



EIE-2003-096



ENPER - EXIST

Applying the EPBD to improve the **Energy Performance Requirements** to **Existing Buildings**

ENPER-EXIST

Task 1: Applicability of CEN standards

Marleen Spiekman, Dick van Dijk
TNO Built Environment and Geosciences
The Netherlands





Content of the presentation

- Aims of the study
- Short explanation on CEN work
- Overview of work done and work in progress
- First results and preliminary findings
- Overview of expected results



Objective of the task

1. To identify the gaps between CEN & practice for existing buildings
 - To define the **input parameters** needed for the method to describe the system or the procedure
 - To identify problems with the **data collection**
 - To see if **influencing factors** (if special relevant for existing buildings) are taken into account
2. To make recommendations (pro's and con's of different options)
 - Based on national experiences
 - To identify solutions for gaps found



EIE-2003-096



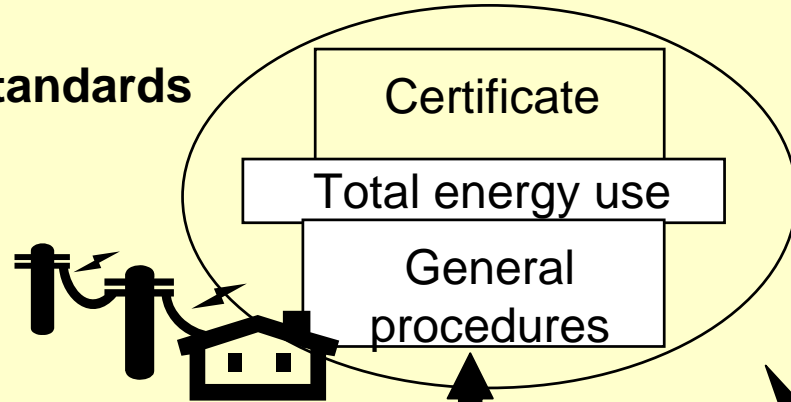
ENPER - EXIST

Short explanation of CEN work

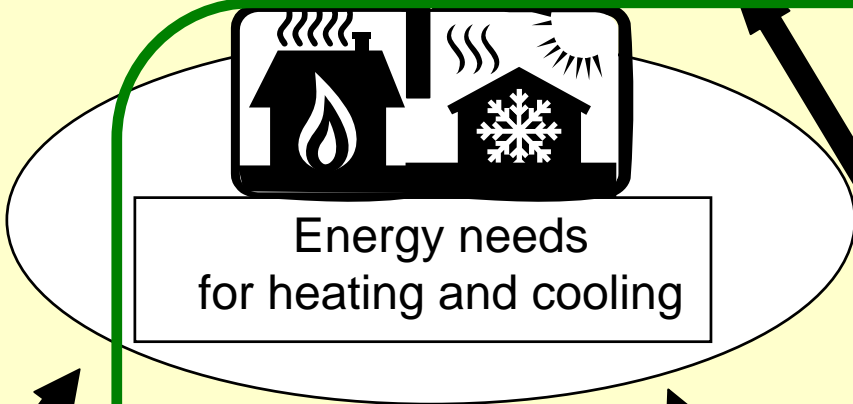


CEN focus on existing buildings where relevant

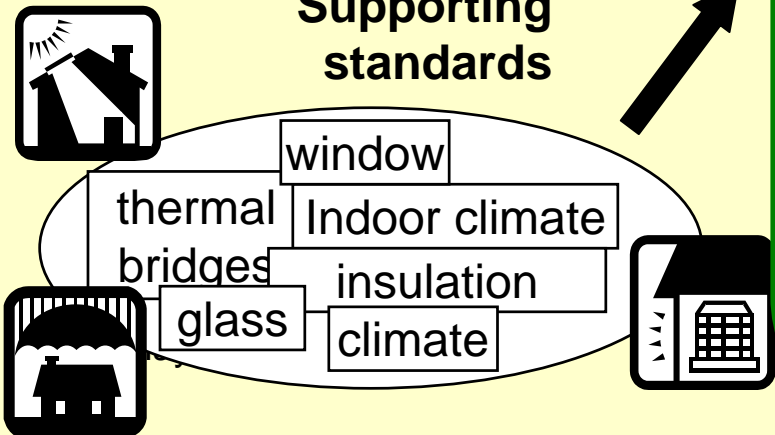
Overall standards



Building standard

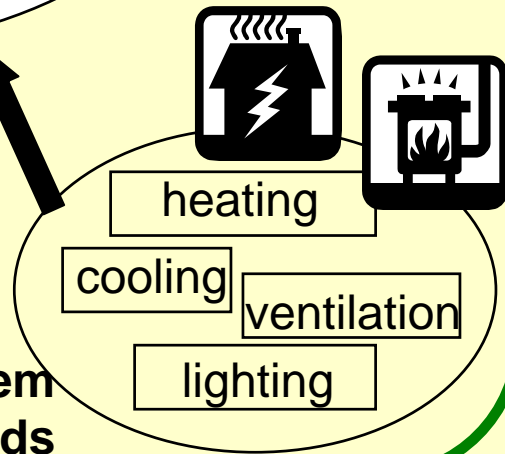


Supporting standards



Focus ENPER-Exist on existing buildings

System standards





Objective 1. Finding possible gaps in the relevant CEN draft standards

- Analysis of the relevant CEN draft standards (prEN's)
 - Aim: to give direct feedback to CEN
- A Pilot study of the data collection
 - Aim: to test the data collection in practice



Finding possible gaps in the relevant CEN prEN standards

- Input data
 - CEN is concentrating on calculation procedures and do not address in detail **input data acquisition**
 - The total accuracy depends on the calculation method and **input data acquisition**
 - **Input data acquisition** is often a more difficult issue in existing buildings than in new buildings
- Phenomena to be taken into account
 - Some phenomena are considered with too much detail : e.g. thermal bridges
 - Some phenomena are forgotten, for example:
 - Actual operation of the building (*some standards don't accept other than standard operation*)
 - Ageing



Example of some concrete results (1)

- *CEN adopted request from Enper-Exist:*
 - *To allow use of simple methods, for e.g.*
 - *thermal bridges*
 - *sunspaces*
 - *unconditioned spaces*
 - *In case of existing buildings where cost-effectiveness of the inspection is a problem when using the full CEN method*
 - *To be decided at national level, depending on the application and type of building*
 - *To add informative annexes with examples of national values on e.g.*
 - *nocturnal insulation*
 - *air tightness*
 - *internal heat sources*
 - *internal heat capacity*



Example of some concrete results (2)

- *Problem with local heating in old houses:*
 - *poor thermal comfort*
 - *But:*
 - *low energy consumption, thus good energy performance*
 - *→ low thermal comfort is rewarded??!*
- *Suggestion from Enper-Exist adopted by CEN:*
 - *Change definition of “heated space”:*
 - *a “heated space” may include also spaces that are considered for the calculation as being heated*
 - *for comparison under standard conditions*
 - *such as for the EP certificate*



Objective 2. Investigation of alternative methods

- An analysis of pro's and con's of various alternatives
 - Based on (national) experiences: national methods and methods developed in e.g. EU projects



Investigation of alternative methods

- Some concrete examples of alternative methods:
 - Simple methods from various countries available for e.g.:
 - Thermal bridges
 - Sunspaces
 - Unconditioned spaces
 - External shading
 - Fan power
 - Duct lengths (concerning ventilation losses)
 - Air flow rates
 - Default values for boiler and DHW efficiencies
 - Alternative methods:
 - Cooling load for non A/C buildings



Investigation of examples of input parameters

- Some concrete examples on (national) databases/libraries:
 - Examples from countries on:
 - Constructions
 - Materials
 - Boiler properties



More general, preliminary findings

To apply the CEN standards to existing buildings, one must (or a country must):

Select among the different options in the standard the option which is well adapted to existing buildings

- The standards contain different options, even sometimes simple ones
 - But the different options are generally based on different (e.g. national) approaches, not on rational considerations regarding existing buildings
 - ➔ There should be a statement in each standard to explain which methods are adapted to existing building



Some preliminary findings (2): on needed input parameters

- The standards contain various input parameters which are difficult to obtain, in case of existing buildings
- Simple options often depend on national annexes:
 - Gives a lot of flexibility and freedom to the countries
 - Puts a high burden on shoulders of countries
 - Gives no guidance to inexperienced countries
- Alternative approaches are:
 - Define **European data base** enabling to get values of the parameters (probably too difficult now, but a good opportunity for common work with the industry). Good opportunity for **product labeling** ****see also presentation “Rating in NL” in the afternoon ****)
 - Add **informative annexes** to the standard which could be used if no national annex is available



Some preliminary findings (3): further steps

- Enper-Exist points out specific issues to be improved for application to existing buildings
- But:
 - This is a long term work because only few countries have experience with existing buildings



Conclusion: expected results

- Comments on how to improve standards
- Test on the problem of data collection (when applying procedures to example buildings)
- Comments on the advantages and drawbacks of the different options offered by the standard
- Concrete suggestions
 - On methods
 - Input parameters
 - Alternative methods
- Definition of strategy for further steps at the CEN level