# ENERGY SIMULATION SOFTWARE TRAINING
# 19 June 2009, Canberra, Australia

| City | Day | Address | Enquiries |
|---|---|---|---|
| **Canberra, ACT** | Friday,<br>19 June 2009<br>**0900 - 1700** | Engineers Australia – Engineering House<br>Ground Floor, 11 National Circuit<br>**Barton ACT 2600**<br>+61 2 6270 6548 (training venue only, on the day) | +61 417 405 478<br>(technical)<br>+61 2 6270 6548<br>(Eng. Aust. bookings) |

## Overview

Whole building energy simulation analysis is required for:

- Building and energy system long-term cost optimisation;
- Meeting the alternative verification requirements of Section J of the BCA;
- Risk management within the Commitment Agreement framework of NABERS; and
- Green Star ENE-2 credits.

This one-day workshop is designed to introduce participants to basic dynamic energy simulation of commercial office buildings using the DesignBuilder software tool as a graphical user interface for EnergyPlus.

## DesignBuilder

DesignBuilder (www.designbuilder.co.uk) is a unique software tool for creating and assessing building designs. DesignBuilder uses the latest EnergyPlus simulation engine to calculate the energy performance of a building. It has been specially developed so it can be used at any stage of the design process. This includes concept stage (where just a few parameters are needed to capture the building design) to much more detailed building models for established designs. Output data may be selectively graphed or exported in tabular format for use in other applications. The DesignBuilder graphical interface significantly simplifies geometry creation within EnergyPlus, allowing the user to access the power of EnergyPlus. DesignBuilder is being continually integrated with EnergyPlus.

DesignBuilder allows rapid construction of building models. Buildings may be visualised in 3D to aid assessment of design / energy performance trade-offs. DesignBuilder is suitable for use by architects, building services engineers, energy consultants, and students. Some typical uses are:

- Evaluating impact of building geometry and construction
- Evaluating façade options for energy use and comfort
- Visualisation of shading systems
- Thermal simulation of naturally ventilated buildings
- Cooling and heating load calculation
- Visualisation of thermal performance
- Predicting energy use of buildings via the EnergyPlus simulation engine

## EnergyPlus

EnergyPlus (www.energyplus.gov) is a new-generation building energy simulation program for modelling building heating, cooling, lighting, ventilating, and other energy flows. It is the simulation engine at the heart of DesignBuilder. Now in version 3, EnergyPlus builds on the most popular features and capabilities of BLAST and DOE-2 but also includes many innovative simulation capabilities such as time steps of less than an hour, modular systems and plant integrated with heat balance-based zone simulation, multizone air flow, thermal comfort, and photovoltaic systems. EnergyPlus is continually upgraded, with a freely downloadable upgrade available every six months. EnergyPlus has fulfilled the Australian Building Codes Board software protocols from the beginning.

EnergyPlus has already been recognised by several awards including:

- R&D 100 Award: EnergyPlus received an award as one of the 100 most technologically significant new products of 2003 in the 41st Annual R&D 100 Awards.
- Award for Excellence in Technology Transfer, EnergyPlus development team, Federal Laboratory Consortium, Little Rock, Arkansas, 8 May 2002.

## Workshop Objectives

The objective of this course is to introduce the process of building energy simulation using DesignBuilder. Participants will be given the opportunity to use the graphical DesignBuilder interface for EnergyPlus to create building geometry, visualisation and simple HVAC modeling. . Approximately three-quarters of the course time is spent on tuition and individually working directly with DesignBuilder. A brief introduction to EnergyPlus will be given near the end of the day.

## Workshop Requirements

The venue has its own desktop computers but you are welcome to bring your laptop and work from it. Necessary software will be provided. A 30-day fully functional evaluation licence for DesignBuilder is available to all course participants. *Minimum* preferred system requirements to run DesignBuilder and EnergyPlus are:

- Windows XP Pro (also runs under Vista)
- 1 GB RAM or more *(the more RAM the faster the simulation runs)*

## Conditions

The organisers reserve the right to decline any registration. This workshop is an introduction to Public Domain and commercial software. Changes to these software tools are ongoing and the user would normally obtain updates to that software as required. The presenters can assume no responsibility for such changes. For more information on EnergyPlus and DesignBuilder, visit:
**www.energyplus.gov** for a fully licensed download of EnergyPlus and documentation, free of charge.
**www.designbuilder.co.uk** including a fully functional, 30-day, downloadable trial version of DesignBuilder.

## Who Should Attend?

Engineers, architects and others interested in exploring whole-building energy modeling and ESD analysis. Participants with prior knowledge of energy efficiency in buildings will get the most out of this course.

## *Presenters*

**Peter Lyons, PhD (Physics), MASHRAE**

Peter holds a PhD in physics from the University of Tasmania. Peter's expertise has been acquired locally and internationally and is applied across façade engineering and sustainable building design. Over 16 years he has specialised in energy performance modelling of all types of fenestration systems and of whole buildings, both residential and commercial. During 1998 – 99 Peter was a visiting researcher at Lawrence Berkeley National Laboratory, University of California where he continues applied research into the energy modelling and rating of windows and skylights. He has published over 50 research papers and reports. He has continuing research interests in the impact of windows on human comfort in buildings.

Peter is a foundation Technical Committee member of the new Australian Fenestration Rating Council. He is an accredited simulator with the US National Fenestration Rating Council and is active in ASHRAE Technical Committee 4.5 (Fenestration). He is a participating member of the ISO Technical Committee 163 which is developing a new international standard for calculating the annual energy performance of windows.

**Justin Wong, PhD Candidate, UNSW**

Justin's PhD studies make extensive use of BIM (Building Integrated Modelling); the use of an International Foundation Class (IFC) model to translate an object model between IFC compatible software. His area of research is focused on developing a new way of translating complex building façades into IFC objects. He uses DesignBuilder and EnergyPlus regularly in his work, and is helping the DesignBuilder development team in beta testing of their CFD-integrated offering just released in V2 of DesignBuilder.

## CPD Credit

Note: Attendance may be credited towards ACEA, AIA, AIRAH, CIBSE, SBSE, AIB & Engineers Australia CPD requirements. NPER and CPEng members are required to undertake a minimum of 150 hours of CPD every three years, and are responsible for keeping records for audit purposes.

### Workshop Fees

The workshop fee per participant is $770 inclusive of GST. The fee includes all workshop sessions, morning and afternoon refreshments, lunch, handouts and course materials. Members of EA, AIA, AIRAH, ACEA, AIB, CIBSE and ANZSES are eligible for a discounted fee of $700 inclusive of GST.
Multiple registrations of three or more people from the same organisation are eligible for a discounted fee of $600 inclusive of GST per person.

ABN 98 636 852 025

# *Registration Form*

## DesignBuilder Training Workshop, 19 June 2009

### Engineers Australia, 11 National Circuit, Barton ACT 2600

### Timing

Training runs from 9:00 am – 5:00 pm.
Free parking *(first come first served)* off western end of Blackall Street (two minutes' walk).

### Your details

Mr/Ms/Mrs/Dr__ First name_____Surname_____

Position_____

Organisation_____

Address_____

State_____ Postcode_____

Tel_____ Fax_____Email_____

### Method of payment

1. I enclose a cheque for $ (made out to Engineers Australia) ***OR***

2. Please debit my (please circle): | **MasterCard** | ***VISA*** | **Diners** | **Amex** for the amount of $ .

Card No. __ __ __ __ / __ __ __ __ /__ __ __ __ / __ __ __ __ Expiry ____ / _____

**Cardholder Name** _____ **Signed :** _____ **Date: ___/____/ 2009**

### Summary of the substitution and cancellation policy

If you are no longer able to attend this event, a substitute delegate may take your place. However, if you wish to cancel your registration a full refund, minus a $50 service fee, will be given provided you have notified us in writing, by letter or fax at least five working days before the start of the event. No refund is available for cancellations under five days.

### Condition of acceptance

It may be necessary for reasons beyond the control of the organisers to alter the content of the program.

### *Complete this form and fax it or scan and email it to*:

**Nina Lenz, CPD Policy & Standards Coordinator, Engineers Australia, 11 National Circuit, Barton ACT 2600.**
**fax +61 2 6273 2358, ph +61 2 6270 6548, mobile +61 409 304 447, nlenz@engineersaustralia.org.au**