Objectives:

- heat transfer and there consequences on building-elements and houses
- forms of heat transfer (conduction, radiation, convection);
- physical characteristics of the different materials (ʎ Lambda, ρ Rho)
- thermal bridges and how to avoid them,
- effect of wind and air leaks on heat transfer

Methods:

- lectures, exercises, workshop

Trainer:

Place:
lecture
workshop

Duration:
4 hours

Equipment:
laptops
beamer
flip-chart
prepared examples

Theory

lectures, charts, presentations ...

Practice

Task

- working groups with 3–4 participants working on thermal bridge, air leakage examples
- calculate U-values with programs (www.u-wert.com)
- explain air tightness measures on selected details
- measuring surface temperatures on different materials (in winter)

Documents:

Info sheet

I1 General vocabulary for heat transfer
I2 heat transfers
I3 physical characteristics of materials
I4 thermal bridges
I5 air tightness

Text sheet

X1
X2

Slide Show

Building Physics: Thermal Transfers, Bad Examples

Video/Pictures of IR-Camera

Video Blower Door Test

Organisation
prepare workspace for participants with enough places, WiFi / w-lan,
copy text-sheets for multiple choice tests or have them online (e-learning)
prepare examples of details to work with in groups plus discussion
prepare examples to experience heat transfer or measuring tools