CENSE workshop Zagreb

organized in cooperation with
Croatian Ministry of Environmental Protection, Physical Planning and Construction
Directorate for Construction

EPBD-CEN standards for defining Croatian calculation methodology

8 and 9th of December 2009 Zagreb / Croatia

Minutes

Croatia will adopt EPBD - CEN standards, but there are some difficulties in determination of national annexes. All national annexes will be prescribed as a part of the building regulations. The aim of the project IEE-CENSE is to increase the awareness and effective use of the EPBD - CEN standards. The main activities in the IEE CENSE project are:

- communicate the content of the standards and provide guidance on implementation;
- collect comments and good practice examples;
- prepare recommendations to CEN for the revision of the standards.

The 8th and 9th of December a workshop has been organized in Zagreb by the IEE - CENSE project in cooperation with Croatian Ministry of Environmental Protection, Physical Planning and Construction, Directorate for Construction, who is responsible for building regulations.

The objective of the workshop was to exchange on how Croatia could adopt and adapt the EPBD - CEN standards in their building regulation and software.

In order to enable fruitful detailed technical discussions, only participants involved in the application of EPBD - CEN standards in building regulations has been invited. About 20 experts representing the:

- Croatian Directorate for Construction;
- Universities acting as technical advisers for the public authorities;
- Educational institutes responsible for the training of Croatian certificators;
- Building test institutes;
- Building professionals;

were participating (see attendance list on http://www.epbd-s.eu).

Experts from Slovenia, Slovakia and Italy also attended, and therefore an exchange of experiences in the region was possible.

Lino Fučić, Director for Construction, opened the meeting and welcomed the participants. He underlined the interest for Croatia to have the possibility to exchange with experts from other countries, who have already implemented EPBD-CEN standards, on their experience, difficulties and solutions found.

Johann Zirngibl, for the IEE - CENSE project, pointed out that the feedback from Croatia will be useful for the revision of the standards. He then detailed the draft agenda and the organisation of the meeting.

For each topic the experts had prepared a short presentation focused more on their experience with the standards (problems, solutions, choices made, etc) than explaining the standards itself (the participants knew the standards already).The experts explained how they applied the EPBD - CEN standards (national annexes, why they have chosen this or this option).

The following priorities have been defined by the organisers for the workshop:

- context of Croatian Building regulation;

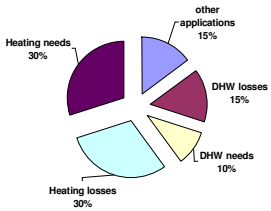
- the use of EPBD - CEN standards in the Croatian calculation methods;
  general structure -overall energy use (EN 15603)
  building needs (EN 13790, EN 15316-3.1)
  heating system losses (EN 15316 series)
  ventilation (EN 15242, EN 15241),
- operational rating;
- certificates (EN 15217);
- software tools.

The evolution of the Croatian building regulation is quite comparable to the evolution of the building regulation in the most advanced European countries **[1]**. It started in 1970 with thermal transmitence requirements and now moves towards the overall energy use of buildings, expressed for example in primary energy. For apartments built between 1988 and 1994 the heating needs are about 180 kWh/m2a. The requirements for new buildings are about 50 up to 90 kWh/m2a ! To reach these ambitious targets and to upgrade the Croatian building stock of nearly 2 millions apartments, performant tools are needed.

The EPBD and the related CEN standards are requiring a holistic approach of the building. The use of the EPBD - CEN standards in building regulations should start by adopting the same general calculation structure. EN 15603 was presented and it was explained how this standard could be used as a starting point for EPBD – CEN standards integration **[2]**.

The holistic calculation begins with the calculation of the buildings needs (thermal needs of the building envelope, domestic hot water needs, lighting, etc). The workshop focused on the building needs and the domestic hot water needs. After the presentation from Croatia and their choices made in EN ISO 13790 **[3]**, the experiences from Slovenia [**4]** and Slovakia **[5]** in the transposition of EN ISO 13790 were presented. The national decisions taken, the problems encountered were detailed and the questions from Croatia were answered. The EBPD – CEN standard EN 15316-3.1 about DHW needs was presented and discussed **[6]**.

In the past, often building regulations were limited to the building needs calculated according EN ISO 13790. The losses of the technical building systems were often underestimated or neglected. Indeed they can account for about 50% of the building needs in existing residential buildings (see **figure** for French building stock).



When the house become better and better insulated, the performance of the technical building systems become more and more important in the overall energy use and they can no longer be neglected.
For example in well insulated houses the consumption of the heating circulation pump could represent up to 10 % of the overall energy consumption. All parameters influencing the overall energy use has to be taken into account in the calculation methods, otherwise the potential of upgrading the building stock will not be used efficiently. An important part of the workshop was dedicated to the heating system loss calculation [**3], [7], [8].** An example about a typical Italian collective building clearly highlighted the energy saving potential in the building stock.
Ventilation system calculation has also be discussed during the meeting [**3], [9].** The use of the related standards causes some difficulties.

The Croatian building authorities were also interested in the experiences from other countries on operational rating, for example for public buildings. EN 15603 deals with operational rating too. An interesting experience with operational rating has been presented by Slovakia **[10].**

After having discussed the calculation methods in details, some participants wondered if it would be possible to ask for so many detailed information for the building permit, for the use permit, for the certificates in new and existing buildings. Should the calculation method for these applications be the same or different (detailed, simplified methods)?

It was recalled that the stake in energy efficiency is in the building stock. The certificates (and the inspection reports) are meant to be a trigger for upgrading the building stock through

effective advice. Unfortunately today the certificates are often based on simplified tools as many countries are still in the starting phase with the certificates. The advices are often very basic. Better tools are needed for better advices to upgrade the energy efficiency of the building stock in a cost efficient way. The participants agreed that the calculation methods should be the same.

During the meeting it was pointed out that for the certificators it would be difficult to read the hundreds of pages of the standards and to apply the standard without help. But there is no need for the certifcator to read the standards if he could use high quality software tools.
By using a software tool the calculation method could be the same. The simplification will not be on the calculation method itself but on the interface between the user (certificator) and the calculation method. Each user can decide how deep he wants to go into the details. Default values, precalculated values based on the typology of buildings and technical systems will help to reduce the input data.

The investments needed to develop high quality software tools (e.g.: integrated tools for design and energy calculation, graphical interfaces) are only justified for a significant market having the same rules. The significant market is Europe; the same rules for the calculation method are established by the EPBD - CEN standards.

The Croatian authorities decided to use the experience of other countries and to adopt the EPBD – CEN standards. Croatia will focus on the development on national annexes like climate data and boundary conditions. Through application of European standards Croatian experts are provided with the possibility of using also other software which support the same set of European standards with prescribed obligatory control of their applicability under Croatian regulations. Software applicability control shall be carried out using an algorithm - a tool planned to be developed and which will contain also all national additions necessary for the application of European standards **[11].**
The Directorate for construction will also support Croatian experts to participate actively to EPBD - CEN standardization work to bring in their experience directly.

Presentations (see http://www.epbd-s.eu and www.iee-cense.eu):

[1] Harmonisation of legal system in the field of energy efficiency in buildings in the Republic of Croatia, Nada Marđetko Škoro, Directorate for Construction; Department for system and programs, Croatia
[2] P87 How to integrate the CEN – EPBD standards in national building regulations, Johann Zirngibl, CSTB, France
[3] Energy performance calculation structure in Croatia, Igor Balen, Faculty of Mechanical Engineering and Naval Architecture, Croatia
[4] EN ISO 13790 – Slovene ways and sideways, Matjaž Zupan, Fibran Nord d.o.o, Slovenia
[5] Calculation of heat need for heating and cooling (EN ISO 13790:2008), Jana Bendžalová, BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
[6] P99 Information paper on EN 15316-3.1, Hans van Wolferen, TNO, Netherlands, Claude François, CSTB, France
[7] HRN EN 15316 series, Space heating and domestic hot water systems – energy requirements and efficiencies, Damir Dović, Faculty of Mechanical Engineering and Naval Architecture, Croatia
[8] P98 Information paper on EN 15316-2.3 – Space heating distribution systems, Laurent Socal, Edilclima, Italy
[9] P110 Information paper on EN 15242 - Calculation methods for the determination of air flow rates in buildings including infiltration, Hicham Lahmidi, CSTB, France
[10] Measured energy rating, Jana Bendžalová, BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
[11] Software tools, Željko Štromar, INSTITUT IGH d.d., Croatia.