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International Energy Agency
Energy Conservation in Buildings
and Community Systems Programme

Air Infiltration and Ventilation Centre

European ventilation standards supporting the EPBD

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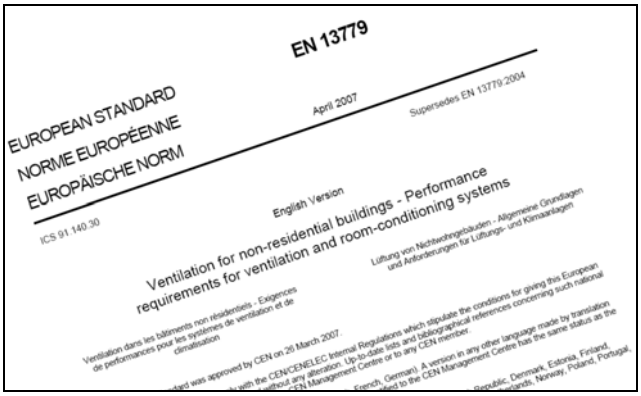
1 Introduction

The European Directive 2002/91/EC on the energy performance of buildings (the EPBD) imposes to the EU member states several different measures to achieve a more rational use of energy resources and to reduce the environmental impact of the energy use for buildings (see also VIP 9).

This directive stimulates the use of European 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 EPBD. Within this context, the European Commission gave a mandate to the European Committee for Standardization (CEN) in order to speed up the development of standards needed 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 committees have been involved in developing the CEN program to support the implementation of the EPBD.

The standardization work on energy performance of buildings is being overseen by a working group (CEN/BT WG 173). Its task is to coordinate the work and to ensure that standards prepared in different committees interface with each other in a suitable way.


EN 13779

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

April 2007

Supersedes EN 13779:2004

English Version

ICS 91.140.30

Ventilation for non-residential buildings - Performance requirements for ventilation and room-conditioning systems

Lüftung von Nichtwohngebäuden - Allgemeine Grundlagen und Anforderungen für Lüftungs- und Klimaanlagen

Ventilation dans les bâtiments non résidentiels - Exigences de performances pour les systèmes de ventilation et de climatisation

2 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 was to develop within a short period (2004-2007) 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 be attractive for all Member States. The maintenance and further development costs will be lower compared with the situation where all national standardisation bodies have to do this on their own. In addition, there is great advantage in having harmonised standards throughout Europe.

The wide scale 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.

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.

3 The set of EPBD CEN ventilation standards

The set of CEN-EPBD ventilation related standards consists of 8 titles or parts and can be grouped as follows:

1. The most important group with three standards: from ventilation air flows EN 15242 through temperatures and internal loads prEN 15243 to Energy performance EN 15241.
2. In the second group there are standards on the inspection of ventilation and air conditioning systems. EN 15239 and En 15240
3. The third group is more unclear. They all deal in some way with criteria and requirements for ventilation of buildings. Within CEN the real meaning and purpose of these standards is still under discussion.

EN number	**Title & Content**
EN 13779	*Ventilation for non-residential buildings - Performance requirements for ventilation and room-conditioning systems* (revision of EN 13779:2004) **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.)
EN 15239	*Ventilation for buildings - Energy performance of buildings - Guidelines for inspection of ventilation systems* **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
EN 15240	*Ventilation for buildings - Energy performance of buildings - Guidelines for inspection of air-conditioning systems* **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
EN 15241	*Ventilation for buildings - Calculation methods for energy losses due to ventilation and infiltration in commercial buildings* **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.

EN number	Title & Content
EN 15242	*Ventilation for buildings - Calculation methods for the determination of air flow rates in buildings including infiltration* **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
prEN 15243	*Ventilation for buildings - Calculation of room temperatures and of load and energy for buildings with room conditioning systems* **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.
EN 15251	*Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics* **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.
prEN 15665	*Ventilation in buildings - Determining performance criteria for design of residential ventilation systems* **CONTENT:** Sets out criteria to assess the performance of residential ventilation systems which serve single family, multi family and apartment type dwellings throughout the year. Also specifies ways to determine criteria to be used for design levels in regulations. These criteria are meant to be applied to: • mechanically ventilated building (mechanical exhaust, mechanical supply or balanced system); • passive ducts; • hybrid system switching between mechanical and natural modes; • windows opening by manual operation for airing or summer comfort issues. The document considers aspects of hygiene and indoor air quality. It applies to ventilation systems within new, existing and refurbished buildings.

4 How is the CEN work organised?

The European Committee for Standardization (CEN) is the European association of national standardisation institutes, the so called "National Standards Bodies" (NSB's). These bodies are responsible for the contact with the interested market parties and experts preparing the European 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.

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 voting is a so called weighted voting procedure, where countries are weighted according to their number of inhabitants. The time between publishing the prEN and publishing the final standard is usually between 21 and 30 months.

5 How and where do I obtain EN standards?

European (draft) 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.

CEN website: www.cen.eu

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 and the preliminary drafts, are in English. When publishing a draft standard (prEN) it is up to DIN (German NSB) and AFNOR (French NSB) 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.

6 What is the relation with the national and international standards?

6.1 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 principle shall be respected 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. A three to five years period is considered as the maximum deviation period.

6.2 International standards

There is an agreement between CEN and ISO (International Organization for Standardization) stating 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 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

Based on original article:
Hogeling, J. 2006. *The set of CEN standards developed to support the implementation of the EPBD in the EU Member States*. EPBD Buildings Platform, Information Paper P02, Brussels, Belgium

The Air Infiltration and Ventilation Centre was inaugurated through the International Energy Agency and is funded by the following countries: Belgium, Czech Republic, Denmark, France, Greece, Japan, Republic of Korea, Netherlands, Norway and United States of America.

The Air Infiltration and Ventilation Centre provides technical support in air infiltration and ventilation research and application. The aim is to promote the understanding of the complex behaviour of the air flow in buildings and to advance the effective application of associated energy saving measures in the design of new buildings and the improvement of the existing building stock.