

\*EnergyPlus\*SPARK\*DOE-2\* EnergyPlus\*VisualSPARK\*DOE-2\*GenOpt\*EnergyPlus\*DOE-2\*GenOpt\*EnergyPlus\*  
 \*VisualSPARK\*DOE-2\*GenOpt\*SPARK\*EnergyPlus\*DOE-2\*GenOpt\*VisualSPARK\*DOE-2 \*GenOpt\*EnergyPlus\*

# Building Energy Simulation ♦ User News

\*EnergyPlus\*SPARK\*DOE-2\* EnergyPlus\*VisualSPARK\*DOE-2\*GenOpt\*EnergyPlus\*DOE-2\*GenOpt\*EnergyPlus\*  
 \*VisualSPARK\*DOE-2\*GenOpt\*SPARK\*EnergyPlus\*DOE-2\*GenOpt\*VisualSPARK\*DOE-2 \*GenOpt\*EnergyPlus\*

## Highlights

- 2 ... Release of **EnergyPlus 2.1**
- 4 ... New **EnergyPlus** Consultant for Brazil
- 5 ... Free "Cool Roof" DVD from the State of California
- 5 ... Ask an **EnergyPlus** Expert
  - 5 **SHGC Solar Transmittance**
  - 5 **Chiller Operation**
  - 6 **DX Cooling Problem**
  - 6 **Run Time Fraction**
  - 7 **Surface Output Variable**
  - 7 **Zone Sizing Output File**
  - 8 **Hot Water Radiators**
- 6 ... The "Lighting Portal" from the California Lighting Technology Center
- 7 ... HLCP: An Indian Interface for **EnergyPlus**
- 9 ... Updated **EnergyPlus Example File Generator**
- 9 ... On-line "Getting Started" Tutorial for **EnergyPlus**
- 10 ... Release of EFEN 1.0
- 10 ... Simupedia – a Building Simulation Wikipedia

## Recent Reports

- 11 ... "Energy Index Evaluation Of Buildings In Function Of The External Temperature"
- 11 ... "Simulation Enhanced Prototyping Of An Experimental Solar House"
- 12 ... "The Study of a Simple HVAC Interface of EnergyPlus in the Chinese Language"

## Regular Features

- 11 ... Meetings – Conferences – Symposia
- 12 ... Energy Efficient Business Seminars from San Diego Gas & Electric Co.
- 12 ... January 2008 Technical Seminars from Southern California Gas Co.

## The Buzz

*EnergyPlus* Lauded by *Time Magazine*  
*Time Magazine* has named the San Francisco Federal Building one of its 2007 "Best Inventions of the Year" in the architecture category. The award citation noted that the building is "really a machine for delivering sunlight and fresh air to the people who work there." *EnergyPlus* was used to model the building's energy efficiency features.



**Disclaimer:** The Building Energy Simulation User News was prepared as an account of work sponsored by the United States Government (USG). While this document is believed to contain correct information, neither the USG nor any agency thereof, nor the Regents of the University of California (RUC), nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process or service by its trade name, trademark, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the USG or any agency thereof, or the RUC. The views and opinions of authors expressed herein do not necessarily state or reflect those of the USG or any agency thereof or of the Regents of the University of California

---

---

## **Release of EnergyPlus 2.1**

### **NEW FEATURES**

#### **NATURAL AND MECHANICAL VENTILATION**

- A new system availability manager was added to allow system-level control of hybrid ventilation systems.

#### **HVAC**

- Added water-cooled condenser capability to refrigeration compressor racks for useful heat recovery.
- Chilled and hot-water coils can now be used in the outside air system to preheat or precool outside air.
- New desiccant dehumidifier with additional capabilities and flexibility compared to the existing solid desiccant dehumidifier model.
- Water side economizer (including simulation of integrated and non-integrated water side economizers).
- Packaged terminal air conditioner (PTAC) added to model a fan, DX cooling coil, and a gas, electric, hydronic or steam heating coil serving a single zone.
- Multispeed heat pump with up to four discrete speeds for both cooling and heating.
- Heat losses (and gains) from plant piping.
- New and updated Compact HVAC objects:
  - Compact HVAC chilled water coils now use the COIL:WATER:COOLING model by default, COIL:Water:DetailedFlatCooling can be selected as an option.
  - Compact HVAC unitary system now supports the draw-thru fan placement option, and allows a schedule for the supply fan operating mode (continuous or cycling).
  - New Compact HVAC options for dehumidification and humidification controls for unitary and VAV system types.
  - New primary-secondary loop options for Compact HVAC chilled water loops.
  - Compact HVAC expanded to support specification of outside air as a combination of flow/person, flow/area and flow/zone.
  - Compact HVAC baseboard heat option added for unitary and VAV zones.
  - New Compact HVAC objects for unitary heat pump, unitary VAV, packaged terminal air conditioner, and packaged terminal heat pump.

*Continued on the next page*

---

---

## **Release of EnergyPlus 2.1**

### **INPUT**

- Example input files created for all new features (More than 225 example input files now available).

### **OUTPUT**

- New tabular reports for surface shadowing, shading, lighting, HVAC sizing, system and component sizing, and outside air.
- New Report:SurfaceColorScheme allow users to select their own colors for building elements in the DXF output.

### **DATASETS**

- Color schemes for DXF. (original and default)

### **DESIGN DAY**

- User now can choose between ASHRAE Clear Sky and Zhang-Huang solar radiation models for use in design day calculations.

### **Geometry/Windows/Walls/Shading**

- Surface Surround Subsurface error detection more robust (less false errors)
- Autocalculate now allowed for shading surfaces (number of vertices)

### **ZONE MODEL**

- Zone sizing calculations now include heat gains from domestic/service hot water uses and water heaters.

### **UTILITIES**

- WeatherConverter now produces KML output (for Google Earth) of latitude, longitude, elevation, and a few climate statistics for locations in a list processing run.
- Add comma delimited form of CLM (ESP-r Ascii files) conversion to WeatherConverter.
- WinEPDraw produces in new default colors.

### **DOCUMENTATION AND GUIDES**

- The Getting Started Manual has been completely rewritten to provide more hands-on example exercises and other information for getting up to speed on EnergyPlus.
  - The Input/Output Reference and Engineering Reference Manuals have been updated and extended for all new features and updates. Total documentation now exceeds 3500 pages.
- 
-

---

---

### EnergyPlus Available for Apple's Intel-based Macintosh Platform



The newest version of EnergyPlus (2.1), released 10/31/07, is available for Apple's Intel-based Macintosh platform (in addition to Windows and Linux versions). Download at no cost from the EnergyPlus web site: <http://www.energyplus.gov>.

Our thanks to Greg Stark of Building Synergies, LLC for his help in porting EnergyPlus to the Apple Macintosh platform.

---

---

### Status of EnergyPlus Plug-In for SketchUp



DOE plans to release an EnergyPlus plug-in for Google's SketchUp at the end of 2007. This free EnergyPlus plug-in will integrate building simulation functionality into the SketchUp drawing environment. The plug-in stores EnergyPlus input data on SketchUp surfaces as they are drawn by the user. An EnergyPlus toolbar provides a way to create zones and surfaces with only a few mouse clicks. Construction assignments are 'painted' onto surfaces using a palette of EnergyPlus wall, roof, and window constructions. Users will be able to execute an annual simulation from within SketchUp. Watch the EnergyPlus web site <http://www.energyplus.gov> and email for more information.

---

---

### EnergyPlus\_Support Group at YahooGroups



Are you a commercial or academic user of EnergyPlus? Join over 1200 EnergyPlus users in an email group on YahooGroups. It's a place to ask your questions and share information with other users. The YahooGroup provides a searchable archive of all 7 years of discussion. You can also upload files to share with other users. This group supplements but does not replace the primary program support.  
[EnergyPlus-Support@gard.com](mailto:EnergyPlus-Support@gard.com).

The main web page for the group is: [http://groups.yahoo.com/group/EnergyPlus\\_Support](http://groups.yahoo.com/group/EnergyPlus_Support)

To subscribe, send an email message to:

[EnergyPlus\\_Support-subscribe@yahoogroups.com](mailto:EnergyPlus_Support-subscribe@yahoogroups.com)

---

---

+++++

#### NEW ENERGYPLUS CONSULTANT FOR BRAZIL:

Ana Paula Melo  
[apaula\\_melo@labeee.ufsc.br](mailto:apaula_melo@labeee.ufsc.br)  
Tel: +55(48)37215184  
[www.labeee.ufsc.br](http://www.labeee.ufsc.br)

Universidade Federal de Santa Catarina  
Campus Universitário –  
88040-900 - Florianopolis, SC  
BRAZIL

+++++

**Ask an EnergyPlus Expert . . .**

**SHGC AND SOLAR TRANSMITTANCE**

I'm simulating a zone with a glass façade and I want to have 0.15 for the SHGC of the window: I have run two simulations:

1st case: window with SHGC=0,15      solarTransmittanceNormIncidence=0,06  
2nd case: window with SHGC=0,15      solarTransmittanceNormIncidence=0,10

Basically the amount of solar heat entering in the zone is the same (since the SHGC is the same), but the amount of solar radiation (beam + diffuse) is different. Does Energy Plus make any difference for calculating the cooling rate? And if I want to estimate the cooling peak value, which case should I consider?

**Answer**

EnergyPlus will calculate things differently for the two windows.

Keep in mind that SHGC is defined under a set of standard conditions. Two different windows could line up to have the same SHGC under the standard conditions, but won't necessarily perform equally at all times during annual simulation.

In general, there will be more time lag associated with the radiated portion of solar heat load because it will arrive first at inside surfaces of the zone. The portion of heat that is convecting off the inside face of window will go straight into the zone air and show up as load right away.

You would have to run both windows to see which has the higher peak. My guess is the first case would have higher peak, but it really depends on the particulars of the zone in question.

**CHILLER OPERATION**

In plant equipment, the simulation model contains two chillers, one large and one smaller. Generally, the larger chiller operates from morning to noon and the smaller chiller operates from afternoon to night. When calculating the energy consumption to the chiller electricity, should I sum those two values?

**Answer**

Each chiller will have an output report variable for its "Chiller Electric Power [W]" and its "Chiller Electric Consumption [J]" (see Input/Output Reference, section "Generic Chiller Outputs" and section "Report Variable"). Yes, you should sum the values for each chiller if you want to know the total electric power or electric consumption for the two chillers. As an alternative, the "Chiller Electric Consumption [J]" is metered (i.e., summed for all electric chillers) on Electricity:Plant. However, this meter will also contain the pump energy and cooling tower fan energy if a tower is being simulated. Look in the Input/Output Reference at the section entitled "Report Meter, Report MeterFile Only" for more information regarding report meters.

The California Energy Commission is offering a FREE copy of the "HVAC Changeouts and Cool Roofs" DVD (*you don't need to be a California resident to get a DVD – ed.*).

The video is intended to assist in training building department staff, builders, and consumers on the State of California Title 24 Energy Efficiency requirements.

**FREE!!  
Cool Roof  
DVD**



The DVD contains interviews, slide presentations and other information on HVAC Changeouts and Cool Roof technologies, and how to achieve compliance with the law. Please call the Energy Commission's Title 24 Energy Hotline at 800-772-3300 or 916-654-5106 (outside California) to request your free copy of the DVD (as supplies last).

Note: If you are outside the U.S., Canada or Mexico, send email to [klellington@lbl.gov](mailto:klellington@lbl.gov) to request your free DVD.

### Ask an EnergyPlus Expert . . .

#### DX COOLING PROBLEM

We have an input file that uses the COIL:DX:CoolingBypassFactorEmpirical object and is causing some problems. When run through EnergyPlus (V. 1.4) an error is reported as follows:

```
** Severe ** COIL:DX:COOLINGBYPASSFACTOREMPIRICAL "WC:C2 FF OPEN" -  
** coil bypass factor calculation did not converge after max iterations.  
** The Rated SHR of 0.571, entered by the user or autosized (see *.eio  
** file), may be causing this. The line defined by the coil rated inlet  
** air conditions (26.7C drybulb and 19.4C wetbulb) and the Rated SHR  
** (i.e., slope of the line) must intersect the saturation curve of the  
** psychrometric chart. If the RatedSHR is too low, then this  
** intersection may not occur and the coil bypass factor calculation will  
** not converge. If autosizing the SHR, recheck the design supply air  
** humidity ratio and design supply air temperature values in the System  
** Sizing and Zone Sizing objects. In general, the temperatures and  
** humidity ratios specified in these two objects should be the same for  
** each system and the zones that it serves.
```

Given the absence of a system sizing object, it is unclear how to address this problem.

#### Answer

The supply air condition in the zone sizing object is too low for the coil's process line to cross the saturation curve. You are using a rated inlet air dry-bulb temperature of 26.7 C and rated inlet air wet-bulb temperature of 19.4C (rated inlet air humidity ratio = 0.01125 kg/kg) with a zone sizing object supply air temperature of 16C and zone sizing supply air humidity ratio of 0.008. If you draw a line from the rated inlet air condition to the zone sizing supply air condition, you will see that this line does not cross the saturation curve on the psychrometric chart. Try increasing the supply air humidity ratio to 0.009. This should allow the bypass factor calculation to converge. Please upgrade to V. 2.1!

#### RUN TIME FRACTION

We want to use Energy Plus to look at a typical heating and cooling system runtime at different load conditions. The model consists of a single story residence with a constant volume residential forced air furnace (FURNACE: HEATCOOL), a DX cooling coil (COIL:DX:CoolingBypassFactorEmpirical), and an electric resistance heating coil (COIL:ELECTRIC:HEATING). We are modeling the system using a cycling fan schedule.

To estimate compressor runtime over the (one-hour) simulation time step, should we use the cooling coil runtime fraction? We have run the simulations using different internal and ambient load profiles and the runtime fractions vary from 0.02, 0.06 to 0.1. There is some confusion about what the runtime fraction actually represents. Does it represent the fraction of the time step that cooling is on, or is it the rate at which the compressor cycles?

#### Answer

The runtime fraction (RTF) is the fraction of time the compressor operates during a time step. Upon review of the runtime fraction examples you gave, 0.1 is only 10% of the runtime fraction or approximately 10% of the DX coil capacity. This unit is over-sized for the load; make your coil smaller so the RTF is higher and near 0.9 at the design load.

---

The **Lighting Portal** is a new online resource for the lighting efficiency community that provides a forum for lighting energy efficiency enthusiasts, researchers, manufacturers, lighting designers, architects, policy makers, etc., to exchange ideas and information. Try out the beta version at <http://www.thelightingportal.ucdavis.edu>

---

**Ask an EnergyPlus Expert . . .**

**SURFACE OUTPUT VARIABLES**

The Opaque surface Inside Face Conduction[w] variable can be reported, but how do I get the Outside Face Conduction[w] variable value?

**Answer**

The documentation is searchable from the main menu. As it says in the Input Output/Reference:

*Output variables applicable to opaque heat transfer surfaces (FLOOR, WALL, ROOF, DOOR).*

*Note – these are advanced variables – you must read and understand the descriptions before use – then you must use the Diagnostics object to allow reporting.*

*Zone,Average,Opaque Surface Inside Face Conduction[W]*

*Zone,Average,Opaque Surface Inside Face Conduction Gain[W]*

*Zone,Average,Opaque Surface Inside Face Conduction Loss[W]*

*Zone,Average,Zone Opaque Surface Inside Face Conduction Gain[W]*

*Zone,Average,Zone Opaque Surface Inside Face Conduction Loss[W]*

*Zone,Average,Opaque Surface Inside Face Beam Solar Absorbed[W]*

And under the Diagnostics object, see *DisplayAdvancedReportVariables*.

Use this to be able to use the "Opaque Surface Inside Face Conduction"; the name may be misleading to some. If you put in this field, then you will be able to report on this variable.

So, you need to add Diagnostics, DisplayAdvancedReportVariables; to get this variable reported.

**ZONE SIZING OUTPUT FILE**

When running a design-day-only simulation for the purpose of checking zone sizing, the \*\*\*\*\*cZsz.csv file has the last two lines labelled "Peak" and "Peak Vol Flow." For the mass flow rate columns, these values differ, and the "Peak Vol Flow" value is always less than the "Peak." What is the definition for these two values (I have NOT assigned a value for the "heating max air flow")?

**Answer**

The "peak" value is the maximum of the individual timestep mass flow rates. It is in kg/s, as are the timestep numbers. The "Peak Vol Flow" is the peak converted to volumetric flow rate: its units are m<sup>3</sup>/s.

**Question**

And at what temperature and pressure is the volumetric flow rate calculated? I get slightly different values using STP conditions. How about documenting this and modifying the .csv file to add the units in the description?

**Answer**

We'll modify the Zsz.csv file to include the units for "peak vol flow." The air density is for dry air at 20C, pressure = 101.325\*(1-2.25577E-05\*Elevation)\*\*5.2559; this is an elevation corrected standard pressure formula from the ASHRAE Handbook of Fundamentals.

---

**Indian Interface to EnergyPlus: HLCP Hourly Load Calculation Program**

HLCP (Hourly Load Calculation Programme) is a graphical user interface for design-day and hourly load calculations for Indian cities, meant to be used with the EnergyPlus simulation engine.

Note that HLCP is a for-purchase program. For details, please go to <http://www.hvacindia.com/hlcp/>

---

**Ask an EnergyPlus Expert . . .**

**HOT WATER RADIATORS**

I'm trying to connect hot water radiators using Energy Plus and I am getting some error messages I don't understand. I tried these connections (having already filled in the fields of CONTROLLED ZONE EQUIPEMENT CONFIGUGATION and ZONE EQUIPEMENT LIST):

```
BASEBOARD HEATER:Water:Convective
Baseboard Name           HouseBaseboard
Available Schedule       House_Zone_OPERATION
Inlet_Node               HouseReheatWaterInletNode
Outlet_Node              HouseReheatWaterOutletNode
UA                       500
Max Water Flow Rate      0.0013
Convergence Tolerance    0.001
```

And I am getting the following error messages:

```
** Severe ** Node Connection Error, Node="HOUSEREHEATWATERINLETNODE",
Inlet node did not find an appropriate matching "outlet" node.
** ~~~ ** If this is an outside air inlet node, it must be listed in an
OUTSIDE AIR NODE or OUTSIDE AIR INLET NODE LIST object.
** ~~~ ** Reference Object=BASEBOARD HEATER:WATER:CONVECTIVE,
Name=HOUSEBASEBOARD
** Warning ** Node Connection Error for object BASEBOARD
HEATER:WATER:CONVECTIVE, name=HOUSEBASEBOARD
** ~~~ ** Hot Water Nodes not on any Branch or Parent Object
** ~~~ ** Inlet Node : HOUSEREHEATWATERINLETNODE
** ~~~ ** Outlet Node: HOUSEREHEATWATEROUTLETNODE
```

I don't understand why "inlet" node did not find an appropriate matching "outlet" node. How do I correct the connection? Is there an example file??

**Answer**

What you have so far is fine, but it is not enough. There must be a complete PLANT LOOP and more components, including a pump and boiler, in order to serve the radiator. Please see example file WindACAuto.idf. This example has three radiators on the demand side of the plant loop, but you can construct your input to be similar with a single radiator.

**Question**

Thanks for your reply. To clarify, is a pump, a boiler, a radiator, a radiator thermostat and a room thermostat enough for the simplest possible modeling of a hot water radiator system?

**Answer**

Yes, if the pump is variable speed. If the pump is constant speed, then you need a splitter, a bypass pipe, and a mixer on the demand side. And by "radiator thermostat", I assume you mean a SET POINT MANAGER:\* object to control the hot water supply temperature.

**Question**

I noticed that in the example file you suggested, it uses Purchased:Hot Water. Is this instead of using a boiler?

**Answer**

Yes, the example file uses purchased hot water (district heating) instead of a boiler. You can substitute a BOILER:SIMPLE where you see PURCHASE:HOT WATER referenced.

---

---

## ENERGYPLUS EXAMPLE FILE GENERATOR – **UPDATED!!!**

[http://www.eere.energy.gov/buildings/energyplus/interfaces\\_tools.html](http://www.eere.energy.gov/buildings/energyplus/interfaces_tools.html)

DOE and NREL are pleased to announce the update of the EnergyPlus Example File Generator. The goal of the Example File Generator is to provide input files for building models that serve as a starting point for using and learning EnergyPlus. This service is free and available at the EnergyPlus web site ([www.energyplus.gov](http://www.energyplus.gov)) under Interfaces & Other Tools.

Web-based forms allow you to input some general information about the building you want to model. The service then automatically creates a complete EnergyPlus input file, runs an annual simulation on NREL's computers, and then sends you an email with the EnergyPlus input file along with a summary of the annual energy results (and a dxf image file). The attached DXF of an EnergyPlus example file was generated in just a few minutes.

Assumptions should be carefully reviewed. There is no guarantee that the models are fully compliant with the energy performance Standards used to generate model details.

The new version has many new capabilities:

- Generates input file for EnergyPlus version 2.1.
- The input files are now completely annotated with the descriptions of the fields for each object.
- Added input boxes for geometry including -- Rectangle, Courtyard, L-Shape, H-Shape, T-Shape, U-Shape
- Gas appliances
- Fins
- Continuous daylighting
- Addition of over 50 HVAC systems
- Ventilation rates by people and/or area
- Service Water Heating inputs



Give the service a try! If you have questions or feedback, email [ewi\\_support@nrel.gov](mailto:ewi_support@nrel.gov).

---

---

### *A Getting Started Tutorial for EnergyPlus*

by Vishal Garg  
[Center for IT in Building Science](#)  
[IIIT Hyderabad India](#)

Dr. Vishal Garg of the International Institute of Information Technology in Hyderabad, India, has created an EnergyPlus tutorial aimed at architects and engineers who are familiar with the basic concepts of energy simulation and HVAC systems. The tutorial out-lines the procedures for modeling a small room using EnergyPlus, including instruction on how to run the simulation, and how to interpret the output files. The output presents both heating and cooling energy consumption, so the user may experiment with size, orientation, material properties, location, etc., and compare heating/cooling energy usage.

<http://energyplustutorial.googlepages.com/>

## ***EFEN 1.0***

**EFEN** is a next generation energy analysis tool using the EnergyPlus simulation engine. It is packaged in a user friendly program suitable for quick analysis in early stages of design, comparative energy analysis of different fenestration options and prediction of the whole building energy use, and prediction of the size of HVAC equipment.

**Use EFEN to:**

- Calculate energy and cost savings for your building
- Calculate energy and first year equipment cost savings
- Choose from a library of more than 500 windows (or input your own)
- Choose among numerous building types and shapes
- Choose US or international weather locations (over 2000 locations)
- Quickly complete your analysis in as little as 10 minutes

**Additional program features include:**

- Choice of 7 building types/uses and 6 geometries (shapes) for a total of 42 different buildings
- 3-D building preview in real time
- Option to enter your own windows
- Automated download of weather data files by zip, city/state choice
- Annual energy use and peak loads
- Automated HVAC generation
- Daylighting controls
- Choice of temperature setback and economizer
- Automated insulation levels based on the climate zone, worldwide
- Parametric analysis for different fenestration

For more information and for program demo, contact [info@designbuildersoftware.com](mailto:info@designbuildersoftware.com) or visit <http://www.designbuildersoftware.com/> or call at (413) 256-4647. Pricing varies on the type of license



### **WikiPedia for Building Simulation**

What do you get when you combine *Building Simulation* with a *WikiPedia*?? You get **Simupedia** -- a user-driven encyclopedia aimed at building simulation practitioners!! The idea originated with IBPSA-Germany and it is hoped that Simupedia will become a world-wide effort. Add to it at <http://129.187.44.165/index.php/Simupedia/en> .  
IBPSA-Germany website: <http://www.ibpsa-germany.org/>



# Recent Reports

Proc. BS 2007, Sept. 3-6, 2007, Tsinghua U, Beijing.

## SIMULATION ENHANCED PROTOTYPING OF AN EXPERIMENTAL SOLAR HOUSE

Choudhary R, Augenbroe G., Gentry R, and Hu H.  
College of Architecture, Georgia Institute of Technology,  
Atlanta, GA 30332-0155, USA

### ABSTRACT

This paper reports the design analysis process undertaken by the Georgia Tech Solar Decathlon 2007 team for an 800 sq.ft. solar-powered house. It presents the simulation process engaged over the entire design development cycle of the house (from conceptual to built), and demonstrates why, when, and how particular tools were deployed or developed on the basis of queries coming from diverse design team over several design iterations. Through this project, the paper purports a need-based and tool independent analysis process that not only supports design from its conceptual development to incremental evaluations, but is also usable for final testing and fine-tuning of building components as they are brought on site, as well for optimal control of energy management when the house is fully operational. [http://gundog.lbl.gov/dirpubs2/BS07/eplus\\_688.pdf](http://gundog.lbl.gov/dirpubs2/BS07/eplus_688.pdf)

Proc. BS 2007, Sept. 3-6, 2007, Tsinghua U, Beijing.

## ENERGY INDEX EVALUATION OF BUILDINGS IN FUNCTION OF THE EXTERNAL TEMPERATURE

Papa<sup>1</sup>, Renata Pietra, Jota<sup>1</sup>, Patricia Romeiro da Silva and Assis, Eleonora Sad<sup>2</sup>  
<sup>1</sup>Centro Federal de Educação Tecnológica de Minas Gerais – CEFET-MG,  
CPEI, Av. Amazonas 7675, Nova Gameleira, BH – MG 30510-000, BRAZIL  
<sup>2</sup>Universidade Federal de Minas Gerais - UFMG, Escola de Arquitetura  
Rua Paraíba 697, Funcionários, BH – MG 30130-140, BRAZIL

### ABSTRACT

In Brazil, the energy crisis and the scarcity of financial resources to build new plants have increased the interest in saving energy. Buildings are responsible for using a vast amount of energy. To implement actions to save energy in old buildings, it is necessary to measure its energy efficiency. It is difficult to analyze the consumption of energy because of a great amount of variables. Even if there are some fixed variables, the external environment affects strongly the energy use. This paper presents a study, which searches an index of specific consumption with the external temperature. The present work took as base a acclimatized artificial building analyzed through simulation in the Energyplus and compared with measured values. The results collated by means of mathematical modeling had been adjusted for the considered index. [http://gundog.lbl.gov/dirpubs2/BS07/eplus\\_626.pdf](http://gundog.lbl.gov/dirpubs2/BS07/eplus_626.pdf)

## Meetings - Conferences - Symposia

### 2008

January 19-23	ASHRAE Winter Meeting in New York City	<a href="http://www.ashrae.org">http://www.ashrae.org</a>
May 03-08	Solar 2008	<a href="http://www.ases.org/solar2008/">http://www.ases.org/solar2008/</a>
June 16-18	8th Nordic Symposium on Building Physics	<a href="http://www.nsb2008.org/">http://www.nsb2008.org/</a>
June 21-25	ASHRAE Annual Meeting in Salt Lake City, UT	<a href="http://www.ashrae.org">http://www.ashrae.org</a>
July 30 -Aug 01	SimBuild 2008 (Univ.Calif at Berkeley)	<a href="http://gaia.lbl.gov/ocs.index.php/simbuild/2008">http://gaia.lbl.gov/ocs.index.php/simbuild/2008</a>
August 17-22	Indoor Air 2008	<a href="http://www.indoorair2008.org">http://www.indoorair2008.org</a>

# Recent Reports

Proc. BS 2007, Sept. 3-6, 2007, Tsinghua U, Beijing.

## [The Study of a Simple HVAC Interface of EnergyPlus in the Chinese Language](#)

Junjie Liu, Wenshen Li, and Xiaojie Zhou  
School of Environmental Science and Technology, Tianjin University,  
Tianjin 300072, China

### ABSTRACT

EnergyPlus is a new building energy simulation program supported by American DOE. Based on the most popular features and capabilities of BLAST and DOE-2, it is primarily a simulation engine without good interface. There's an original interface called IDF editor supported by EnergyPlus, and users must input the simulation data with complex lists while using it. The boring inputting and all-English interface make the energy simulation so inconvenience that keep lots of new users away from the software although it has a precise and steady engine, especially the local users in China. A simple interface of EnergyPlus in Chinese has been developed with the advantages of the structure and object-orientation of Microsoft Visual Basic 6.0. The interface of beta version can basically input the data required by EnergyPlus and then run the simulation with the engine of EnergyPlus. The new interface has a lot of merits, including straightforwardness and practicality, reliability and universality, full-function and easy to use, which will make more Chinese acquaint with EnergyPlus, but it is still not perfect for some bugs and incomplete HVAC system.

[http://qundog.lbl.gov/dirpubs2/BS07/eplus\\_737.pdf](http://qundog.lbl.gov/dirpubs2/BS07/eplus_737.pdf)



## January 2008 Technical Seminars Presented by Southern California Gas Company Located at the Energy Resource Center in Downey, California

[http://www.socalgas.com/business/resource\\_center/erc\\_home.shtml](http://www.socalgas.com/business/resource_center/erc_home.shtml)

- January 15 [EnergyPro Training: Indoor & Outdoor Lighting](#)
- January 15 [EnergyPro Training: Envelope and Windows](#)
- January 16 [EnergyPro Training: Advanced](#)
- January 16 [EnergyPro Training: Mechanical](#)
- January 17 [2008 Non-Res Title 24 Standards: Compliance, TDV & Beyond](#)

Southern California Gas Company



## 2008 Energy Efficient Business Seminars San Diego Gas and Electric Company -- <http://www.sdge.com/training/>

- |        |  |        |  |
|--------|--|--------|--|
| Jan 30 | <a href="#">2008 Nonresidential Title 24 Standards</a> | Mar 18 | <a href="#">Demand Response - A Practical Approach</a>                 |
| Feb 07 | <a href="#">Advanced Lighting Technologies</a>         | Mar 18 | <a href="#">System Duct Design (Part 1 &amp; 2 of a 4-night class)</a> |
| Feb 19 | <a href="#">Heat Pump Part 1</a>                       | Mar 20 | <a href="#">System Duct Design (Part 2 of a 4-night class)</a>         |
| Feb 21 | <a href="#">Heat Pump Part 2</a>                       | Apr 15 | <a href="#">System Design (Part 3 of a 4-night class)</a>              |
| Mar 06 | <a href="#">Adjustable Speed Drives</a>                | Apr 17 | <a href="#">System Design (Part 4 of a 4-night class)</a>              |

## EnergyPlus Version 2.1

### Support Tools

Support software is listed on the main EnergyPlus website.

### Weather Data

Main weather data site is at  
[http://www.eere.energy.gov/buildings/energyplus/cfm/weather\\_data.cfm](http://www.eere.energy.gov/buildings/energyplus/cfm/weather_data.cfm)  
Weather data for more than 800 locations are now available in EnergyPlus weather format.  
See the write-up on how to create [Meteonorm Files](#)

### Ask an EnergyPlus Expert

Questions from program users are answered promptly via the EnergyPlus User Group at Yahoo. To join, go to [http://groups.yahoo.com/group/EnergyPlus\\_Support/](http://groups.yahoo.com/group/EnergyPlus_Support/)  
Selected questions and answers have been compiled into PDF documents:  
for [2002](#), for [2003](#), for [2004](#), for [2005](#), for [2006](#)

### Are you an EnergyPlus consultant?

If you are an EnergyPlus consultant and would like to be listed in this newsletter and on our website, please send details to [klellington@lbl.gov](mailto:klellington@lbl.gov)

### Testing and Validation

Go to <http://www.eere.energy.gov/buildings/energyplus/testing.html> for info.

*EnergyPlus is being developed by University of Illinois and Lawrence Berkeley National Laboratory, DHL Consulting, C. O. Pedersen Associates, Florida Solar Energy Center, GARD Analytics, the National Renewable Energy Laboratory, Oklahoma State University and others. Development of EnergyPlus is supported by the U. S. Department of Energy, Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Building Technologies Program (Program Manager, Dru Crawley).*

## DOE-2.1E, Version 124

### Are you a DOE-2 Consultant?

If you would like to be listed as a DOE-2 consultant on our website and in the *User News* please contact [klellington@lbl.gov](mailto:klellington@lbl.gov)

### DOE-2 Documentation OCR'd by the Energy Systems Lab, TAMU

PDF files at this link: <http://esl.tamu.edu/pub/DOE%2D2%5FOCR%5FManuals/>

### More Free DOE-2 Documentation. Download from <http://SimulationResearch.lbl.gov/>

[DOE-2 Basics Manual \(2.1E\)](http://gundog.lbl.gov/dirpubs/BASIC/basiclist.html) <http://gundog.lbl.gov/dirpubs/BASIC/basiclist.html>

Update Packages: Update Packages are not cumulative; each one contains different information. Download all four packages then print and insert the pages into your existing DOE-2 manuals.

[Update Package #1:](#) DOE-2.1E Basics, the Supplement and BDL Summary

[Update Package #2:](#) BDL Summary and Supplement

[Update Package #3:](#) Appendix A of the Supplement

[Update Package #4:](#) (1000-zone DOE-2.1E) BDL Summary

[DOE-2 Modeling Tips \(pdf files\)](#) for [2006](#) [2005](#) [2004](#) [2003](#) [2002](#)

A compilation of all the "how to" and "DOE-2 Puzzler" articles from the newsletter.

[Changes and Bug Fixes to DOE-2.1E \(txt file\)](#)

<http://simulationresearch.lbl.gov/dirpubs/VERSIONS.txt>

All changes and bug fixes in a plain-text document.



# Homeward Bound

**The Humane Society of Pagosa Springs, Colorado  
needs your help and they really need it now—**

to complete the new animal shelter project on Cloman Boulevard. The incoming/isolation building is finished and the adoption center must be started soon. The project will cost \$1.2 million and over \$700,000 has already been raised.

**We need your help to raise the remaining \$500,000.**

**The sum of \$500,000 may seem daunting but if just 500 people  
give \$1,000 the goal will be achieved.**

The Humane Society is not receiving financial help from the Town, County or national humane organizations for this construction project. We are asking for your support now! Donations of \$1,000 or more are eligible for recognition in the new Memorial Garden. Every donation is tax deductible to the full extent of the law.

Send donations to HSPS, P.O. Box 2230, Pagosa Springs, CO 81147 or donate online at [www.humanesociety.biz](http://www.humanesociety.biz). For more information, call 970-264-5549 or email [homewardbound@centurytel.net](mailto:homewardbound@centurytel.net).

***Only you can bring us home!***