WUFI COMPUTER MODELING WORKSHOP
FOR WALL DESIGN AND PERFORMANCE
(HEAT AND MOISTURE TRANSFER IN BUILDING ENVELOPES)
Salt Lake City, Utah -- May 8-9, 2018

U.S. DEPARTMENT OF ENERGY

Building Technologies Research and Integration Center

WUFI-ORNL[1] Program made available by the U.S Department of Energy

Fraunhofer IBP Institut Bauphysik

This symposium and workshop is co-sponsored by the U.S. Department of Energy (DOE) through Oak Ridge National Laboratory (ORNL) in collaboration with the Fraunhofer-Institut für Bauphysik (IBP) and co-sponsored by the National Institute of Building Sciences (NIBS)/ Building Enclosure Technology and Environment Council (BETEC), Owens Corning, and National Building Science Corporation (NBSC) of California. It is endorsed by the Building Enclosure Council (BEC) of Boston and the National BECs.

BEC BOSTON Building Enclosure Council

Learn to use the most powerful computer modeling program available, which is the industry standard, for building envelope design and wall analysis for heat/moisture control.

See how to use WUFI® in conjunction with ASHRAE's New Standard 160, Design Criteria for Moisture Control in Buildings.


Dr. Achilles Karagiozis and André Desjarlais demonstrate the newest and best strategies on building envelope design with an emphasis on heat and moisture transfer.

About the workshop:

- WUFI® workshops can help architects, engineers, building designers, building forensic specialists, manufacturer representatives, facilities managers, IAQ specialists, and other building science professionals.
- The **2-day hands-on** training session is kept at 30 or fewer, to ensure personalized attention.
- You will receive a copy of WUFI® software; the US Department of Energy provides WUFI-ORNL® for free, and you will receive the commercial WUFI Pro® 6.0 with a 6-week license.
- You must bring with you a laptop computer and your power supply. You need administrative privileges on your laptop so that you can load the software.
- You will be walked through every aspect of the modeling sequencing, enabling you to create wall or roof designs that would be most appropriate for the geographical location.
- You can integrate weather data that has been collected for generations by NOAA, or import weather data from other sources.
- The program allows for each wall or roof design to be specifically engineered for its intended location and its orientation on the building site.
- Aspects of modeling for new products are demonstrated by both group and individual interaction.

[1] WUFI = Wärme und Feuchte instationär ORNL = Oak Ridge National Laboratory 2018-01-19

- You will learn how to export your files and create movies of the simulations.
- Understand liquid water, vapor transfer, thermal transfer, the effects of humidity, drying, and the cause and elimination of vapor and condensation within walls. Whether you are building in a hot, humid environment or cold and dry, or mixed because of seasons, this powerful modeling tool uses modern hygrothermal science to model every wall and roof condition in the contiguous USA.
- You are encouraged to interact and exchange ideas with the professors/instructors, exploring the possibilities of the programs' depth and multiple uses.
- **Point-and-click to**
  - Pick a material. You can also input new materials.
  - Layer your wall with a huge variety of building materials that can be selected and evaluated simultaneously for the most energy- and thermally-efficient walls.
  - Change walls or roofs using your evaluation instead of materials in the database.
  - Change location or orientation of your building.

  See the newest features of Version 6 on the last page of this flyer.

WORKSHOP OVERVIEW

The workshop provides:

- Basic building envelope design principles
- Heat and mass transfer fundamentals
- Validation of modern hygrothermal simulation tools
- Necessary input data: where can I get them and what accuracy is required?
- The Do's and Don'ts of WUFI-ORNL® and WUFI Pro®
- What do the results tell me – performance predicting
- Mold growth predictions – new post-processing modules
- Development and future extensions of WUFI-ORNL® and WUFI Pro®, future standards and guidelines

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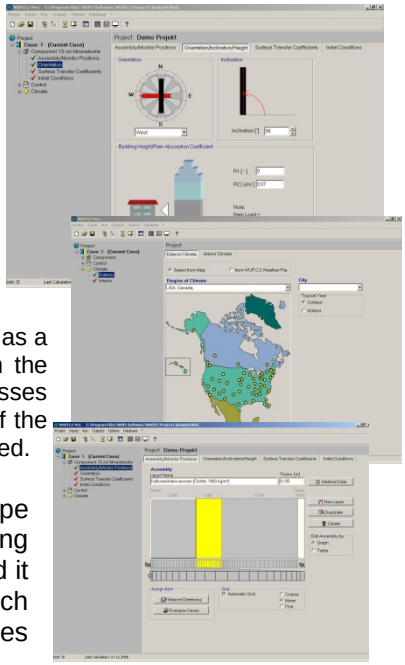
- You learn the conditions and remedies of moisture, both liquid and vapor, that have had deleterious effects on modern construction. You are introduced to new material application to eliminate moisture-related problems in buildings, such as mold and decay.
- The overview ends with an extensive question-and-answer session that allows the participants to interact informally with the presenters.
- You will receive a signed Certificate of Completion.

ABOUT WUFI®:

WUFI® series software

- Allows the realistic simulation of the transient hygrothermal behavior of multi- layer building walls and roofs exposed to natural weather.
- Handles contributions from rain, solar radiation and other crucial weather events on an hourly basis. Both vapor and liquid transport are included, along with the sorptive capacity of building construction materials.
- **WUFI ORNL/IBP®,** one of the WUFI® family software, offers an easy and user-friendly interface for data input and output and is free of charge. **WUFI ORNL/IBP®** comes with weather data for scores of North-American cities which can easily be selected from a map. The temporal behavior of the computed quantities (temperatures, relative humidities and water contents) can be analyzed with the help of preconfigured or user-defined diagrams.



- Furthermore, all the computed profiles can be displayed in rapid succession as a film which shows the transient thermal and hygric processes occurring in the envelope. This film is ideal for gaining insights into the hygrothermal processes and for developing a 'feel' for the situation in the envelope. The reactions of the different materials to the changing climatic conditions can be directly visualized.

- **Save time and cost by modeling:**
  - WUFI® software answers questions specific to building type and environment without the time and expense of building numerous test huts or leaving your office. Now you can build it on the computer, using sophisticated modeling software which gives you heat and moisture data and uses weather data files from all over the country.
  - The software includes analysis to predict mold.

Agenda

Class hours Day One 8:00 a.m. to 5:00 p.m., Day Two 8:00 a.m. to 5:00 p.m.

- Registration/Check-in
- Installation of WUFI-ORNL/IBP® Software
- History of WUFI-ORNL/IBP®
- Practical Application of Simulation Tools
- Thermal Performance of Walls and Roofs (Cool Roofs)
- The Importance of Modeling for Heat and Moisture Transport in Building Envelopes
- Mold Perspectives and Design Perspective
- Fundamentals and Requisites
- Boundary Conditions / Surface Conditions
- WUFI-ORNL/WUFI Pro® Group Modeling Project & Competition
- Group Modeling Project & Presentation of Results
- Analysis of Material Properties
- Assignment and Examples
- Review of Example Cases by all trainers
- Evaluation of Results
- Features of WUFI-PRO®
- Assignment of More Examples of WUFI-PRO®
- WUFI-2D® and WUFI Plus® overview
- Future Standards and Guidelines and Mold Growth
- Limitations of Modeling
- Q & A

WUFI® WORKSHOP REGISTRATIONS: You may register and pay online through this link:
http://events.constantcontact.com/register/event?llr=lbiqjbbab&oeidk=a07ef1fkrf295e0e5bc

Please note that if you pay via PayPal, can use almost any credit card, and you do NOT need a PayPal account.

Registration will be cut off after 30 registrations.

Note: Workshop price is $950/person. Included is a temporary license to use the software. Lunches are included, as well as coffee breaks.

This workshop is listed through the Air Barrier Association of America (ABAA). ABAA Conference and Trade Show is May 8-9, 2018. Registration is separate from the WUFI workshop registration. You would not be able to attend both the WUFI workshop and the ABAA conference at the same time. Please check the ABAA Conference web site:
http://abaaconference.com/.

WORKSHOP Location:

Salt Palace Convention Center
Room 251 D
100 S. West Temple
Salt Lake City, UT 84101
phone: 385-468-2222

Hotel Reservations – through ABAA (Air Barrier Assoc. of America):

Radisson Hotel Salt Lake City Downtown
215 West South Temple, Salt Lake City, Utah, USA 84101
Tel: +1 801 531 7500
Block-discounted rooms still available:
https://www.radisson.com/saltlakecity/abaa

WORKSHOP REGISTRATION

***WUFI Pro* Salt Lake city, Utah – May 8-9, 2018**

To register and pay online with a credit card:

http://events.constantcontact.com/register/event?llr=lbiqjbbab&oeidk=a07ef1fkrf295e0e5bc

Other ways to reserve:

1. E-mail this page to jackiebh@section08.com

WORKSHOP RESERVATION:

Included:

- WUFI Pro® & WUFI/ORNL® instruction May 8-9, 2018 w/software & 6-week license
- Lunches & coffee breaks

Last Name	First Name	Middle Initial
Title:		
Company/Organization:		
Business Street Address:		
City:	State:	Zip:
Business Phone:	Fax:	
E-Mail Address:		

Price: **$950.00 ***

☐ Register online:

http://events.constantcontact.com/register/event?llr=lbiqjbbab&oeidk=a07ef1fkrf295e0e5bc

André Desjarlais – Oak Ridge National Laboratory
Oak Ridge National Laboratory
Building Thermal Envelope Systems & Materials
1 Bethel Valley Road, Oak Ridge, TN 37831-6070
Dr. Achilles Karagiozis – Owens Corning, Toledo, OH

Fraunhofer-Institut für Bauphysik (IBP)
Directors: Univ.-Prof. Dr.-Ing. Gerd Hauser, Univ.-Prof. Dr.-Ing. Klaus Sedlbauer
Holzkirchen Branch
Fraunhoferstraße 10
D-83626 Valley
Phone +49 (0) 8024/643-0
Fax +49 (0) 8024/643-366
info@hoki.ibp.fraunhofer.de
www.bauphysik.de

* You will be notified promptly of any cancellations or schedule changes. If a program is cancelled or postponed we will refund registration fees but cannot be held responsible for any other related costs, charges, or expenses, including cancellation/change charges assessed by airlines or travel agencies. Refunds of registration fees, when cancelled by the registrant, are 90% refundable if notice is given via e-mail by April 8, 2018.

WUFI Pro® Version 6 Features

From Fraunhofer Institute of Building Physics, https://wufi.de/en/

The new version of our simulation software WUFI Pro® can now be obtained at the online shop. Version 6.0 shows many new features and improvements:

- A simplified and more intuitive user experience
- A new, faster and more stable calculation engine
- A new climate menu that allows you to pick a location from the globe, performs further analysis on the related climate data file and displays the progression of all the climate elements contained within it
- Additional climate files for 20 locations in South Korea
- A user-defined climate database with the option to display your own locations on the map
- A new materials database interface with a clearly laid out tree structure, convenient search function and new options for managing user-defined data
- A materials database expanded to include a range of new materials characteristics
- A WUFI® graph tool for evaluating results. For the first time, it is possible to directly compare different scenarios in a single view, compare WUFI® Pro (1D) and 2D simulation results and even evaluate conditions for multiple grid elements – including relative humidity. As a result, it is possible to evaluate wood components in accordance with Germany's new WTA 6-8 specification governing the humidity assessment of such components – including the requirements set out in the specification for dynamically evaluating the ongoing risk of wood rot.
- An interior climate model updated in line with Germany's revised WTA 6-2 specification. Further updates allowing for free configuration of interior climate models to follow soon via a free update.