IBPSA Seattle

EnergyPlus Training for Experienced Building Energy Modelers
Seattle, WA, USA, April 23rd-24th, 2013

Organized by IBPSA-USA Seattle Chapter and Battelle Pacific Northwest National Laboratory

Objective
The objective of this workshop is to introduce EnergyPlus to users who are experienced energy modelers. The course will focus on overall workflow to efficiently and accurately build EnergyPlus models with an emphasis on HVAC systems, controls, and customization. The workshop will be roughly 50% presentations and discussion and 50% hands-on exercises (bring your own laptop).

Registration
The event will be held at the Washington State Convention Center, 800 Convention Place , Room no 204, Seattle, WA 98101.
Registration fee for this event is $150. Number of seats are limited and registration closes on **April 12th**.
Please follow this link to register for the training:
http://www.brownpapertickets.com/event/355515
Brown Paper Tickets will prompt you for a password. Please enter "IBPSA".

Note: Brown Paper Tickets charges a service fee, total cost for registration, including the fee, is $156.24.

Instructor
Dr. Michael J. Witte is a Principal Engineer at GARD Analytics, Inc. in Arlington Heights, Illinois. Since 1999, he has led GARD's EnergyPlus activities, including user support, testing and validation, training, and software development. Dr. Witte has developed and presented more than 45 EnergyPlus training workshops and webinars to more than 750 persons. A graduate of Valparaiso University and the University of Illinois at Urbana-Champaign, he has specialized in building energy modeling since 1983.

Dr. Witte would be assisted by Rahul Athalye for the hands-on training. Rahul is a research engineer at Pacific Northwest National Lab, in Richland, WA. Rahul currently supports the ASHRAE 90.1 Progress Indicator development at PNNL. He represents PNNL on the ASHRAE 90.1 Envelope Subcommittee, leading the analysis on envelope and daylighting. In addition, he supports various other projects, such as ASHRAE 189.1 and IECC code analysis,as well as energy audits for army installations under the FEDS project. He is also involved with PNNL's Solid State Lighting Program.

Prerequisites

- Intermediate to advanced knowledge of energy modeling.

- Know how to use EP-Launch and IDF Editor (online video tutorials available, practice with example files).Note that EP-Launch and IDF Editor will be used heavily in this workshop. These utilities are currently only available for Windows. Mac users must have a Windows virtual environment (such as VM Fusion or Parallels) in order to install and use these utilities.

- Review available EnergyPlus online video tutorials (43 minutes, 9 videos)
  https://www.youtube.com/playlist?list=PL83CB71B24D2650E9

Training Schedule: Day 1

1. EnergyPlus Overview
(30 min presentation, no exercise)

       a. General overview
       b. EnergyPlus advantages vs. other tools
       c. EnergyPlus input structure
       d. EnergyPlus workflows

2. Geometry

(30 min presentation, no exercise, short break)

       a. Creating geometry (OpenStudio SketchUp Plug-ins and other GUIs)
       b. Spaces and zones
       c. File types supported for import.
       d. EnergyPlus geometry and shading conventions -
       what's different/important for EnergyPlus
       e. Speed considerations - more zones can be better, zone multipliers

3. Zones

(30 min presentation and demo, 30 minute exercise/break)

       a. Loads-only simulation - IdealLoads system type
       b. Design Days vs Annual Simulations
       c. Internal Loads

4. HVAC Zone Equipment and Air Loop Connections

(30 min presentation and demo, 30 minute exercise/break)

LUNCH (1 hour)

5. HVAC Plant Loops and Plant Equipment
(30 min presentation and demo, 30 minute exercise)

       a. Plant loop topology and constraints
       b. Adding/removing equipment
       c. Plant equipment sequencing

6. HVAC Controls - Availability Managers
(30 min presentation and examples, 30 minute exercise/break)

7. HVAC Controls - Setpoint Managers
(30 min presentation and examples, 30 minute exercise)

8. HVAC Controls - Outdoor Air Controls
(30 min presentation and examples, 30 minute exercise/break)

Training Schedule: Day 2

1. Output Results
(30 min presentation and examples, 30 minute exercise

       a. Types of output files
       b. Commands for requesting and controlling output

      c. Output viewers
      d. Postprocessing output
      e. Linking spreadsheets
      f. Key outputs

2. Parametric Analysis
(30 min presentation and examples, 30 minute exercise/break

3. Custom Functions - "EMS"
(30 min presentation and examples, 30 minute exercise)

      a. EMS Overview
      b. EMS Sensors
      c. EMS Actuators
      d. EMS Programs
      e. Erl - EnergyPlus Runtime Language
      f. Calling Points and Overall Program Flow
      g. Custom components
      h. Examples

LUNCH (1 hour)

4. HVAC Autosizing
(30 min presentation and examples, 30 minute exercise)

      a. Zone sizing
      b. System sizing
      c. Plant sizing
      d. Sizing outputs
      e. Mixing hard values with autosized
      f. Limitations
      g. Troubleshooting

5. QA, Errors, and Debugging
(30 min presentation and examples, 30 minute exercise/break)

      a. Types of errors - warning/severe/fatal
      b. Inputs for diagnostics
      c. Errors that matter
      d. Errors that don't matter as much
      e. Examples of common errors and strategies for diagnosing/fixing

6. Overall workflow process
(30 min presentation and examples, 30 minute exercise)

      a. Efficiency for data input
      b. Access points
      c. What transition points are one-way streets
      d. GUIs are changing rapidly
      e. Strategies for faster simulations
      f. Strategies for better success
      g. Strategies for better helpdesk assistance

7. Specific Features and Open Q&A
(60 minutes informal presentation, tour of examples, discussion)

      a. Plant heat exchangers
      b. Natural ventilation
      c. Thermal storage

When: **Tuesday, April 23rd and Wednesday, April 24th, 2013 (all day)**
Where: Washington State Convention Center

For more details, follow the link below:
http://groupspaces.com/IBPSASeattle/item/415006