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Intelligent Energy Europe

**March 31, 2010 - CENSE special web event**
**addressing the EPBD Concerted Action-II members**

# Towards a 2nd generation of energy performance calculation procedures in Europe

***to increase the accessibility and efficiency of the energy performance calculation procedures in Europe***

## Experiences with the current set of CEN-EPBD standards. The need for a 2nd generation

**Jaap Hogeling, ISSO (NL)**

# The CEN-standards to support the EPBD

Prepared on the basis of
European Commission Mandate 343 to CEN (Jan.2004):

*…the elaboration and adoption of standards for a methodology calculating the integrated energy performance of buildings in accordance with the EPBD*

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# A variety of (related) subjects ➔ CEN organisation

CEN TC 371, Project Committee on Energy Performance of Buildings. Chair: Jaap Hogeling (NL)

- **Five existing Technical Committees to develop the standards:**
  - TC 89, Thermal performance of buildings and building components
  - TC 228, Heating systems in buildings
  - TC 156, Ventilation for buildings
  - TC 247, Controls for mechanical building services
  - TC 169, Light and lighting

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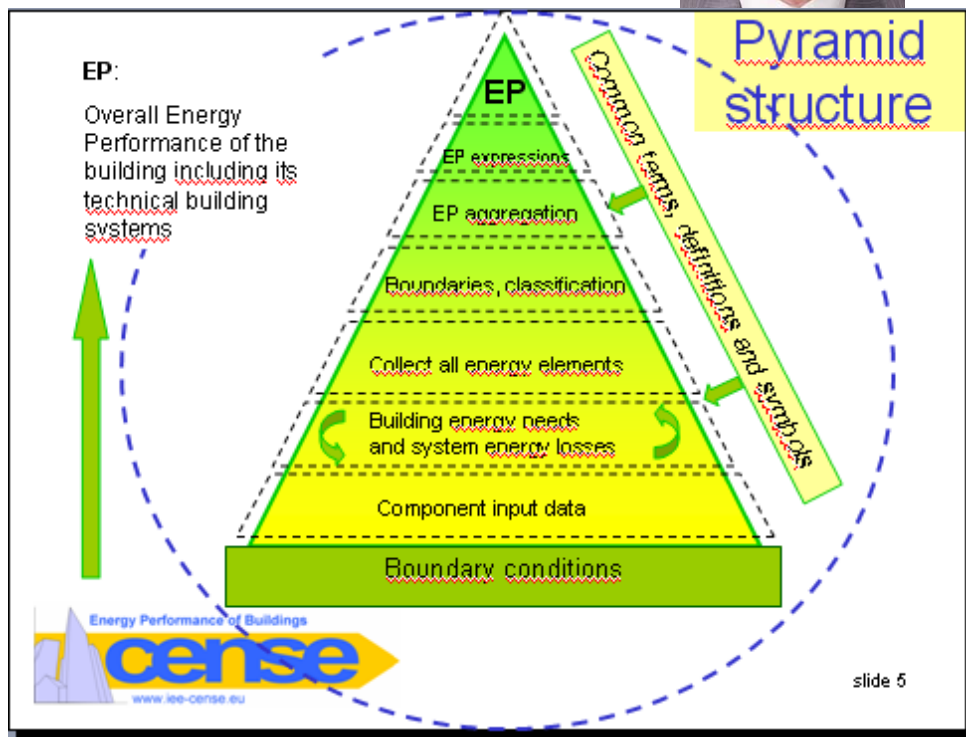
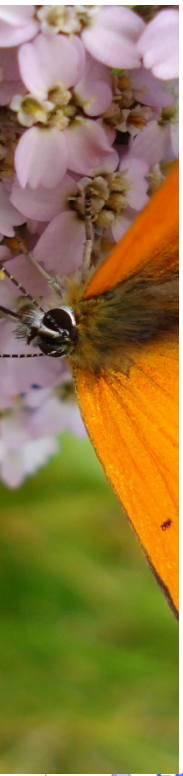
# The starting point… Tower of Babel
# → towards the CEN TR 15615

# Result

- Over 30 CEN-standards published (2007-2008)
- Forming a pyramid structure



Most are **used** in many MS, but **“in a practical way”**

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# Quality?

- Consistency (structure and levels of detail) not ideal
- Causes:
  - Timeschedule was extremely tight: flying start required
  - Not all work started from scratch
  - Many MS had, at the time, no or little experience with overall EP requirements ➔ various options needed to accomodate different expectations
  - Subsidiarity principle in EPBD: implementation not mandatory

# How are the CEN standards implemented in practice?

## Actual situation

- CEN-EPBD standards are used in many EU Member States in a “practical way”: by copying parts of CEN standards into national standards or building codes and adding national elements

  Some of the main reasons:
  - Phase difference
  - Need at national level for a combined “all in one” document
  - CEN-EPBD standards are not optimized as reference documents (do not contain all necessary details)

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➔ Illustration:

# Example: current standards often mix of common procedure and national choices

A building generally uses more than one energy carrier. Therefore, a common exp
carriers shall be used to aggregate the used amounts, sometimes expressed in vari
having various impacts.

According to this standard, the aggregation methods are based on the following impa
have:

— Primary energy;

— Carbon dioxide emission;

— Parameter defined at national level.

NOTE Cost is a parameter that may be used

**8.3.3 Primary energy factors**

There are two conventions for defining primary energ

a) Total primary energy factor. The conversion fac
point of use (production outside the building s
primary energy conversion factor always exceed

b) Non-renewable primary energy factor: The conv
to the point of use but exclude the renewable en
primary energy conversion factor less than unity

The primary energy factors shall include at least:

— Energy to extract the primary energy carrier;

— Energy to transport the energy carrier from the p

— Energy used for processing, storage, generati
necessary for delivery to the building in which th

The primary energy factors may also include:

— Energy to build the transformation units;

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# Example: current practical application of EN 13790 (Energy use for heating and cooling)

**CEN: EN ISO 13790**

**7.2.1.1 Energy need for heating**

For each building zone and each calculation step (month or season), the building energy need for space heating, $Q_{H,nd}$, for co

$Q_{H,nd} = Q_{H,nd,co}$

where (for each build

$Q_{H,nd,cont}$ is th expr

$Q_{H,ht}$ is th expr

$Q_{H,gn}$ give expr

$\eta_{H,gn}$ is th

**Italy: UNI/TS 11300-1**

5 DESCRIZIONE SINTETICA DELLA PROCEDURA DI CALCOLO

5.1

La procedura di calcolo comprende i seguenti passi:

1) definiz dell'ed
2) definiz
3) definiz estern
4) calcol per il r
5) aggreg stessi

Al punto raffrescame

$Q_{H,nd} = Q_H$

$Q_{C,nd} = Q_g$

dove:

$Q_{H,nd}$ è il f

**Netherlands: draft NEN 7120**

7.1.2.1 **Netto warmtebehoefte per maand per rekenzone [A]**

*zi*, in maand, *mi*, a

Met weglating van de indic

$Q_{H;nd;net} = a_{H;red} (Q_{H;ht}$ –

Met als ondergrens: $Q_{H;nd;}$

waarin (voor elke rekenzor

$Q_{H;nd;net}$ is de netto

$Q_{H;ht}$ is het total

$Q_{H;gn}$ is de totale

**Germany: DIN V 18599-2**

**5.2.2 Bilanzgleichung für**

den Ausnutzungsgrad mitein
kation mit der Anzahl der T
Betriebstagen und Tagen mi

$Q_{h,b} = Q_{sink} - \eta Q_{source}$

Dabei ist

$Q_{h,b}$ der Heizwärme
für Betriebstag

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# In short: main difficulties for better use of current 1st generation CEN-EPBD standards

- Need for clear separation between *common procedures* and *national/regional choices and input data*
- Need for more consistency and transparency of the overall structure
- Too many options
- But: strong interest from target groups (European industry, building professionals and key actors from the Member States) in 2nd generation standards

- ➔ Proposal (in next presentation)

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# About cooperation CEN – ISO

- CEN operates at European level
- ISO operates at the global level
- In many cases standards are developed in cooperation ➔ EN-ISO standards
- Already several EN's are EN-ISO
  - Example:

| | |
|---|---|
| EUROPEAN STANDARD<br>NORME EUROPÉENNE<br>EUROPÄISCHE NORM | **EN ISO 13790**<br>March 2008 |

- Expected intensified cooperation CEN-ISO
  - CEN standards used as basis
  - Taking the recommendations for improvements into account
  - With European experts retaining the initiative

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# Impact of 2nd generation of CEN-EPBD standards (1)

- CEN standards more usable as direct reference & high transparency in national choices
  - Higher efficiency: concentrate at national level on
    a) the national specialties
    b) active contribution to the improvement of the common procedures (“the physics”)
- Easier international knowledge exchange and shared research
- Increased circulation of products, services and property data
  - Towards **more** EU product data coupled to EP calculations
  - Towards **less** use of confusing national or non-EU labels…
  - **More** uniform info on quality of building stock

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# Impact of 2nd generation of CEN-EPBD standards (2)

- Faster implementation of new solutions
  - Better comparable energy performance levels and impact of innovations
- Increased credibility of EU in the world
  - Retaining the initiative in the global arena
- EPBD Recast ready
  - Such as: link to comparative cost-optimum method, links to other Directives, emphasis to existing buildings and to near-zero energy, … (more in next presentation)
- Ultimate goal: High performance European tools leading to high performance buildings

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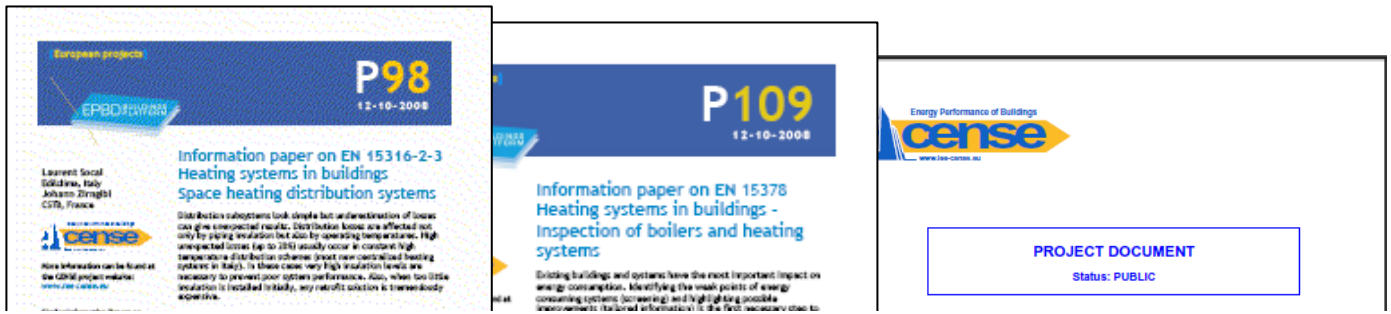
Current status: Under discussion between CEN and DG ENER

# More information

More information and downloads: www.iee-cense.eu

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