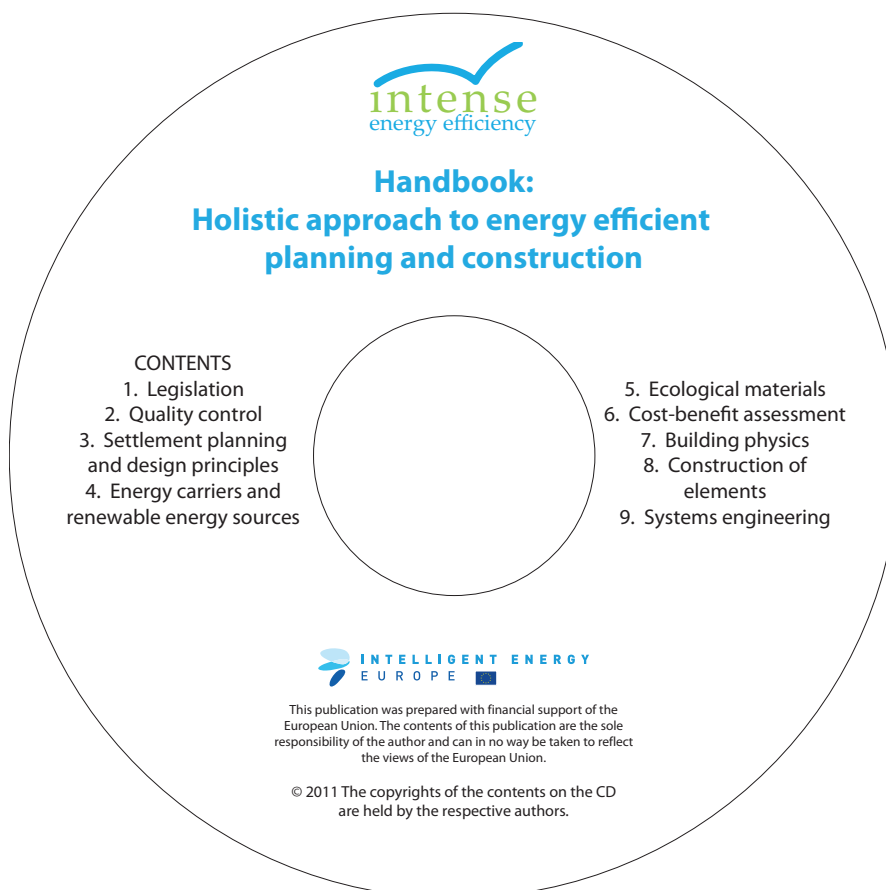


Annexes

Annex A1. CD containing the extended training program

The handbook folder contains a CD with two sets of PowerPoint presentations: one version with the same content as printed in this handbook and for each topic an extended version with more information and additional examples.



NOTE:

If you have downloaded this document from the internet, and you are interested in the PowerPoint documents, please contact the coordinator of INTENSE:

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Annex A2. Beneficial calculation tools

Attention! The information in the tables below, especially with regard to prices and versions of software, are subject to change.

phpp	Does energy-conscious design require sophisticated simulations? This was indeed the case for the first Passive Houses that were completed in 1991. Calculating the energy balance of buildings with very low energy consumption is a demanding task - existing regulations, standards and pre-standards lack the required precision. Nevertheless, we have identified the critical factors for preparing reliable balances - with tools that are simple to use and with acceptable effort in terms of data input.	demo-version for free www.passive-on.org
Delphin	Delphin is a comprehensive numerical simulation tool for the combined heat, moisture, and matter (e.g. salt) transport in porous building materials. It is mostly applied to calculate transient processes in building envelopes and construction details, and predict condensation problems and durability risks in general	Different licensing options www.eere.energy.gov
AnTherm	Calculates temperature distributions, heat flows and (optionally) vapor diffusion flows in building structures - particularly those with thermal heat bridges. AnTherm (Analysis of Thermal behaviour of Building Construction Heat Bridges) is designed for the technically qualified designer by providing thorough and reliable evaluation of thermal performance in accordance with current European standards (EN ISO).	Up to 5.000,- € www.kornicki.de/antherm
Heat 2	Calculates two-dimensional transient and steady-state heat conduction within objects that can be described in a rectangular grid. It is well adapted to the following applications: General heat conduction problems Analysis of thermal bridges Calculation of U-values for building construction parts Estimation of surface temperatures (surface condensation risks) Calculation of heat losses to the ground from a house Optimization of insulation fitting Analysis of floor heating systems Analysis of window frames	about 520,- \$ www.buildingphysics.com/index-filer/Page691.htm
Heat 3	Three-dimensional transient and steady-state heat conduction within objects that can be described in a rectangular grid. HEAT3 can be used for analyses of thermal bridges, heat transfer through corners of a window, heat loss from a house to the ground, to mention a few applications. Arbitrary thermal properties and initial temperatures can be specified. HEAT3 can handle such internal modifications as heat sources and internal boundaries of prescribed temperature.	About 500,- \$ Heat 2 + Heat 3 Package price: 600,- \$ www.buildingphysics.com/index-filer/Page691.htm
LESOKAI	Computes the static and dynamic thermal transmission properties of simple building components, estimates the risk of water vapour condensation and mould growth, and checks if the component complies with the Swiss SIA 180 standard. It also allows the calculation of optimal thickness in terms of energy or cost. Calculations are performed according to the most recent European standards. Included is a comprehensive materials data base. Lesokai 4 is part of the LESO series, and has the same user interface as Lesosai.	550,- CHF http://apps1.eere.energy.gov

MOIST	Program to predict combined transfer of heat and moisture in multi-layer building construction. Inputs hourly weather data from diskette and predicts the moisture content and temperature of the construction layers as a function of time of year. Can be used to develop guidelines and practices for controlling moisture in walls, flat roofs, and cathedral ceilings.	For free www.bfrl.nist.gov/863/moist.html
Physibel	Suite of heat and mass transfer programs: 2-D/3-D steady state heat transfer for building details, thermal bridges, window frames. 2-D/3-D transient heat transfer for ground heat losses, building details, and efficiency of thermal capacity: SECTRA, VOLTRA. Improved Glaser method for vapour transfer, condensation, and drying: GLASTA. multi-zone transient heat transfer for heating, cooling, overheating, sunscreens, and passive solar energy: CAPSOL.	- www.physibel.be
THERM	Analysis of two-dimensional heat transfer through building products. Includes a graphical user interface that allows users to draw cross sections of fenestration and other building products, which can then be analyzed by an automatic mesh generator and finite-element heat transfer algorithms. Results are displayed graphically.	For free http://windows.lbl.gov/software/therm/therm.html
UMIDUS	Models coupled heat and moisture transfer within porous media, in order to analyze hygrothermal performance of building elements when subjected to any kind of climate conditions. Both diffusion and capillary regimes are taken into account that is the transfer of water in the vapor and liquid phases through the material can be analyzed. The model predicts moisture and temperature profiles within multi-layer walls and low-slope roofs for any time step and calculates heat and mass transfer. Umidus has been built in an OOP language to be fast and precise easy-to-use software. Umidus is especially useful for studies of hygrothermal behaviours of building envelope and roofs. Users can quickly build different construction elements and compare them in terms of heat flux, mass flow and moisture content and temperatures profiles. Reports of building parameters and graphs of results can be effortlessly exhibited.	- http://apps1.eere.energy.gov
WUFI	Advance hygrothermal model that solves the coupled heat, and moisture transport in building envelope systems such as walls and roofs. The model is joint development between the Oak Ridge National Laboratory and the Fraunhofer Institute in Building Physics (IBP). WUFI-ORNL/IBP is an easy-to-use, menu-driven program for use on a personal computer which can provide customized solutions to moisture engineering and damage assessment problems for various building envelope systems. The model was specifically developed for architects, and engineers alike. It is excellent education tool as the user can visually review the transient thermal and moisture distributions as the simulation is executed.	For free http://web.ornl.gov/sci/btc/apps/moisture
Pay-back Trainer	Calculation of cost-benefit situations for all investments of a building.	About 40,- € www.amortisationtrainer.de

Measuring instruments and construction-planning tools

condetti[®]PÄD condetti[®]BOX condetti[®]Max	Condetti is a planning tool for building details with boards or at PC as virtual construction. You can visualise and discuss the detailed planning in workshop groups	Information upon request www.condetti.de
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Blower-Door testing instruments	Measuring instruments for quantifying the airtightness of a building. Air temperature and humidity levels are important issues for occupant health and comfort. A professional design and examination of the building's air barrier protects from draughts and dry indoor air resulting from air leaks through joints and gaps. Construction damages like mould caused by moisture finding its way into the insulation can be avoided. An airtight envelope protects from energy losses and takes care of the environment and the economy.	Information upon request www.blowerdoor.de
Thermography cameras	Measuring instruments for imaging the heat losses of a building envelope (from outside or inside)	www.gs.flir.com www.pce-instruments.com

Annex A3: Useful tips for event preparation

“Reminder” for the trainer’s preparation

Target of the event

Relevant questions:

- > **What shall be the result of the event for the target group?**
- > **Knowledge transfer (could it be done by reading a book)?**
- > **Learning of competences (knowledge transformation)?**

Participants

- > **Is my event focused on a special target-group?**
The more precise the event content is offered the better you could be aware of the kind of “specialists” who will take part. It could be a more homogeneous participant group.
- > **Is it a heterogeneous or homogeneous target-group (experience/ knowledge/ age)?**
If the group is heterogeneous – each participant will have different expectations – it may be a problem not to react on it as the lecturer/trainer of this group!
- > **Do I know the level of knowledge and expertise? What could be the expectation of the participants?**
On the one hand it is useful to know something about their level of knowledge and on the other hand it is helpful to know something about their expectations. Ask them! Both will help to find the right approach to satisfy all participants. If you do not know anything about your participants – be flexible in the content and way of presentation.
- > **Can I anticipate the questions the participants have in mind (it is likely to correlate with their expectations)– how can I integrate these questions into my event?**
If you ask the participants before starting your presentation – you could reflect about these questions during my presentation – or are you flexible enough to allow questions during the presentation process?
- > **How many participants will take part?**
You should know the number of participants during preparation of event (before hand!):
 - > **The smaller the group of participants – the more direct and intensive the communication could be.**
 - > **The bigger the group the better must be the planning of the event (different working groups in different rooms – material, media, facilitators for group work)**
 - > **You could copy the needed number of lecture-material**
 - > **You could prepare the setting of the room where it will take place (desks, chairs)**

Event-planning

- > **What kind of event will be the best for the target-group?**
There are several options for presenting special contents. Each of these options has its own positive or critical aspects – You should be aware of it (lecture/ workshop/ training/ exercise/ exchange of experience – or a mixture).
- > **Will I integrate my participants?**
The more flexible you react to the participants – the more interesting the interacting between me and audience will be – for all (!). “Info-tainment” means not only to give a “package” of information to the audience – but to “play” with the process between all persons in this room.
- > **What kind of media (or equipment) do I need?**
Each of the different kinds of events needs its own preparation (see above).

...and remember to make the best out of your equipment:

Beamer:

It is now the most common presentation technology. But if using it, you should also use the technological options of my computer/ laptop: Animations, comics, graphs, pictures, films – all is possible – and you should be aware of these very useful features of software – it will make your presentation more interesting for your audience (and interesting presentation will be more in mind of the participants later on).

Day-light-proceter (over-head-proceter):

It is an “old” technology – but useful if you want to write something (with pen) or if you want to write and describe some graph (calculations etc.) during your presentation.

Flip chart

They give the chance to collect useful comments and questions from the audience during the presentation. You also may use it as prepared papers (e.g. with graphs or graphic model cuts of building details etc.) which should be commented during the presentation.

All written material could be photographed and used as document later on.

Meta-plan-board

It is a bigger sized wall than flip chart – useful for collecting and clustering relevant points of discussion by little “post-it’s” during a workshop.

Also useful for tools like “condetti” – e. g. to visualize construction details

Black board / white board

It is often in seminar rooms of schools – could be used like a flip chart (with different colored pieces of chalk) and be photographed for documentation.

Extra-material

- > Pens in different colors and sizes (not too slim!)
- > Post it’s (paper)
- > Paper for flip chart or meta plan boards
- > Glue sticks
- > pins
- > Prepared flip chart for feed back (ranking by dotting)

Last, but not least: rules for a good presentation

- > Be aware of your position between audience and presentation board
- > Speak directly to the audience during presentation
- > Give an overview about that what you want to present - "red thread"
- > Give clear and exact comments corresponding to the shown slide
- > All contents shown must be commented
- > Keep text short!
- > Diagrams, graphs and letters must be recognizable on the slide
- > Not too much different information on one slide
- > Do not read a longer text on the slide
- > Do not read from a script directly (it could be too monotonous)
- > Good speech modulation is good for the attention of the audience
- > Use the technical options for an interesting presentation (see above!)
- > Use demonstration material which could be given to the participants (models of construction elements/ insulating material/ tapes)
- > Alternation between passive and active participation will animate and inspire the audience

We hope these little hints will be helpful for your planning!

We wish you a successful presentation!

Your INTENSE-team