

Handbook: Holistic energy efficient planning and construction



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INTENSE – Intelligent energy saving measures for municipal housing in Central and Eastern European countries

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Introduction

About the Handbook

On 19 May 2010, the European Parliament and the Council of the European Union adopted the recast of the Energy Performance of Buildings Directive (2010/30/EU). The aim of the Directive is to strengthen the energy performance requirements and to clarify and streamline some of the provisions from the 2002 Directive, which it replaces. The Directive clearly states that as of 31 December 2020 new buildings in the European Union will have to consume 'nearly zero' energy and the energy will have to be 'to a very large extent' from renewable sources.

Meeting these requirements means that construction is implemented properly and in a high quality. Already the building boom in many Central and Eastern European countries in 2006-2008 showed that quality differs greatly. Many buildings erected in this period have constructional defects that also affect their energetic efficiency. Settlements were built in the outskirts of larger cities without proper infrastructure and connection to the urban public transport system.

Due to that reason there was a need for a training program having a holistic approach by bringing together different aspects of energy efficient urban planning down to details of construction and finding out how to make energy efficient houses more attractive and desirable for citizens.

Such a training programme should be targeted not only to the immediate decision-makers on municipal level, but also the executing stakeholders both from design and implementation levels. Experts from these two levels are the most important key actors for the implementation of energy efficiency in construction.

In the frame of the project "From Estonia till Croatia: Intelligent Energy Saving Measures for Municipal housing in Central and Eastern European Countries (INTENSE)", which is financed by Intelligent Energy – Europe program, such a training program was elaborated in order to provide tools for further dynamic developments at the pan-European level and to promote the know-how transfer between nations in order to achieve the goal of implementing the European Union standards at a national level.

The focus of the INTENSE training program is on the low energy/passive house standard, i.e. how to achieve the standard and to go further ('nearly zero'-buildings, required by the Directive Recast). The training program has a modular approach consists of 9 modules and it allows combining different units according to local needs:

1. Legislation
2. Quality control
3. Settlement planning and design principles
4. Energy carriers and renewable energy sources
5. Ecological materials
6. Cost-benefit assessment
7. Building physics
8. Construction of elements
9. Systems engineering

The handbook is divided into 2 parts – a paper version consisting of key slides with comments of each module and an extended electronic version having deeper information on each module (on CD).

How to use the Handbook

Each chapter contains key slides, which summarize the main contents in form of a presentation and below you can find further explanations on the content, as well as hints for further information or suggestions for how to present the content to your audience. Where applicable you will also find here information about connecting topics.

Notes

Further explanations for you as a trainer with suggestions for further reading and how to present the content.



Slide

The presentation you can find on the enclosed CD.

For each topic the CD will also contain an extended version of the presentation with more detailed explanations and more examples.

Using and adapting the slides

You are free to use these presentations as a whole or only parts of it in your trainings and you are also free to modify these presentations provided that you give credit to those who have prepared them. In that case we would appreciate a note from you with some information how you have used the slides.

Further information is also available on www.intense-energy.eu

Abbreviations used in this handbook

AC	Air conditioning
A/V	Outer surface to inner volume
BEF	Baltic Environmental Forum
CAD	Computer-aided design
CAPEM	Cycle Assessment Procedure for Eco-Materials
CEE	Central and Eastern Europe
CHP	Combined Heat and Power generation
COP	coefficient of performance
CPC	Compound Parabolic Concentrator
DHW	Domestic hot water
EE	Energy efficiency
EER	Energy efficiency ratio
EC	European Commission
EPBD	Energy performance of buildings directive
EPC	Energy performance certificate
ESD	Energy end-use efficiency and energy services directive
EU	European Union
e.u.z.	energie + umwelt zentrum (energy + environment centre)
GEMIS	Global Emission Model for Integrated Systems
GHG	Greenhouse gas
HR	Heat recovery
HVAC	Heating, ventilation and air conditioning
HVACR	Heating, Ventilation, Air Conditioning and Refrigeration
IEE	Intelligent Energy Europe
INTENSE	From Estonia till Croatia: Intelligent Energy Saving Measures for Municipal housing in Central and Eastern European countries
LCA	Life cycle analyses
LCC	Life cycle costs
LV	Latvia
MS	Member State
PC	Personal computer
PHPP	Passive House Planning (Design) Package
PVC	Polyvinyl chloride
RE	Renewable energy
REA	Riga Energy Agency
REC	Regional Environmental Center
RES	Renewable energy sources
ST	Solar thermal
SWOT- analysis	Strengths, Weaknesses, Opportunities, and Threats analysis
US EPA	United States Environmental Protection Agency