

# IBPSA-USA, Houston Chapter

International Building Performance Simulation Association



## Quarterly Publication Newsletter

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*"IBPSA is a non-profit international society of building performance simulation researchers, developers and practitioners, dedicated to improving the built environment."*

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# SIMBUILD 2010

Kapil Upadhyaya, LEED AP, Kirksey



IBPSA-USA hosts Simbuild, a national conference, every two years to present the latest in building performance simulation research. This year the conference took place in New York in August. To make-up for the loss of attendees from the Houston Chapter, here is a synopsis of a few of the presentations and research. Some of these, as you can see, contribute directly to our year long discussions in Houston.

## Interoperability

A very interesting paper on doing detailed energy modeling with Revit models exported to Trace was presented by <sup>a</sup>Shariq Ali. The paper outlines the process in detail, with approximate timelines and probable pitfalls- a must read for all Revit & Trace users.

## Modeling Protocol

<sup>b</sup>Chris Baker, Prasad Vaidya, and Alan D.'Souza presented a paper on Modeling Protocol for early design phase of projects. The paper highlights shortcomings of Appendix G in measuring programmatic efficiency, building shape, window-to-wall area ratio and skylight-to-roof area ratio.

## Software

<sup>c</sup>Cassie Wadell and Shruti Kaserekar compare four softwares -Equest, Energyplus, Trace and IES-for solar gain and resulting cooling loads. Their paper describes differences in algorithms that cause differences in ways transition occurs from envelope load to system load in each of the above softwares, thereby leading to different calculated-loads.

*a. Shariq Ali<sup>1</sup>, <sup>1</sup>URS Corporation, Cleveland, Ohio: Analysis of Procedured and Workflow for conducting energy analysis using Autodesk Revit, GBXML and Trace 700.*

*b. Chris Baker<sup>1</sup>, Prasad Vaidya<sup>2</sup>, and Alan D.'Souza<sup>1</sup>: Modeling Protocol for Early Design Assistance, <sup>1</sup>The Weidt Group, Inc., Minnetonka, MN. <sup>2</sup>The Weidt Group, Inc., Berkeley, CA.*

*c. Cassie Waddell<sup>1</sup>, Shruti Kaserekar<sup>2</sup>,<sup>1</sup>Arup, San Francisco, CA, <sup>2</sup>Atelier Ten, San Francisco, CA: Solar gain and cooling load comparison using energy modeling software.*

## Computational Fluid Dynamics

The paper by <sup>d</sup>Mona Azarbayjani and Jim Anderson presents a case-study of a high-rise office building in Chicago, where-in they utilize Fluent, Gambit and EnergyPlus to analyze natural ventilation strategies and its impact on energy consumption.

Another interesting discussion on the effect of vegetation for pedestrian comfort is included in the paper by <sup>e</sup>Akram Rosheidat and Harvey Bryan. The research utilized ENVI-met for CFD modeling. It summarized that vegetation can have contradicting effects of shading and night-time reduction in radiation that, and that heat island effect is dependent on material and thickness of urban surfaces.

Lastly, the paper by <sup>f</sup>Gang Tan and Kevin S. Venerable describe application of a CFD model to simulation of existing air-flow in a data center, and to prediction of air-flow with a proposed expansion .

## Net Zero Buildings

With DOE's commitment to Net Zero Buildings, the papers presented in the conference bring a lot of applicable knowledge to practitioners.

The research paper by <sup>f</sup>Piljae Im and Jeff S. Haberl show simulation results for an existing K-5 school building, that with energy efficiency measures, solar hot-water and PV systems, can reduce EUI from 48kBtu/sf to 15kBtu/sf.

Another paper by <sup>g</sup>Mini Malhotra and Jeff Haberl compares building performance of single-family detached residences in Minneapolis, Atlanta and Phoenix, and the systems these would require to achieve 'off-grid, off-pipe operation'.

All papers can be found at: <http://www.ibpsa.us/sb10pub.shtml>

*d. Mona Azarbayjani<sup>1</sup>, Jim Anderson<sup>2</sup>,<sup>1</sup>Center for Integrated Building Design Research, School of Architecture, University of North Carolina at Charlotte. <sup>2</sup>School of Architecture, University of Illinois at Urbana Champaign : Beyond Arrows: CFD modeling of a new, naturally ventilated, double skin facade configuration in a Chicago high-rise office building.*

*e. Akram Rosheidat<sup>1</sup>, Harvey Bryan<sup>2</sup>, <sup>1</sup>. Ph.D. Student, School of Architecture + Landscape Architecture, Arizona State University, Tempe, AZ, USA.<sup>2</sup>. Professor School of Architecture + Landscape Architecture, Arizona State University, Tempe, AZ, USA.*

*f. Piljae Im<sup>1</sup>, and Jeff S. Haberl<sup>2</sup>,<sup>1</sup>Oak Ridge National Laboratory, Oak Ridge, TN. <sup>2</sup>Texas A&M University, College Station, TX: Analysis of the energy savings potential in K-5 schools in hot and humid climates: Application of high performance measures and renewable energy systems.*

*g. Mini Malhotra<sup>1</sup>, Jeff Haberl<sup>2</sup>, <sup>1</sup>R&D Staff, Oak Ridge National Laboratory, Oak Ridge, Tennessee. <sup>2</sup>Professor, Energy Systems Laboratory, Texas A&M University, College Station, Texas: Simulated Building Energy Performance of single-family detached residences designed for off-grid, off-pipe operation.*

# Ric's mail on Trane Trace Training



*Hello all.*

*Hope this newsletter finds everyone well. It has been awhile since our last meeting in September. During the last meeting I was attending Trane Trace 700 training. The training was presented by Trane CDS and hosted locally by Hunton Trane. The training consisted of three, eight hour session. The sessions included:*

*Load Design*

*Energy and Economics*

*LEED & ASHRAE 90.1*

*The sessions were fast paced and filled with usable information. Several "hands on" exercises were included in the training to coincide with the presentation to drive home the intended instructional points. Engineers from a variety of local service agencies were in attendance and yes even a few MEP consultants. The instructor, Scott Hintz, was exceptional. There were even extended periods of question and answer sessions as Scott took extra time to answer our real world questions and concerns. Our concerns covered items such as data input, data output, system configurations, simulation setups, what's new and what's next, what about adding this to the program, etc.*

*If anyone in the group is using TRACE 700 for building modeling or just load estimating and has not been to the formal training sessions, I highly recommended you attend as soon as possible. I do not think you will be disappointed.*

*Ric Glenn, P.E.*

*Sr. Project Engineer*

*Rice & Gardner Consultants, Inc.*

# EVENTS

## **IBPSA-USA, Houston Quarterly Meeting**

We will meet at Kirksey on December 8<sup>th</sup> , 4:30pm.

Agenda: Webdemo & Presentation: Tileflow

Please coordinate with *Kapil Upadhyaya* ([kapilu@kirksey.com](mailto:kapilu@kirksey.com)) if you would like to include questions or topics related to Tileflow.

Other events of interest:

## **Upcoming IBPSA-USA Meeting**

Las Vegas, January 29, 2011

<http://www.ibpsa.us/meetings.shtml>

## **ASHRAE:**

### **2011 Winter Conference**

Las Vegas, Nevada, January 29-February 2

## **USGBC:**

### **Green is Mainstream**

Guest Speakers:

Jose Fernandez-Solis, Ph.D., Architect Assistant Professor, Department of Construction Science, College of Architecture, TX A&M University

Fred Bastani, Ph.D. NCCER Trainer & PDS Master Trainer, International Polytechnic Institute

Friday, December 3, 2010: 9:00 a.m. – noon

<http://usgbctexasgulfcoast.org/calendar.asp?show=782&calid=640>

## **LEED 201: CORE CONCEPTS & STRATEGIES WORKSHOP**

Austin, TX, Dec. 9, 2010 - 8:30 am - 5:00 pm

<http://usgbctexasgulfcoast.org/calendar.asp?show=780&calid=639>

## **IESNA:**

### **Office Lighting + LED's/Controls**

Drew Thompson, Acuity Lighting

January 1/11/11

[http://www.iesnaincinto.org/2010-11\\_Calendar/Calendar10-11.htm](http://www.iesnaincinto.org/2010-11_Calendar/Calendar10-11.htm)



# IBPSA-USA, Houston

IBPSA (the International Building Performance Simulation Association) is a non-profit international society of building performance simulation researchers, developers and practitioners, dedicated to improving the built environment.



**Dec. 8th, 2010, 4:30pm**

Venue: Kirksey, 6909 Portwest Dr,  
Houston, Texas 77024

## Web Demo & Presentation: Tileflow by Dr. Kailash Karki, Ph.D.

Dr. Karki is a principal at TileFlow & has done extensive research in various facets of CFD & has more than 60 research papers.



Photos from left to right:  
eschipul's photostream: <http://www.flickr.com/photos/eschipul/1033105082/>  
Hickey & Robertson: [http://www.architectureweek.com/cgi-bin/awimage?dir=2008/0123&article=news\\_1-3.html&image=13731\\_image\\_3.jpg](http://www.architectureweek.com/cgi-bin/awimage?dir=2008/0123&article=news_1-3.html&image=13731_image_3.jpg)

# LAST MEETING

The last IBPSA-USA, Houston meeting was clubbed with Houston Revit Users Group, and was sponsored by Total CAD. Jon Allen Gardzelewski from University of Wyoming presented case studies of buildings designed with Ecotect.

## QUESTIONS ???

We are starting this section to address your questions on LEED Energy modeling, technical issues related to different modeling programs, or opinion of experienced modeling personnel. Please send them to *Norman J. Conger* ( [nconger@chpengr.com](mailto:nconger@chpengr.com) ), *Subject: IBPSA-QA* and we would direct them to one of our fellow members. All Q&As would be included in the next newsletter.

### Are You a Member???

To become a member, simply fill out the application form found at the address below:

<http://www.ibpsa.us/membership.shtml>

Existing members may use the form to renew their membership or update their contact information.

Visit the IBPSA-USA, Houston Chapter at: <http://ibpsausahouston.wordpress.com/>

### Call for Articles

This newsletter serves as a wonderful tool to circulate useful information and upcoming events across the modeling community. Please share these with us along with your own opinions by contacting *Kapil Upadhyaya* ( [kapilu@kirksey.com](mailto:kapilu@kirksey.com) ). All comments are greatly appreciated.