

**5th CEN-CENELEC Annual Meeting: Sustainable Use of Energy,
July 1, 2009**

***Energy Efficiency of Buildings
- Current use and challenges for the future:
feedback of CENSE project***

Dick van Dijk
dick.vandijk@tno.nl

TNO Built Environment and Geosciences, The Netherlands

CENSE



Outline

- **CEN standards to support the EPBD**
- **The CENSE project**
- **Current situation**
- **The future**



European Energy Performance of Buildings Directive (EPBD, Dec. 2002)

- Required for all EU Member States, from 2006 (2009). Main elements:
 - General **framework for a calculation methodology** on the integrated energy performance of buildings...
 - Application of **minimum requirements** on the energy performance of new buildings (and major renovation of large buildings) ...
 - Energy performance **certification** of buildings (“energy labels”)...
 - Regular **inspection** of boilers and of air-conditioning systems in buildings ...

CEN standards to support the EPBD

- European Commission **Mandate 343** to CEN/CENELEC/ETSI (Jan.2004):

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

- Result: circa 30 CEN standards published (2007-2008)

- *More details in presentation by Jaap Hogeling*



Objective of the EU CENSE project (2007-2010)

- To accelerate **adoption** and improved **effectiveness** of the EPBD related CEN standards in the EU Member States
- Benefit:
 - Increased **accessibility**, **efficiency** and **harmonisation** of the building energy performance assessments in the Member States

Main activities

- A. To widely communicate the role, status and content of these standards; to provide **guidance** on the implementation
- B. To collect **comments** and good practice **examples** from MS aiming to remove obstacles
- C. To prepare **recommendations** to CEN for a “second generation” of standards on the integrated energy performance of buildings

A. To give guidance: examples

European projects

EPBD#EN15316-3-1

P91
23-10-2008

A vehicle for energy-efficient

European projects

EPBD#EN15316-3-1

P92
21-10-2008

Information paper for the EN ISO standard on energy use for heating and cooling

Dick van Dijk
TNO Built Environment and Geosciences

European projects

EPBD#EN15316-2-3

P98
12-10-2008

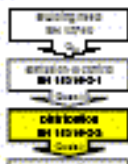
Information paper on EN 15316-2-3 Heating systems in buildings Space heating distribution systems

Laurent Social
Edilizia, Italy
Johann Zirnigal
CSTB, France



More information can be found at the CDME project website: www.cim-cim.eu/

Similar Information Papers on CDME and/or other European projects can be found at the Building Platform website: www.buildingplatform.eu/



Distribution subsystems look simple but underestimation of losses can give unexpected results. Distribution losses are affected not only by piping insulation but also by operating temperatures. High unexpected losses (up to 28%) usually occur in constant high temperature distribution schemes (not new centralized heating systems in Italy). In these cases very high insulation levels are necessary to prevent poor system performance. Also, when too little insulation is installed initially, any retrofit solution is tremendously expensive.

Also, the water distribution circuit type may affect generator performance. Experience has shown that a number of condensing generators do not condense at all (losses being up to 10% efficiency) because of poor consideration of distribution circuits effect on water temperature.

Electric energy use also be a concern. A circulator of 160 W kept running 24/24 for 163 days in a 160 m² flat would use 10 kWh/m² (with a primary energy factor of 2,5)

This paper gives a short introduction to the CDME standard EN 15316-2-3 for calculating heat losses and auxiliary energy needs from heating system distribution systems. It contains explanations of the calculation methods with details on the input and output data and links with other CDME standards.

The basis of the detailed method is simple enough but this standard

European projects

EPBD#EN15316-3-1

P99
03-10-2008

Hans van Wofferen
TNO Built Environment and Geosciences,
The Netherlands

Information paper on EN 15316-3-1 Domestic Hot Water systems - Characterisation of Needs (tapping requirements) -

This paper gives a short introduction to the CDME standard EN 15316-

European projects

EPBD#EN15316-3-2

P100
09-10-2008

Hans van Wofferen
TNO Built Environment and Geosciences,
The Netherlands

Information paper on EN 15316-3-2 Domestic Hot Water systems - Distribution

This paper gives a short introduction to the CDME standard for calculation of the losses from domestic hot water distribution systems. It contains explanations of the calculation methods with details on the input and output data and the links with other CDME standards. Distribution losses may be 25% or more of total DHW needs needs for distribution rates of 20 m and more and for losses



European projects

EPBD#EN15378

P109
12-10-2008

Laurent Social
Edilizia, Italy

Information paper on EN 15378 Heating systems in buildings -



More information can be found at the CDME project website: www.cim-cim.eu/

Similar Information Papers on CDME and/or other European projects can be found at the Building Platform website: www.buildingplatform.eu/

European projects

EPBD#EN15239

P116
25-11-2008

Jean-Robert Alliet
CSTB

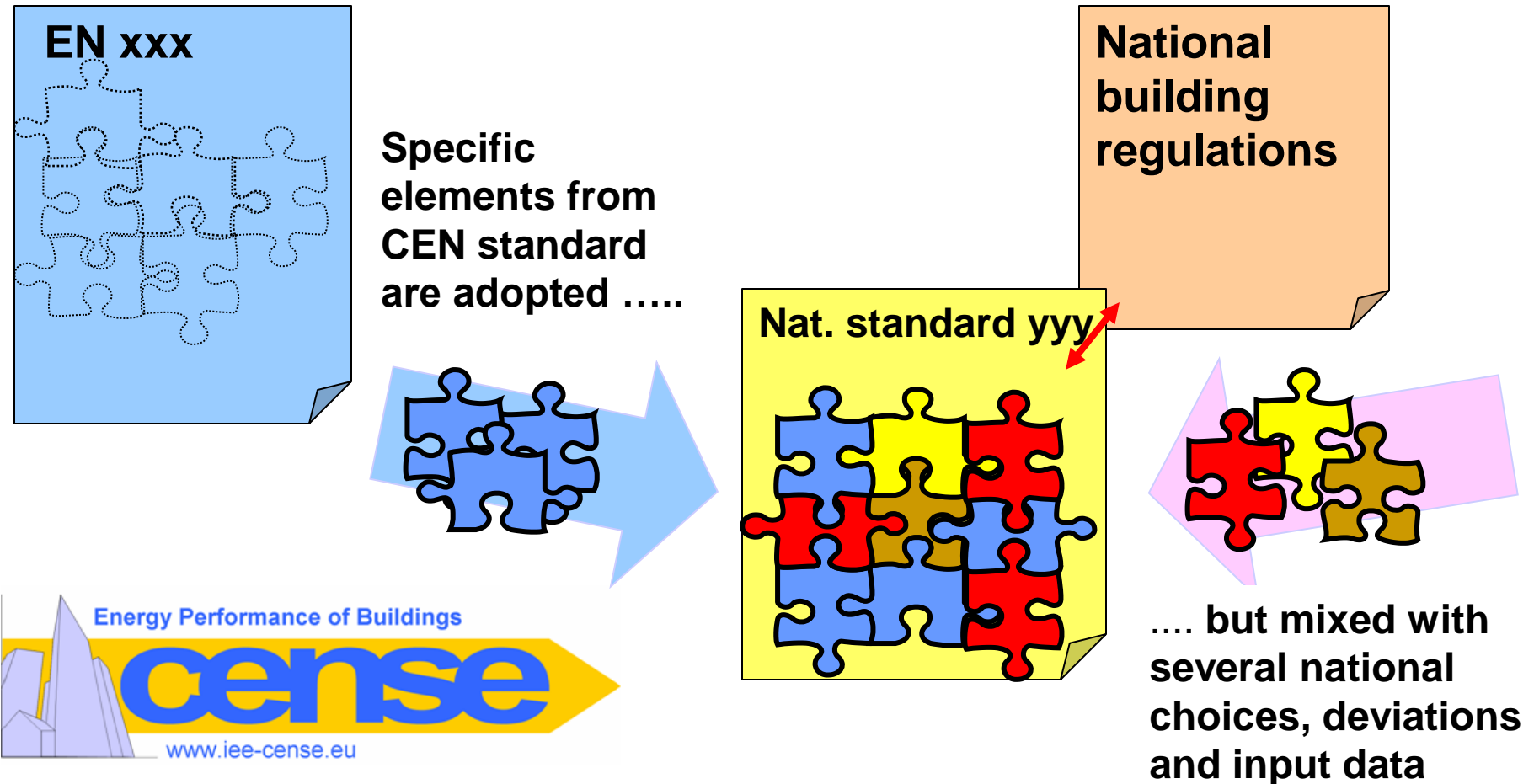
Inspection of ventilation systems - EN 15239 for the application of

B. To collect feed back

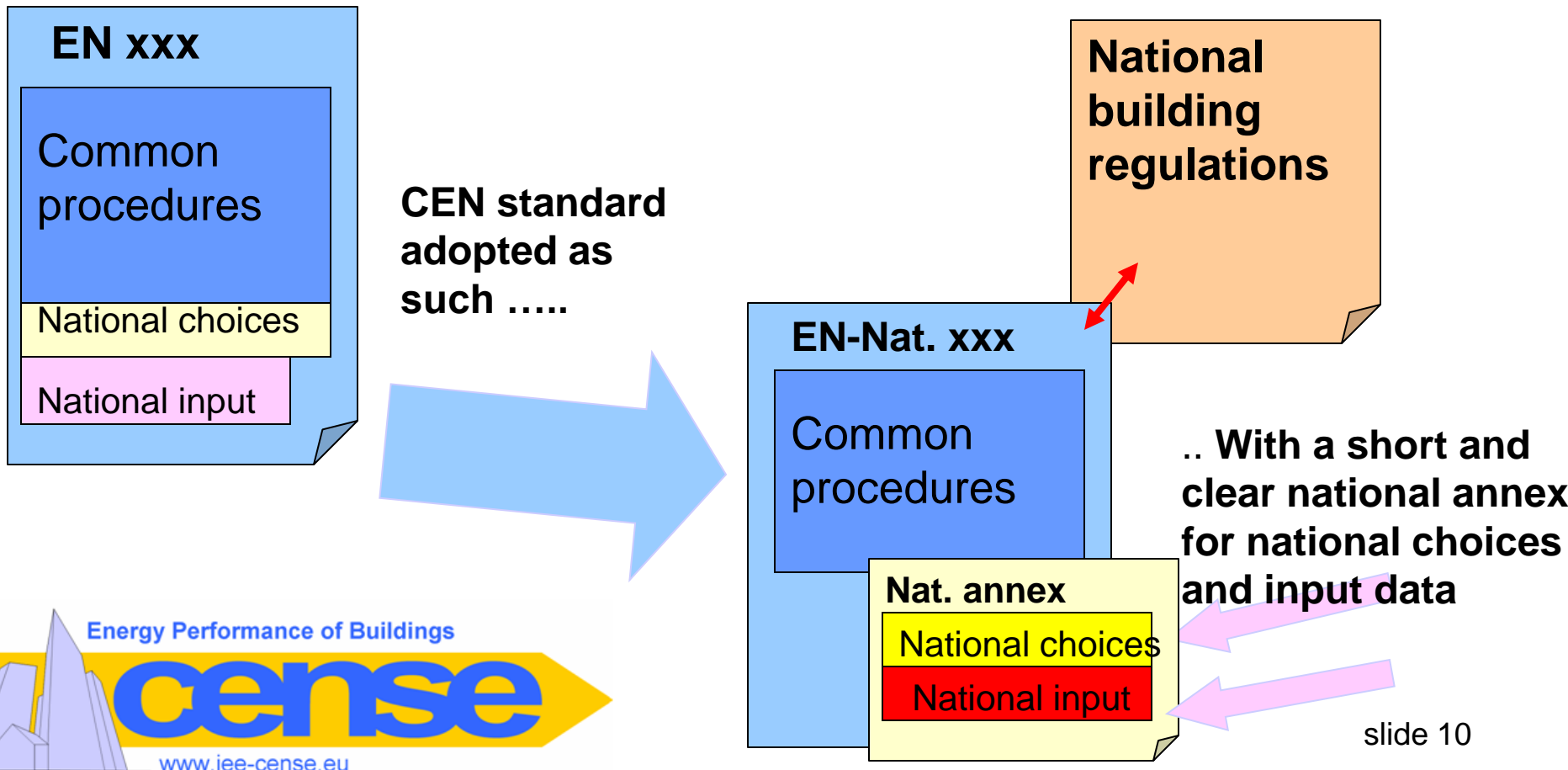


Current situation:

Several EU Member States implemented
1st generation CEN-EPBD standards «in a practical
way»

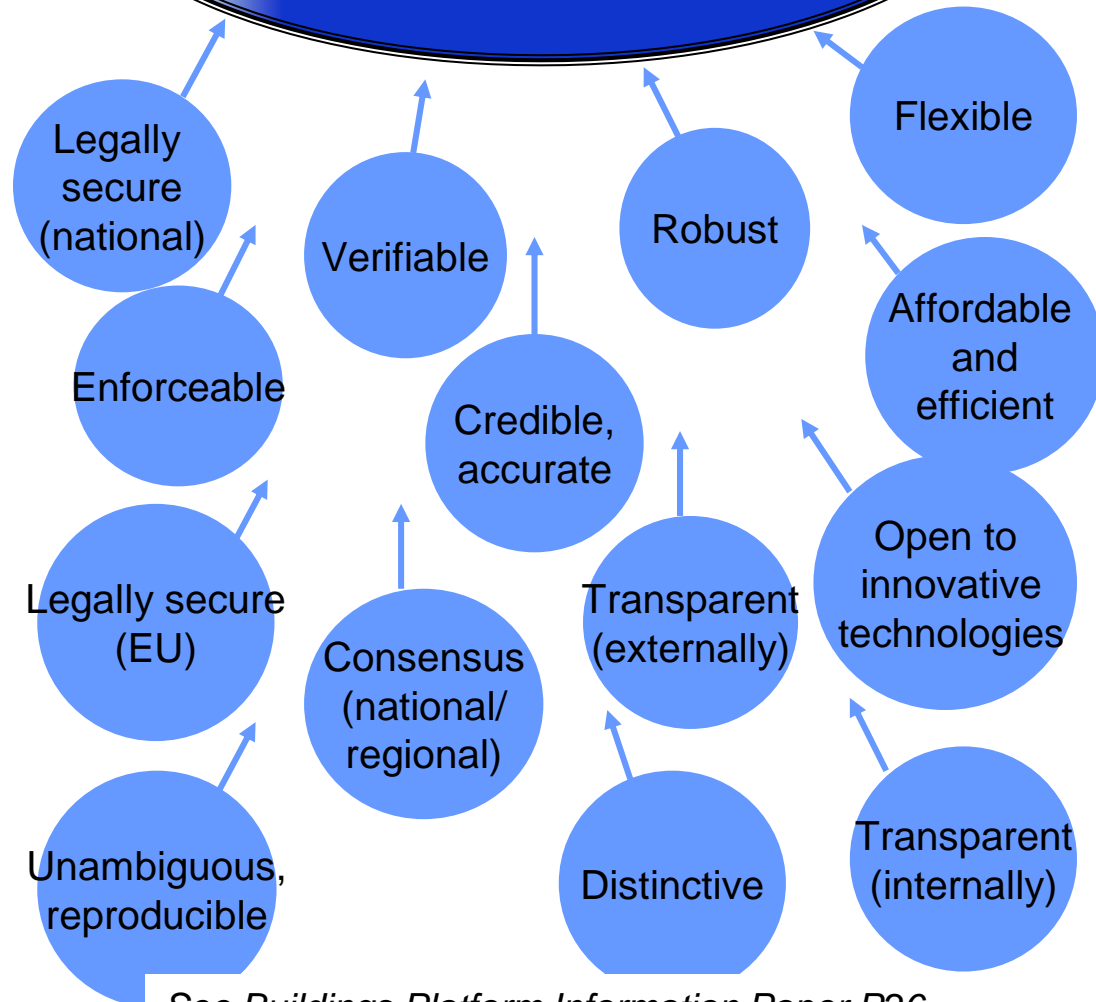
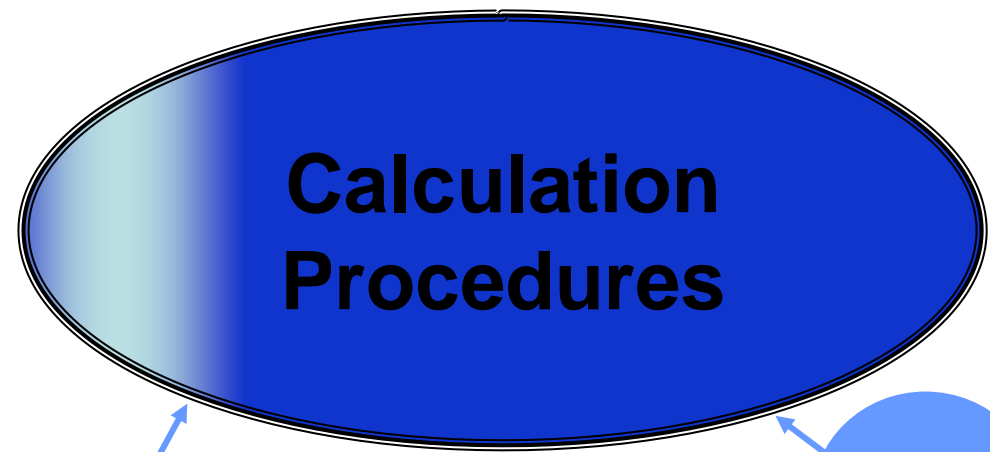


Desirable situation



Challenge to find the right balance

Many -*sometimes* conflicting- quality criteria



Challenge: balance between harmonized procedures & national choices (1)

- Differences between countries/regions, on use of energy performance methods in the context of building regulations:
 - **Climate data**: Obvious..
 - **Building traditions, cultural differences**:
 - Use of attic and cellar..
 - Average conditioned floor area per person...
 - Market penetration of products/technologies..
 - Architectural traditions, ...
 - **Occupant/user behaviour**

Challenge: balance between harmonized procedures & national choices (2)

– National policy:

- e.,g.: Conversion factors electricity (oil, wood, ..) → primary energy and/or CO₂)
- Which energy uses included (cooling? Appliances?)
- Differences in rating scales (A-G, 0-100, ..)

– Legal context:

- Links with other regulations, e.g.
 - Indoor air quality ⇔ ventilation needs
 - Definition and size of conditioned floor area
 - Daylight/view from office spaces

Challenge: balance between harmonized procedures & national choices (3)

– Legal context (continued):

- Type of government control:
 - On bldng design or on realized bldng?
 - Penalties?
 - Strict control or not?
 - → Effect on relevance of detailed input
- Status:
 - Energy label purely informative or linked to mandatory measures (improvement) or incentives (subsidies, cheaper mortgages, ..)?

Next steps

- **Recommendations to CEN** for second generation of CEN standards on energy performance of buildings
 - Aim: Increased **accessibility**, **efficiency** and **harmonisation** of the building energy performance assessments in the Member States
- **→**
 - Increased consistency and clarity
 - Basis for (common?!) software tools
 - Balance between harmonized procedures and national choices and input

CEN & ISO

- Already many of the CEN-EPBD standards developed as EN-ISO standards under Vienna Agreement

In particular:

EN TC89 & ISO TC163

New (2009):

Joint Working Group of
ISO/TC 163 “Thermal
performance and energy
use in the built
environment”

ISO/TC 205 “Building
environment design”



Energy Performance of Buildings

EPBD

www.iee-cense.eu

Outlook: CEN & ISO

CEN standards published in
2007-2008
and implemented in
many Member States
"in **practical way**") →
2nd generation needed
in **2010-2012**

CENSE project:
**Recommendations for
2nd generation of CEN
standards: late 2009-early
2010**

**ISO: Joint Working Group
TC 163 -TC 205 established
June 2009
to develop ISO
standards on EP of
Buildings
2009-2011**

High
expectation
s in ISO

With anticipated active input
from European experts →
Global EN-ISO standards?!!

CENSE Project website

More information about the CEN standards can be found at the CENSE project website

www.iee-cense.eu