (TBM) systems and services. Summarises the methodologies to calculate/estimate the energy demand for heating, ventilation, cooling, hot water and lighting of buildings and expresses the results of energy saving and efficiency in buildings by the application of the different BACS energy saving functions.	prEN15232	2005-09-21
23.	Review of standards dealing with calculation of heat transmission in buildings. - 1 st set - <i>Thermal performance of building components - Dynamic thermal characteristics - Calculation methods</i> CONTENT: Specifies the characteristics related to dynamic thermal behaviour of building components and gives methods for their calculation - <i>Thermal performance of buildings - Transmission and ventilation heat transfer coefficients - Calculation method</i> CONTENT: Specifies method and provides conventions for the calculation of the steady-state transmission and ventilation heat transfer coefficients of whole buildings and parts of buildings. Applicable both to heat loss (internal temperature higher than external temperature) and to heat gain (internal temperature lower than external temperature). - <i>Thermal performance of windows, doors and shutters - calculation of transmittance Part 1 : General</i> CONTENT: Specifies methods for the calculation of the thermal transmittance of windows and pedestrian doors consisting of glazed and/or	prEN-ISO 13786 13789 10077-1	2005-07-10 2005-09-24

WI -nr	Title	prEN number	End of Enquiry
	or opaque panels fitted in a frame, with and without shutters. Allows for different types of glazing, opaque panels, various types of frames, and where appropriate the additional thermal resistance for closed shutters.		FV
24.	<p>Review of standards dealing with calculation of heat transmission in buildings. - 2nd set</p> <p><i>- Building material and products - Hygrothermal properties - Tabulated design thermal values and procedures for determining declared and design values</i></p> <p>CONTENT: This standard specifies methods for the determination of declared and design thermal values for thermally homogeneous building materials and products, together with procedures to convert values obtained under one set of conditions to those valid for another set of conditions. These procedures are valid for design ambient temperatures between -30 °C and +60 °C.</p> <p>It gives conversion coefficients for temperature and for moisture. These coefficients are valid for mean temperatures between 0 °C and 30 °C.</p> <p>It also gives design data in tabular form for use in heat and moisture transfer calculations, for thermally homogeneous materials and products commonly used in building construction.</p> <p><i>- Heat transfer via the ground - calculation methods</i></p> <p>CONTENT: Gives methods of calculation of heat transfer coefficients and heat flow rates, for building elements in thermal contact with the ground, including slab-on-ground floors, suspended floors and basements. It applies to building elements, or parts of them, below a horizontal plane in the bounding walls of the building. Includes calculation of the steady-state part of the heat transfer (the annual average rate of heat flow), and the part due to annual periodic variations in temperature (the seasonal variations of the heat flow rate about the annual average).</p> <p><i>- Thermal bridges - Heat flows and surface temperatures - detailed calculations</i></p> <p>CONTENT: Sets out the specifications for a 3-D and 2-D geometrical model of a thermal bridge for the numerical calculation of heat flows and surface temperatures. Specifications include the geometrical boundaries and subdivisions of the model, the thermal boundary conditions and the thermal values and relationships to be used</p> <p><i>- Thermal bridges - Linear transmittance - simplified methods and default values</i></p> <p>CONTENT: Deals with simplified methods for determining heat flows through linear thermal bridges which occur at junctions of building elements. Specifies requirements relating to thermal bridge catalogues and manual calculation methods. Provides default values of linear thermal transmittance</p> <p><i>-Thermal resistance and thermal transmittance - calculation method</i></p> <p>CONTENT: Method of calculation of the thermal resistance and thermal transmittance of building components and building elements, excluding doors, windows and other glazed units, components which involve heat transfer to the ground, and components through which air is designed to permeate</p>	<p>prEN-ISO</p> <p>10456</p> <p>13370</p> <p>10211</p> <p>14683</p> <p>6946</p>	<p>2005-09-24</p>
25.	<p><i>Ventilation for non residential buildings - Performance requirements for ventilation and room conditioning systems.</i> (revision of EN 13779:2003)</p> <p>CONTENT: Gives performance requirements for ventilation systems. Applies to the design of ventilation and room conditioning systems for non-residential buildings subject to human occupancy, excluding applications like industrial processes. (Applications for residential ventilation are dealt with in prEN 14788.).</p>	prEN13779	2005-09-28
26.	<p><i>Design of Embedded water based surface heating and cooling systems: Part 1: Determination of the design heating and cooling capacity Part 2: Design, Dimensioning and Installation</i></p>	<p>prEN15377</p> <p>15377-1</p>	2006-03-06

WI -nr	Title	prEN number	End of Enquiry
	<p><i>Part 3: Optimizing for use of renewable energy sources</i> CONTENT: Applies to water based surface heating and cooling systems in residential, commercial and industrial buildings, for systems integrated into the wall, floor or ceiling construction without any open air gaps. In three parts: Part 1: Determination of the design heating and cooling capacity Part 2: Design, dimensioning and installation Part 3: Optimising for the use of renewable energy sources</p>	15377-2 15377-3	2006-03-06 2006-03-06
27.	<p><i>Performance requirements for temperature calculation procedure without mechanical cooling.</i> CONTENT: Specifies the assumptions, boundary conditions, equations and validation tests for a calculation procedure, under transient hourly conditions, of the internal temperatures (air and operative) during the warm period, of a single room without any cooling/heating equipment in operation. No specific numerical techniques are imposed by this standard. Validation tests are included</p>	EN13791	Published
28.	<p><i>Thermal performance of buildings - Calculation of internal temperatures of a room in summer without mechanical cooling - Simplified method.</i> CONTENT: Specifies the required input data for simplified calculation methods for determining the maximum, average and minimum daily values of the operative temperature of a room in the warm period, to define the characteristics of a room in order to avoid overheating in summer at the design stage, or to define whether the installation of a cooling system is necessary. Gives criteria to be met by a calculation method in order to satisfy the standard</p>	EN13792	Published
29.	<p><i>Data requirements for standard economic evaluation procedures related to energy systems in buildings, including renewable energy sources.</i> CONTENT: Provides data and calculation methods for economic issues of heating systems and other systems that are involved in the energy demand and consumption of the building</p>	prEN15459	2006-06-26
30.	<p><i>Guidelines for inspection of ventilation systems</i> CONTENT: Gives methodology for the inspection of mechanical and natural ventilation systems in relation to its energy consumption. Applicable to all buildings. Purpose is to assess functioning and impact on energy consumption. Includes recommendations on possible system improvements</p>	prEN15239	2005-09-28
31.	<p><i>Criteria for the indoor environment, including thermal, indoor air quality, light and noise.</i> CONTENT: Specifies the parameters of impact and/or criteria for indoor environment and how to establish indoor environmental input parameters for the building system design and energy performance calculations. Also specifies methods for long term evaluation of the obtained indoor environment as a result of calculations or measurements. Applicable mainly in the non-industrial buildings where the criteria for indoor environment are set by human occupancy and where the production or process does not have a major impact on indoor environment..</p>	prEN15251	2005-10-05