Passive House Institute US

Passive House Consultant Training Part III *September 18-20, 2008*

Passive House Retrofits and Non-residential Buildings
Economic Feasibility of the Passive House Standard

Location: Urbana Civic Center, 108 E. Water St., Urbana, Illinois 61801
Phone: (217) 384-2375

Presenters:
Katrin Klingenberg, Director of e-co lab and PHIUS
TBD

Course Requirements:

1. **Your own laptop with MS Exel 2000 or newer if available**
2. **Basic knowledge of MS-Exel**
3. **Basic Passive House Knowledge and completed Fairview II Exercise I (Training I)**
4. **Completed Exercises II-VII (Training II)**

Literature recommendations:

1. **Details for Passive Houses – a catalogue of ecologically rated constructions IBO, Oesterreichisches Institut fuer Baubiologie und –oekologie, Springer Verlag 2008, ISBN 978-3-211-29763-6**

Presentations over the next three days on retrofit and commercial building design principles, the associated mechanical systems design and economic feasibility studies will alternate with practical exercises. The number of participants is limited to assure individual tutoring during the three-day session.

PHIUS will conduct a final online test which will be distributed on October 1st and is due back to PHIUS by the end of October.

Thursday, September 18, 2008

Morning Session Day I –Review of five townhouses for Kerr Ave PHPP exercise:

During the morning session we will go through the final Townhouse PHPP calculations step by step. Participants will have the opportunity to back-check their own calculations against the finalized e-co lab version of the calculations and ask clarifying questions.

9.00 am-10.30 pm

- Final PHPP file comparison

- Q&A

10.30 am-10.45 am **Short Break**

10.45 am-12.15 pm

- Introduction of Exercise VIII: Climate specific energy balancing and modulation of values for multi-family
- Presentation of various climate solutions by each participant to the group
- Discussion, exchange of experiences

12.15 pm-1.00 pm **Lunch**

Afternoon session Day I – PHPP energy balancing introduction for non-residential projects:

1.00 pm-2.30 pm

- Introductory overview of the Passive House Planning Package calculations for non-residential buildings

2.30 pm-2.45 pm **Short Break**

2.45 pm-4.00 pm

- Introduction of Exercise VIIII: a school building (*results to be e-mailed to PHIUS as part of final upcoming online test, correct file and answers will be distributed after review at the end of October)*
- Discussion, exchange of experiences

Friday, September 19, 2008

Morning Session Day II –Passive house components for retrofit applications:

The vast existing building stock is a great market opportunity for high performance retrofits with passive house components. Participants of this seminar will learn how to apply passive house principles for retrofit projects and subsequently lower the energy consumption by up to 90%. An overview over different retrofit approaches will be given and the economic feasibility of each approach will be investigated and compared.

Typical challenges will be highlighted such as lasting waterproofing of the building, limits of insulation thickness, retrofit of ventilation systems, reduction of thermal bridges at the perimeter and footing, insulation of existing slab, basement ceilings and roof (also for low room height situations).

9.00 am-10.30 pm

- Retrofit insulation approaches
- Opportunities and limits in regards to thermal bridge elimination strategies
- Achieving excellent air-tightness in retrofit applications

10.30 am-10.45 am **Short Break**

10.45 am-12.15 pm

- The challenge of interior insulation
- Passive house windows
- Various solutions for ventilation system retrofits

12.15 pm-1.00 pm **Lunch**

Afternoon session Day II – Mechanical retrofit, economic feasibility and built examples:

1.00 pm-2.30 pm

- Energy efficiency grants available and economic feasibility of retrofit applications
- Construction examples

2.30 pm-2.45 pm **Short Break**

2.45 pm-4.00 pm

- Exercise X: thermal bridge reduction, case study
- Discussion, exchange of experiences

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Saturday, September 20, 2008

Morning Session Day III – Non-residential applications – office and school buildings:

Passive houses have made headlines primarily in residential applications. But also the non-residential construction sector is in need of highly comfortable and energy efficient building solutions. The goal of this session is to highlight the most important differences between residential and non-residential building projects.
Participants will learn how to plan an office or school building complying with the passive house standard.

9.00 am-10.30 pm

- Passive house criteria for non-residential buildings
- Ventilation: lay out of air flow volume, times of operation, zoning, fire protection and acoustical issues
- Use of multiple ventilation systems in one building

10.30 am-10.45 am **Short Break**

10.45 am-12.15 pm

- Electrical efficiency: day lighting, energy efficient lighting concepts, office applications
- Internal heat gains / loads
- Cooling loads

12.15 pm-1.00 pm **Lunch**

Afternoon session Day III – Ventilation workshop

1.00 pm-3.00 pm

- Project examples
- Discussion, exchange of experiences, conclusions and feedback