Resource Center News …
Korea is the location of the newest DOE-2 resource center. Dr. Jun Tae Kim, Senior Lecturer in the Department of Architectural Engineering at Kong Ju National University in Chongnam, has agreed to establish a center for DOE-2 users in the Republic of Korea. See p. 18 for the complete list of resource centers.

Also, the email and telephone number for Antonio Rego Teixeira in Portugal have changed. The new email address is art@itime.ineti.pt; the new phone number is (351) 1-350 29 31.

GenOpt Alpha Testers Wanted …
In Vol. 19, No. 2 of the User News we invited readers to become alpha testers of GenOpt, a generic optimization program. If you want to participate, check out the article on p. 15 then download the program from http://eetl.lbl.gov/btp/simulations/

EnergyPro Price Reduction …
Gabel Dodd/Enerysoft has dropped the price of EnergyPro to $895 ($700 for the DOE-2 nonresidential module plus $195 for the program interface); for details phone (415) 883-5900 or fax 883-5970.

Update your address books …
New phone and fax numbers for DOE-2 consultant Greg Banken of Woodinville, WA: Phone (425) 825-0200, Fax (425) 825-0136, Email: gbanken@qmetrics.com

What’s New? continued on p. 16
What’s Inside?

1 Building Design Advisor (BDA): Pre-release of Version 1.0
2 BLASTnews
3 BLAST’s Heat Balance Load Calculator
4 WinLCCID 98 is Released
5 Meetings, Conferences, Symposia
6 DOE-2 Directory of Software and Services
7 DOE-2.1E Documentation Correction:
   • Window Library
8 Gabel Dodd/Energysoft has dropped the price of EnergyPro to $895 ($700 for the DOE-2 nonresidential module plus $195 for the program interface); for details phone (415) 883-5900 or fax 883-5970.
9 Recent LBNL Reports
   • DOE-2 Validation Study
   • Therm 2.0 Program
10 GenOpt -- Call for Alpha Testers
11 DOE-2.1E Documentation Correction:
12 Newsletter Deadlines for 1998-1999
13 The Answer Man: How to Simulate a Fuel Cell
14 International DOE-2 Resource Centers
15 International DOE-2 Energy Consultants
16 ASHRAE’s Pocket Guide for HVAC
17 U.S. DOE-2 Energy Consultants
18 Web and Internet Sites for Building Energy Efficiency
19 Featured Web Sites This Issue
   • Linric Company
   • Numerical Logics, Inc., of Canada
20 Weather Data Sources
21 DOE-2 Documentation for International Users
22 DOE-2 Documentation for International Users
23 DOE-2 Documentation for Users in the U.S., Canada and Mexico
24 Subscriptions, Help Desk, DOE-2 Training
25 Proceedings from the ACEEE 1998 Summer Study

The Building Energy Simulation User News is published by the Simulation Research Group at Lawrence Berkeley National Laboratory with cooperation from the Building Systems Laboratory at the University of Illinois. Direct comments or submissions to Kathy Ellington, MS: 90-3147, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, or email kathy@srge.lbl.gov or fax us at (510) 486-4089. Direct BLAST-related inquiries to the Building Systems Laboratory, phone (217) 333-3977 or email support@blast.bso.uiuc.edu © 1998 Regents of the University of California, Lawrence Berkeley National Laboratory. This work was supported by the Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Building Technology, State and Community Programs, Office of Building Systems of the U.S. Department of Energy, under Contract No. DE-AC03-76SF00098. Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, University of California, Berkeley, CA 94720 USA ©
The Building Design Advisor (BDA) is an advanced decision-making tool intended to allow architects and building designers to quickly and efficiently explore the energy implications of design decisions very early in the conceptual design process (see User News Volume 19, No. 1, p. 29).

BDA is a Windows application that acts as a data manager and process controller for the concurrent, integrated use of multiple simulation tools and databases. The BDA maintains a single, object-oriented representation of the building and its context, which is mapped to the data models of the simulation tools that are linked to the BDA. The 1.0 version of the BDA is linked to a Schematic Graphic Editor (Figure 1) and two simulation tools: DElight and RESEGY.

- DElight uses DOE-2-like algorithms to compute spatial and temporal distributions of daylight work-plane illuminance and glare index, as well as potential electric lighting savings for various control schemes, in rectangular spaces.

- RESEGY uses a modified bin method to compute monthly and annual energy requirements by end use and energy source, based on TMY2 weather data. RESEGY is also used for HVAC auto-sizing calculations, using design day weather data.

Using a default value mechanism that is based on building type and location and space type, the BDA allows immediate use of simulation tools as soon as geometry has been specified in the Schematic Graphic Editor. All input parameters to simulation tools can be edited in a user interface element called Building Browser (Figure 2).
The values of any number of parameters (input and output to simulation tools) can be displayed graphically for any number of design alternatives in a user interface element called Decision Desktop (Figure 3).

The 1.0 version of the BDA is mainly targeted to academia, for teaching as well as research, to expand capabilities and explore ideas for automation, user interface elements, advisor modules, etc. It can also be used for the consideration of daylighting and energy issues during the schematic design of actual buildings. However, it has not yet been thoroughly tested for accuracy of computations. While the 1.0 version is being finalized, work is already underway for the development of BDA 2.0 with links to more sophisticated simulation tools like DOE-2 or EnergyPlus, Radiance, etc. For information on licensing BDA, contact:

Kostas Papamichael
Lawrence Berkeley National Laboratory
MS: 90-3111
Berkeley, CA 94720

Email: K_Papamichael@lbl.gov
Tel: (510) 486-6854
Fax: (510) 486-4089
http://eande.lbl.gov/BTP/KOSTAS.html
The Building Loads Analysis and System Thermodynamics (BLAST) system is a comprehensive set of programs for predicting energy consumption and energy system performance and cost in buildings. The BLAST system was developed by the U.S. Army Construction Engineering Research Laboratory (USACERL) under the sponsorship of the Department of the Air Force, Air Force Engineering and Services Center (AFESC), and the Department of the Army, Office of the Chief of Engineers (OCE). After the original release of BLAST in December 1977, the program was extended and improved under the sponsorship of the General Services Administration, Office of Professional Services; BLAST Version 2.0 was released in June 1979. Under the sponsorship of the Department of the Air Force, Aeronautical System Division, and the Department of Energy, Conservation and Solar Energy Office, the program was further extended; BLAST Version 3.0 was completed in September 1980. Since 1983, the BLAST system has been supported and maintained by the Building Systems Laboratory at the University of Illinois at Urbana-Champaign.

BLAST can be used to investigate the energy performance of new or retrofit building design options of almost any type and size. In addition to performing peak load (design day) calculations necessary for mechanical equipment design, BLAST also estimates the annual energy performance of the facility, which is essential for the design of solar and total energy equipment design. BLAST also estimates the annual energy performance of the facility, which is essential for the design of solar and total energy (cogeneration) systems and for determining compliance with design energy budgets. Repeated use of BLAST is inexpensive; it can be used to evaluate, modify, and re-evaluate alternate designs on the basis of annual energy consumption and cost.

The BLAST analysis program contains three major subprograms:

- **The Space Load Prediction** subprogram computes hourly space loads in a building based on weather data and user inputs detailing the building construction and operation.
- **The Air Distribution System Simulation** subprogram uses the computed space loads, weather data, and user inputs describing the building air-handling system to calculate hot water, steam, gas, chilled water, and electric demands of the building and air-handling system.
- **The Central Plant Simulation** subprogram uses weather data, results of the air distribution system simulation, and user inputs describing the central plant to simulate boilers, chillers, onsite power generating equipment and solar energy systems; it computes monthly and annual fuel and electrical power consumption.
Heat Balance Loads Calculator (HBLC)
The BLAST graphical interface (HBLC) is a Windows-based interactive program for producing BLAST input files. HBLC allows the user to visualize the building model as it is developed and modify previously created input files. Within HBLC, each story of the building is represented as a floor plan which may contain several separate zones. Numerous other building details may be investigated and accessed through simple mouse operations. On-line helps provide valuable on-the-spot assistance that will benefit both new and experienced users. HBLC is an excellent tool which will make the process of developing BLAST input files more intuitive and efficient. You can download a demo version of HBLC (for MS Windows) from the BLAST website (User manual included!).

HBLC/BLAST Training Courses
The BLAST graphical interface (HBLC) is a Windows-based interactive program for producing Experience with the HBLC and the BLAST family of programs has shown that new users can benefit from a session of structured training with the software. Such training helps to define the steps necessary to produce accurate and consistent output from BLAST and its auxiliary programs and gives users a solid foundation from which they can explore the more advanced features of the program with confidence. The Building Systems Laboratory offers such training courses on an as needed basis typically at our offices in Urbana, Illinois and lasting 2 or 3 days depending on the specific needs of the participants. Call the Building Systems Laboratory for additional information on pricing and availability.

WINLCCID 98
LCCID (Life Cycle Cost in Design) has been a standard in the DOD community since its initial release in 1986. LCCID was developed to perform Life Cycle Cost Analyses (LCCA) for the Department of Defense and their contractors, yet it goes far beyond being just a DOD study tool by providing many features of a general purpose life cycle costing tool. With LCCID, it’s easy to carry out “what-if” analyses based on variables such as present and future costs and/or maintenance and repair costs. LCCID allows an analysis based on standard DOD procedures and annually updated escalation factors as well as Energy Conservation Investment Program (ECIP) LCCA. You can download a demo version of WINLCCID 98 (for MS Windows) from the BLAST website http://www.bso.uiuc.edu [see User News Vol. 16, No. 4, p. 5]

To order BLAST-related products, contact the Building Systems Laboratory at the University of Illinois at Urbana-Champaign.

BLAST Order Information

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Order Number</th>
<th>Price Each</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC BLAST Package</strong></td>
<td>3B486E3-0898</td>
<td>$1500.00</td>
</tr>
<tr>
<td>The standard PC BLAST Package includes the following programs: BLAST, HBLC, BTEXT, WIFE, CHILLER, Report Writer, Report Writer File Generator, Comfort Report program, Weather File Reporting Program, Control Profile Macros for Lotus or Symphony, and the Design Week Program. The programs are provided on a single CD-ROM which also includes soft copies of the BLAST Manual, 65 technical articles and theses related to BLAST, nearly 400 processed weather files with an easy-to-use browsing engine, and complete source code for BLAST, HBLC, and other programs in the BLAST package. Requires an IBM PC 486/Pentium II or compatible running MS Windows 95/98/NT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PC BLAST Package</strong> Upgrade from level 295+</td>
<td>4B486E3-0898</td>
<td>$450.00</td>
</tr>
<tr>
<td><strong>WINLCCID 98</strong>: executable version for 386/486/Pentium</td>
<td>3LCC3-0898</td>
<td>$295.00</td>
</tr>
<tr>
<td><strong>WINLCCID 98</strong>: update from WINLCCID 97</td>
<td>4LCC3-0898</td>
<td>$195.00</td>
</tr>
</tbody>
</table>

The last four digits of the catalog number indicate the month and year the item was released or published. This will enable you to see if you have the most recent version. All software will be shipped on 3.5” high density floppy disks unless noted otherwise.
BLAST'S Heat Balance Load Calculator (HBLC) . . .

New Version of HBLC Released!

Now Available on CD-ROM

The Building Systems Laboratory (formerly the BLAST Support Office) at the University of Illinois is pleased to announce that a new and enhanced version of the HBLC (Heat Balance Loads Calculator) graphical interface for BLAST has been released and is now available. HBLC is also being supplied with an upgraded version of BLAST and now comes on a single CD-ROM disk instead of multiple 3.5” floppies. The 650MB capacity of CD-ROM disks has allowed a wide range of new items to be included with the standard HBLC package:

- 394 processed weather files and raw data with a browser
- 65 technical articles, theses, and all manuals
- Source code for BLAST, HBLC and all associated programs
- Easy installation

A new and simpler pricing structure for the HBLC/BLAST package has been created. Current users of BLAST level 295 and upwards will be able to upgrade at a cost of $450 + S&H, while the cost to users with older versions of BLAST and new users will be $1500 + S&H

New HBLC Features

In response to comments and suggestions from users since it initially became available, many new features have been incorporated into HBLC. These features have been extensively tested on several “real world” projects and substantially enhance the capabilities of the program as an interface to BLAST. The new feature list includes:

- Network capabilities
- Full-Function Systems Editor
- Graphic interface for all of the BLAST libraries
- New and Improved output viewer
- New Report Writer variables
- Complete Plants Editor
- Graphical interface for WIFE (Weather Information File Encoder)
- Pollution analysis
- Ability to edit and resize roofs and floors and add skylights
- Ability to enter custom building elements, materials, controls and schedules
Graphical Interfaces for Report Writer (which makes it very easy to generate custom output reports)

Ability to edit individual wall heights and tilts

Ability to track progress through BLAST runs, does initial interpretation of any errors in BLAST output. Ability to edit thermal comfort parameters for thermal comfort reports

New, easier to use scheduled load editor

Windows 95/98/NT Compatible (will run on Windows 3.11 but some features will be disabled)

Requires IBM Compatible 486 with a Numeric Co-Processor (Pentium or Pentium II recommended)

New Features in BLAST and Auxiliary Programs
Although an improved HBLC has been the main focus of this release, several major enhancements have been made to the other programs in the HBLC/BLAST package along with the correction of all previously known bugs in BLAST itself. Among these enhancements are:

1. All programs in the package are Year 2000 compliant
2. It is now possible to use DOE WINDOW-4 windows in calculations
3. WIFE now processes TMY2 format weather data

Availability
The HBLC/BLAST package on CD-ROM is available for purchase from:

Building Systems Laboratory
University of Illinois at Urbana-Champaign
140 MEB, MC-244
1206 W. Green St
Urbana, IL 61801

E-Mail: support@blast.bso.uiuc.edu
FAX: (217) 244-6534
Telephone: (217) 333-3977

See p. 5 for HBLC/BLAST Training
WinLCCID 98 is Released!

LCCID (Life Cycle Cost in Design) has been a standard in the DOD (U.S. Department of Defense) community since its initial release in 1986. LCCID was developed to perform Life Cycle Cost Analyses (LCCA) for the Department of Defense and their contractors, yet it goes far beyond being just a DOD study tool by providing many features of a general purpose life cycle costing tool. With LCCID, it’s easy to carry out “what-if” analyses based on variables such as present and future costs and/or maintenance and repair costs. LCCID allows an analysis based on standard DOD procedures and annually updated escalation factors as well as Energy Conservation Investment Program (ECIP) LCCA.

Following the initial release in 1996, WinLCCID has been released with the latest fuel escalation values and discount rates.

**WinLCCID Features:**

- Windows-based User Interface
- LCCID Calculation Algorithms
- Step-by-Step LCCA
- Advanced User Navigation
- Latest DOD Escalation Rates
- Tri-Service Specifications
- ECIP Compatible
- New Support Structure
- On-Line Helps
- Easy to Use

Order WinLCCID 98 today!

The purchase price for this release is only $295; the update for LCCID Level 92 users is only $195. To order your copy of WinLCCID 98 or to obtain more information on the program, please contact the Building Systems Laboratory by phone at 1-217-333-3977, by fax at (217)244-6534, or by e-mail at support@blast.bso.uiuc.edu. Or, download a free demo copy of WINLCCID 98 from the BLAST home page at www.bso.uiuc.edu.
# Meetings, Conferences, Symposia

<table>
<thead>
<tr>
<th><strong>SSB ’98: SYSTEM SIMULATION IN BUILDINGS</strong></th>
<th><strong>ASHRAE Winter Meeting</strong></th>
<th><strong>Thermal Performance of the Exterior Envelopes of Buildings (Thermal VII)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>To be held December 14-16, 1998 Liege, Belgium</td>
<td>To be held January 23-27, 1999 Chicago, IL</td>
<td>To be held December 7-11, 1998 Clearwater Beach, FL</td>
</tr>
<tr>
<td>Contact: Thermodynamics Laboratory Univ of Liège, Sart-Tilman Bâtiment B49 - Parking P33 B-4000 Liège, Belgium</td>
<td>Contact: ASHRAE Meetings Section 1791 Tullie Circle NE Atlanta, GA 30329</td>
<td>Contact: Mia Prater (Bldg 3147) Oak Ridge Nat’l Lab Thermal Envelope Conf. P.O. Box 2008 Oak Ridge, TN 37831-6070</td>
</tr>
<tr>
<td>Tel: +32 (0) 4 366 48 00 Fax: +32 (0) 4 366 48 12 <a href="mailto:michele.deprez@ulg.ac.be">michele.deprez@ulg.ac.be</a></td>
<td>Tel: 404.636.8400 Fax: 404.321.5478 <a href="mailto:jmarshal@ashrae.org">jmarshal@ashrae.org</a> <a href="http://www.ashrae.org">www.ashrae.org</a></td>
<td>Tel: 423.576.7942 Fax: 423.574.9331 <a href="mailto:unb@ornl.gov">unb@ornl.gov</a> <a href="http://www.ornl.gov/ORNL/Energy_Eff/tectrans.html">www.ornl.gov/ORNL/Energy_Eff/tectrans.html</a></td>
</tr>
</tbody>
</table>

**IBPSA's Building Simulation '99**

To be held September 13-15, 1999 Kyoto, Japan

**Call for Papers** go to www.mae.okstate.edu/ibpsa; refer to the IBPSA web page for all deadlines.

**Contact**

Masaya Okumiya
CIRSE
Nagoya University
Furo-cho, Chikusa-ku,
Nagoya 464-8603 Japan

Fax: +81-52-789-5318 / e-mail BS99@archi.kyoto-u.ac.jp

**ASHRAE Annual Meeting**

To be held June 19-23, 1999 Seattle, WA

**Contact**

ASHRAE Meetings Section 1791 Tullie Circle NE Atlanta, GA 30329

Tel: 404.636.8400 Fax: 404.321.5478 jmarshal@ashrae.org www.ashrae.org
## DOE-2 Directory of Program Related Software and Services

### Mainframe/Workstation Versions of DOE-2

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Operating System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTI/DOE</td>
<td></td>
<td>(see FTI/DOE listing under PC Versions of DOE-2, below)</td>
</tr>
</tbody>
</table>

### PC Versions of DOE-2

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Operating System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADM-DOE-2</td>
<td>DOS Windows 95</td>
<td>ADM-DOE-2 (DOE-2.1E) is compiled for use on 386/486 PCs with a math co-processor and 4MB of RAM. The package contains everything needed to run the program: program files, utilities, sample input files, and weather files. More than 300 weather files are available (TMY, TRY, WYEC, CTZ formats) for the U.S. and Canada. [See User News Vol. 7, No. 2, p. 6]</td>
</tr>
<tr>
<td>Compare-IT</td>
<td>Windows (98, 95, NT)</td>
<td>Compare-IT allows DOE-2 professionals to add value to their projects by giving clients &quot;what-if&quot; scenarios using DOE-2. The interface is designed for novice energy analysts and the GUI can be customized for each client's particular interests. A tabbed main window is configured based on the user's DOE-2 macro organization. All labels, drop-down list boxes, tool-tips, error checking, and help files are created dynamically from a &quot;Compare-IT-ized&quot; DOE-2 input file. Output are tables and powerful graphs of annual costs, annual energy and end-use and hourly end-use values. [See User News Vol. 19, No. 1]</td>
</tr>
<tr>
<td>DOE-PLUS</td>
<td>DOS Windows (3.1, 95, NT)</td>
<td>Complete support for all DOE-2 commands. Imports BDL files created with a text editor or other program. Interactive error checking. 3-D view of building can be rotated and zoomed. Windows, walls, etc., identified by DOE-2 U-name and allow component editing. User-defined libraries of schedules, HVAC systems, plant equipment, building components, etc. Exports results to spreadsheets and database programs. Graphical display of schedules. Utility programs included: Prep, Demand Analyzer, weather processor. Over 500 worldwide weather files. [See User News Vol. 13, No. 2, p. 54, Vol. 16, No. 1, p. 28-32]</td>
</tr>
<tr>
<td>EnergyPro</td>
<td>Windows (95, NT)</td>
<td>Performs nonresidential load calculations for HVAC equipment sizing. Produces typeset quality reports/forms. Electronically exports forms to AutoCad for inclusion on blueprints. On-line help. 344 weather files for the U.S. and Canada. For California Users: Performs Title 24 compliance calculations, includes state-certified HVAC and DHW Equipment directories, Title 24 tailored lighting calculations. [See User News Vol. 18, Nos. 2, 4]</td>
</tr>
<tr>
<td>EZDOE</td>
<td>DOS</td>
<td>Provides full screen, fill-in-the-blank data entry, dynamic error checking, context-sensitive help, mouse support, graphic reports, a 750-page user manual, and extensive weather data. EZDOE integrates the full calculation modules of DOE-2 into a powerful, full implementation of DOE-2 on DOS-based 386 and higher computers. On-line help. Includes some weather files. [See User News Vol. 14, No. 2, p. 10 and No. 4, p. 8-14]</td>
</tr>
<tr>
<td>FTI/DOE</td>
<td>Windows (3.x, 95, NT), AIX, ULTRIX, VMS, Linux, NeXTStep,</td>
<td>FTI/DOE is 100% compatible with LBNL version. Highly optimized and extremely reliable. Version 3.1 will include a graphical user interface and will provide full command functionality and access to all reporting features of the original. Interface is Java-based and will be available for any system supporting Java. Source code versions will compile with most F77-compliant compilers. On-line help: Yes for Version 3.x, No for Version 2.x. 344 weather files for the U.S. and Canada. [See User News Vol. 12, No. 4, p. 8-14]</td>
</tr>
</tbody>
</table>

*This information is based on a December 1997 survey of DOE-2 product vendors.*
### DOE-2 Directory of Program Related Software and Services

#### Mainframe/Workstations Versions of DOE-2

<table>
<thead>
<tr>
<th>Input</th>
<th>Support</th>
<th>Program Price</th>
<th>Vendor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Limited &quot;operational&quot; support, which includes telephone assistance concerning installation, media or platform questions.</td>
<td>SUN version: Govt/Educ $400 U.S., Mexico, Canada $1305 Other Foreign $2000</td>
<td>Energy Science and Technology Software Center P.O. Box 1020 Oak Ridge, TN 37831-1020 Ph: 423-576-2606 / Fx: 423-576-2865 <a href="mailto:ESTSC@ADONIS.OSTI.GOV">ESTSC@ADONIS.OSTI.GOV</a> <a href="http://www.doe.gov/html/osti">www.doe.gov/html/osti</a></td>
</tr>
<tr>
<td></td>
<td>VAX version: Govt/Educ $500 U.S., Mexico, Canada $1835 Other Foreign $2716</td>
<td></td>
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</tbody>
</table>

**FTI/DOE** (see FTI listing under PC Versions of DOE-2, below)

#### PC Versions of DOE-2

<table>
<thead>
<tr>
<th>Input</th>
<th>Support</th>
<th>Program Price</th>
<th>Vendor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information given</td>
<td>None</td>
<td>$395 + $15/SH including one set weather data (your choice) and documentation</td>
<td>ADM-DOE-2 (Richard Burkhart) ADM Associates <a href="mailto:adm_asc@ns.net">adm_asc@ns.net</a> 3239 Ramos Circle Sacramento, CA 95827-2501 Ph: 916-363-8393 / Fx: 916-363-1788</td>
</tr>
<tr>
<td>Customizable windows GUI dynamically built based on DOE-2 macros. Tables and graphs exportable to MS Excel 97. Custom reports dynamically generated in Word 97. Interactive, graphical, fill-in-the-blanks. Customizable tables and graphics</td>
<td>Support price is negotiable; online help included with the program.</td>
<td>$500 consultant $2000 client Documentation available</td>
<td>Compare-IT (Ed Erickson) RLW Analytics 1055 Broadway, Suite G Sonoma, CA 95476 Ph: 707-939-8823 / Fx: 707-939-9218 <a href="mailto:Info@rlw.com">Info@rlw.com</a> or <a href="http://www.rlw.com">www.rlw.com</a></td>
</tr>
<tr>
<td>Graphical</td>
<td>Unlimited support</td>
<td>DOE-2 Module: Non-residential $ 7001,2 Residential $ 2501,2 Program Interface $ 1955 1 price reflects cash discount 2 includes documentation 3 required</td>
<td>DOE-Plus (Steve Byrne) Item Systems 321 High School Road NE #344 Bainbridge Island, WA 98110 Ph: 206-855-9540 / Fx: 206-855-9541 byrne @ item.com</td>
</tr>
<tr>
<td>Graphs, forms</td>
<td>Unlimited support</td>
<td></td>
<td>EnergyPro (Demian Vonderkulen) Gabel Dodd/EnergySoft llc 100 Galli Drive #1 Novato, CA 94949-5657 Ph: 415-883-5900 / Fx: 415-883-5970 <a href="mailto:demian@energysoft.com">demian@energysoft.com</a></td>
</tr>
<tr>
<td>Fill-in-the-blanks</td>
<td>Unlimited phone support</td>
<td>$1295 w/documentation Source code not available.</td>
<td>EZDOE (Bill Smith) Elite Software P.O. Box 1194 Bryan, TX 77806 Ph: 409-846-2340 / Fx: 409-846-4367 bsmith @ elitesoft.com</td>
</tr>
<tr>
<td>Standard DOE reports plus some custom graphic reports</td>
<td>Free support for 90 days from date of purchase. After 90 days, support is: $35 email per incident $55 hour per incident $125 per hour for engineering advice. Bugs reports free.</td>
<td>$ 995.99 US w/documentation $1066 Int'l w/documentation $4999.99 source code</td>
<td>FTI/DOE2 (Scott A. Henderson) Finite Technologies Inc. 3763 Image Drive Anchorage, Alaska 99504 Ph: 907-333-8937 / Fx: 907-333-4482 info @ finite-tech.com</td>
</tr>
</tbody>
</table>

Caveat: We list third-party DOE-2-related products and services for the convenience of program users, with the understanding that the Simulation Research Group does not have the resources to check the DOE-2 program adaptations and utilities for accuracy or reliability.
## DOE-2 Directory of Program Related Software and Services (continued)

### PC Versions of DOE-2 (continued)

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Operating System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICRO-DOE2</td>
<td>DOS, Windows</td>
<td>Widely-used, reliable, and tested. Includes automatic weather processing, batch file creation, and a Users Guide with instructions on how to set up a RAM drive. System requirements: 386/486 PC with 4 Mb of RAM and math co-processor. Optional BDL-Builder simplifies input (see Pre- and Post-Processors for DOE-2). On-line help. Program includes some weather files. [See User News Vol. 7, No. 4, p. 2; Vol. 11, No. 1, p. 2; Vol. 15, No. 1, p. 8; Vol. 15, No. 3, p. 4; Vol. 16, No. 2, p. 1,7; Vol. 16, No. 4, p. 7-8]</td>
</tr>
<tr>
<td>Perform-95</td>
<td>DOS</td>
<td>Created for the State of California Energy Commission's, Title 24 energy code. Perform-95 is an interface shell with DOE-2 as the engine.</td>
</tr>
<tr>
<td>PRC-DOE-2</td>
<td>DOS, Windows</td>
<td>This text-based version of DOE-2 is fast, reliable, and very up to date. Documentation includes 2.1E Supplement, 2.1E BDL Summary; original Reference Manual available. Extensive information on new features is included on the disk as well, including information on new system types, new commands, new options, etc., added to later versions of 2.1E.</td>
</tr>
<tr>
<td>VisualDOE2.6</td>
<td>DOS, Windows</td>
<td>Dramatically faster construction of building geometry using pre-defined blocks and/or drawing interface. Import zone shapes from CADD file (.dxf format). Point-and-click to define zone properties and HVAC systems. Define up to 20 design alternatives in each project file. View rotatable 3-D image of model. Create custom hourly output reports and customized graphs. Edit and expand library of constructions, schedules, equipment, and utility rates. Add custom performance curves. Network version allows sharing of libraries. On-line help. 400+ weather files for the U.S., 12+ weather files for Canada, plus selected locations around the world. [See User News Vol. 15, No. 2, p. 10; Vol. 16, No. 4, p. 9-16; Vol. 17, No. 4, p. 8-13]</td>
</tr>
</tbody>
</table>

### Pre- and Post-Processors for DOE-2

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDL Builder and E2BB</td>
<td>BDL Builder is a user-friendly Windows-implemented pre-processor for DOE-2.1E that allows the description of specific building and HVAC characteristics with numeric input by preparing databases, or building blocks, and then selecting records from the databases to assemble a complete input. E2BB translates existing DOE-2.1E text input to BDL Builder.</td>
</tr>
<tr>
<td>DrawBDL</td>
<td>DrawBDL, Version 2.02, is a graphic debugging and drawing tool for DOE-2 building geometry. DrawBDL reads your BDL input and makes a rotatable 3-D drawing of your building with walls, windows, and building shades shown in different colors for easy identification. [See User News, Vol. 14, No. 1, p. 5-7, Vol. 14, No. 4, p. 16-17, and Vol. 16, No. 1, p.37]</td>
</tr>
<tr>
<td>Visualize-IT (Tools)</td>
<td>The Energy Information Tool is used to review and understand metered or DOE-2.1E hourly output data. It provides the ability to see all 8760 (or 35040) data points for a year's worth of data. Use Energy/Print to get an overview of the data and then apply a variety of tools (load shapes, load duration curves, etc.). The Calibration Tool compares DOE-2.1E hourly output data to total load and/or end-use metered data. Options include monthly demand and load 2D graphs, maximum and seasonal load shapes, average load profiles, end use residuals, monthly average week and weekend days, and dynamic comparison load shapes. Both programs requires a 486 or higher computer and SVGA graphics capabilities. [See User News Vol. 17, No. 2, p. 2-6]</td>
</tr>
<tr>
<td>PRC-TOOLS:</td>
<td>PRC-Tools aid in extracting, analyzing, and formatting DOE-2 output. PRC-Grab automates the process of extracting any number of answers from DOE-2 standard output files. PRC-Hour and PRC-Peak format the hourly output and create Peak-Day and Average-Day load shapes for any number of periods and for any combination of hourly values.</td>
</tr>
</tbody>
</table>

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User News, Vol. 19, No. 3 - 12 - Fall 1998
### DOE-2 Directory of Program Related Software and Services

#### PC Versions of DOE-2 (continued)

<table>
<thead>
<tr>
<th>Input</th>
<th>Support</th>
<th>Program Price</th>
<th>Vendor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill-in-the-blanks</td>
<td>Assistance provided to install and initially use program. Reasonable support thereafter. Training available at Users office. Support price negotiated individually.</td>
<td>$500 w/documentation Source code available, call for price.</td>
<td>MICRO-DOE2 (Don Croy) Acrossoft/CAER Engineers 1204-1/2 Washington Avenue Golden, CO 80401 Ph: 303-279-8136 / Fx: 303-279-0506 <a href="mailto:102447.2611@compuserve.com">102447.2611@compuserve.com</a></td>
</tr>
<tr>
<td>Standard text-based</td>
<td>Technical support available for $100/year from Gabel-Dodd Energy Soft LLC, 100 Galli Drive #1, Novato, CA 94960. Call 415-883-5900 for details...</td>
<td>$250 including Perform-95 manual. Order #P440-96-0006</td>
<td>California Energy Commission Publications MS-13 P.O. Box 944295 Sacramento, CA 94244-2950 Contact the Energy Hotline (in California, call 800-772-3300) at Ph: 916-654-5106</td>
</tr>
<tr>
<td>Graphical</td>
<td>Unlimited support.</td>
<td>$ 495 w/documentation Source code not available.</td>
<td>PRC-DOE-2 (Paul Reeves) Partnership for Resource Conservation 140 South 34th Street Boulder, CO 80303 Ph: 303-499-8611 / Fx: 303-554-1370 <a href="mailto:Paul.Reeves@DOE2.com">Paul.Reeves@DOE2.com</a></td>
</tr>
<tr>
<td>Graphical</td>
<td>90 days free phone and email support. Support is $195 per year after first 90 days</td>
<td>$495 w/documentation Source code not available.</td>
<td>VisualDOE2.6 (C. Eley or Erik Kolderup) Charles Eley Associates 142 Minna Street San Francisco, CA 94105 Ph: 415-957-1977 / Fx: 415-957-1381 <a href="mailto:support@eley.com">support@eley.com</a></td>
</tr>
</tbody>
</table>

### Pre- and Post-Processors for DOE-2

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Works with this version of DOE-2</th>
<th>Price</th>
<th>Vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dos or Windows 3.1, 95</td>
<td>All DOE-2.1E standard versions</td>
<td>BDL Builder $750.00 E2BB $45.00</td>
<td>MICRO-DOE2 (Don Croy) Acrossoft/CAER Engineers 1204-1/2 Washington Avenue Golden, CO 80401 Ph: 303-279-8136 / Fx: 303-279-0506 <a href="mailto:102447.2611@compuserve.com">102447.2611@compuserve.com</a></td>
</tr>
<tr>
<td>Windows 3.1, 95, NT</td>
<td>DOE-2.1E</td>
<td>$125.00 plus shipping</td>
<td>Joe Huang &amp; Associates 6720 Potrero Avenue El Cerrito, CA 91364 Ph/Fx: 510-236-9238</td>
</tr>
<tr>
<td>Windows 3.1</td>
<td>DOE-2.1E</td>
<td></td>
<td>RLW Analytics, Inc. (Ed Erickson) 1055 Broadway, G Sonoma, CA 95476 Ph: 707-939-8823 Fx: 707-939-9218 <a href="mailto:Info@rlw.com">Info@rlw.com</a> <a href="http://www.rlw.com">www.rlw.com</a></td>
</tr>
<tr>
<td>Windows 95, NT</td>
<td>All versions of DOE-2</td>
<td>$99.00</td>
<td>Partnership for Resource Conservation (Paul Reeves) 140 South 34th Street Boulder, CO 80303 Ph: 303-499-8611 / Fx: 303-554-1370 <a href="mailto:Paul.Reeves@DOE2.com">Paul.Reeves@DOE2.com</a></td>
</tr>
</tbody>
</table>
These reports are available from Pat Ross of the LBNL Building Technologies Program. Please fax your request to Pat at (510) 486-4089; be sure to include the LBNL number.

**LBNL-42241**

**Final Report: Validation Studies of the DOE-2 Building Energy Simulation Program**

Robert Sullivan  
Lawrence Berkeley National Laboratory  
Berkeley, CA 94720

**Summary**

This report documents many of the validation studies of the DOE-2 building energy analysis simulation program that have taken place since 1981. Results for several versions of the program are presented with the most recent study conducted in 1996 on Version 2.1E and the most distant study conducted in 1981 on Version DOE-1.3. This work is part of an effort related to continued development of DOE-2, particularly its use as a simulation engine for new, specialized versions of the program such as the recently released RESFEN-3.1.

RESFEN-3.1 is a program that specifically deals with analyzing the energy performance of windows in residential buildings. The intent in providing the results of these validation studies is to give potential users of the program a high degree of confidence in the calculated results.

**LBNL-37371, Rev. 2**

**THERM 2.0: Program Description**

**A PC Program for Analyzing the Two-Dimensional Heat Transfer through Building Products**

Elizabeth Finlayson, Robin Mitchell, and Dariush Arasteh  
Lawrence Berkeley National Laboratory  
Berkeley, CA 94720

Charlie Huizenga  
Center for Environmental Design Research  
University of California  
Berkeley, CA 94720

Dragan Curcija  
Department of Mechanical Engineering  
University of Massachusetts  
Amherst, MA

**Overview**

THERM is a state-of-the-art Windows-based computer program developed at Lawrence Berkeley National Laboratory for use by building component manufacturers, engineers, educators, students, architects and researchers interested in heat transfer. Using THERM, you can model two-dimensional heat-transfer effects in building components such as windows, walls, foundations, roofs and doors, appliances and other products where thermal bridges are of concern. THERM’s heat-transfer analysis allows you to evaluate a product’s energy efficiency and local temperature patterns, which may relate directly to problems with condensation, moisture damage and structural integrity.

THERM’s two-dimensional conduction heat-transfer analysis is based on the finite-element method, which can model the complicated geometries of building products. The program’s graphic interface allows you to draw cross-sections of products or components to be analyzed. To create the cross-sections, you can trace imported files in DXF or bitmap format, or input the geometry from known dimensions. Each cross-section is represented by a combination of polygons. You define the material properties for each polygon and introduce the environmental conditions to which the component is exposed by defining the boundary conditions surrounding the cross-section. Once the model is created, the remaining analysis (mesher and heat transfer) is automatic. You can view results from THERM in several forms, including U-factors, isotherms, heat-flux vectors and local temperatures.

THERM 2.0 includes several new technical and user interface features, the most significant of which is a radiation view-factor algorithm. This feature increases the accuracy of calculations in situations where you are analyzing non-planar surfaces that have different temperatures and exchange energy through radiation heat transfer. This heat-transfer mechanism is important in greenhouse windows, hollow cavities and some aluminum frames.
**GenOpt: A Generic Optimization Program**

*Version 1.0 Ready for Alpha Testing*

GenOpt is a generic multi-parameter optimization program being developed for system optimization. It automatically determines the values of user-selected design parameters that lead to the best operation of a given system. It can also determine unknown parameters in a data-fitting process. GenOpt optimizes a user-selected **objective function**, such as a building’s calculated annual energy use. It also offers an interface for easily implementing your own optimization algorithms into its library. See the Summer 1998 *User News* (Vol. 19, No. 2) for an in-depth look at GenOpt.

GenOpt has an open interface on both the simulation program side and the optimization algorithm side. It allows you to easily couple any external program (like DOE-2, SPARK, BLAST or any user-written program) by modifying a configuration file. GenOpt is currently being developed as a console application, written entirely in Java so that it is platform independent. The interface for coupling external simulation programs and adding custom optimization algorithms is ready. GenOpt currently works under Unix Solaris 2.5.1, Windows NT and Windows 95.

The alpha version of GenOpt is ready to be tested by a limited number of users. For further information and to register as a tester, please visit the GenOpt web page at


---

**Corrections to DOE-2.1E Supplement**

Appendix D, p. D.3: The Emis2 value for glass types 501 and 550 should be changed from .030 to .040:

<table>
<thead>
<tr>
<th>ID</th>
<th>GLASS</th>
<th>d(mm)</th>
<th>Tsol</th>
<th>Rsol</th>
<th>Rbol</th>
<th>Tvis</th>
<th>Rfvis</th>
<th>Rbvis</th>
<th>Tir</th>
<th>Emis1</th>
<th>Emis2</th>
<th>k</th>
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<tr>
<td>501</td>
<td>SPEC SEL CLEAR</td>
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<td>.300</td>
<td>.420</td>
<td>.770</td>
<td>.070</td>
<td>.060</td>
<td>.000</td>
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<td>550</td>
<td>SPEC SEL TINT</td>
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<td>.840</td>
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</table>

On p. 2.107 (Table 2.12) of the “Index to the Window Library,” the GLASS-TYPE-CODE description for entries 2840 to 2865 should be changed from (e2=.029) to (e3=.04):

<table>
<thead>
<tr>
<th>ID</th>
<th>GLASS</th>
<th>d(mm)</th>
<th>Tsol</th>
<th>Rsol</th>
<th>Rbol</th>
<th>Tvis</th>
<th>Rfvis</th>
<th>Rbvis</th>
<th>Tir</th>
<th>Emis1</th>
<th>Emis2</th>
<th>k</th>
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<tbody>
<tr>
<td>2840</td>
<td>DOUBLE LOW-E (e3=.04) ELECTROCHROMIC ABS G BLEACHED/COLORED AIR</td>
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<td>0.41</td>
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<td>.44</td>
<td>.34</td>
<td>.33</td>
<td>.66</td>
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<td>704F</td>
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<tr>
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<td>.18</td>
<td>.16</td>
<td>.06</td>
<td>.19</td>
<td>.10</td>
<td>.08</td>
<td>705F</td>
<td>6.0</td>
<td>Air</td>
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<td>DOUBLE LOW-E (e3=.04) ELECTROCHROMIC ABS G BLEACHED/COLORED AIR</td>
<td>1.64</td>
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<td>.59</td>
<td>.51</td>
<td>.34</td>
<td>.33</td>
<td>.66</td>
<td>.14</td>
<td>704F</td>
<td>6.0</td>
<td>Air</td>
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<td>2843</td>
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<td>.13</td>
<td>.06</td>
<td>.19</td>
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<td>.22</td>
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<tr>
<td>2864</td>
<td>DOUBLE LOW-E (e3=.04) ELECTROCHROMIC REF IG BLEACHED/COLORED ARGON</td>
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<tr>
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<td>DOUBLE LOW-E (e3=.04) ELECTROCHROMIC REF IG BLEACHED/COLORED ARGON</td>
<td>1.33</td>
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<td>.22</td>
<td>.12</td>
<td>.08</td>
<td>707F</td>
<td>6.0</td>
<td>Arg</td>
</tr>
</tbody>
</table>
What's New? (continued from front page)

♦ New DOE-2 Consultants …

GeoPraxis, Inc., of Sonoma, CA, offers energy analysis and DOE-2 consulting.
John F. Kennedy, PE, M.E., Pat Bailey and Tom Conlon
GeoPraxis, Inc.
18850 Robinson Road
Sonoma, CA 95476
www.geopraxis.com ♦ info@geopraxis.com
Phone (707) 996-9408 ♦ Fax (707) 939-8702

Walker Engineering specializes in the design and optimization of building systems for new construction and for the renovation of older buildings.
Dave Walker
Walker Engineering
PO Box 366
Staffordsville, VA 24167
www.swva.net/walkeng ♦ walkeng@swva.net
Phone (540) 921-4544 ♦ Fax (540) 921-4548

In the Sacramento area, Jim Trowbridge of Trowbridge Engineering offers engineering and whole-building energy analysis.
James Trowbridge
Trowbridge Engineering
8240 Caribbean Way
Sacramento, CA 95826
jim@trowbridge-eng.com
Phone (916) 381-4753

And in Massachusetts, please welcome energy conservation specialist Mark Mullins of DMI, Inc.
Mark Mullins
DMI, Inc.
450 Lexington Street
Newton, MA 02466
staff@dmiinc.com
Phone (617) 527-1525 ♦ Fax 527-6606

Mike Andelman is a partner in a new architect/engineering firm that focuses on sustainable design.
Michael Andelman
JRMA & Associates
421 Watertown Street
Newton, MA 02458-1113
Phone (617) 964-8889 ♦ Fax (617) 964-7881
mikea@jrma&a

User News Deadlines for 1998 and 1999

Shaded days on the calendar indicate deadline dates for either submission of articles or changes to vendor information. We always welcome articles about innovative uses for DOE-2, BLAST and their derivative programs.

1998

<table>
<thead>
<tr>
<th>Oct</th>
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<tr>
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1999

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<td>14</td>
</tr>
<tr>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
</tbody>
</table>

Note that the newsletter is usually mailed out three to four weeks after the deadline.
Question:
I'm trying to simulate a fuel cell using the gas turbine model in the DOE-2.1E PLANT subprogram. Basically I want to replace the performance curves with new ones that will make the gas turbine perform like a fuel cell. However, I have run into problems with information contained in the DOE-2.1E Supplement. There is conflicting data about the gas turbine performance curves; p. 4.58 does not agree with p. 4.83.

Answer:
The coefficients for GTURB-I/O-FPLR given on p. 4.58 of the DOE-2.1E Supplement are correct. The values on p. 4.83 seem to reflect an older version of DOE-2. I reviewed the description of the gas turbine in the Supplement and it seems to be a little confusing. Let me clarify how the model works. The basic equation is

\[
GFUEL = \text{CAP} \times \frac{1}{\text{GTURB-GEN-EFF}} \times (FUELG(1) + FUELG(2) \times \text{PLR} + FUELG(3) \times \text{PLR}^2)
\]

where:
- \(GFUEL\) is the fuel consumed by the gas turbine
- \(\text{CAP}\) is the capacity, a fixed number not altered by any curve
- \(\text{GTURB-GEN-EFF}\) is the PLANT-PARAMETERS keyword, the fuel to electric conversion efficiency at full load (default is .19)
- \(FUELG(1), FUELG(2), FUELG(3)\) are the coefficients of the EQUIPMENT-QUAD keyword GTURB-I/O-FPLR; the default coefficients are .442979, .3974, .1569621
- \(\text{PLR}\) is the part load ratio \(\text{PLR} = \text{LOAD}/\text{CAP}\); \(\text{PLR}\) must be bigger than the minimum operating load ratio \(\text{RMIN}\) which defaults to .1 (not .3 as indicated on p. 4.57)

The amount of high temperature recoverable heat is set with a similar equation:

\[
EEXHG = \text{CAP} \times \frac{1}{\text{GTURB-GEN-EFF}} \times \text{GTURB-EXH-EFF} \times (\text{THMXH}(1) + \text{THMXH}(2) \times \text{PLR} + \text{THMXH}(3) \times \text{PLR}^2)
\]

where:
- \(EEXHG\) is the recoverable heat available for the hour
- \(\text{GTURB-EXH-EFF}\) is the PLANT-PARAMETERS keyword, the fraction of fuel energy turned into recoverable heat at full load (default .55)
- \(\text{THMXH}(1), \text{THMXH}(2), \text{THMXH}(3)\) are the coefficients of the EQUIPMENT-QUAD keyword GTURB-EXH-FPLR; default coefficients are .295626, .4930194, .2113548

That's it. Note that GTURB-TEX-FPLR does not exist and GTURB-CAP-FT is never used, contrary to what is stated on p. 4.56 of the Supplement. To simulate a fuel cell you need to just put in the correct full load efficiency GTURB-GEN-EFF and put in the correct part load performance with your own GTURB-I/O-FPLR.

Note very carefully the form of the equation for \(GFUEL\). GTURB-I/O-FPLR multiplies the capacity, \(\text{CAP}\), not the load for the hour. So, if you want a constant efficiency as a function of part load, your GTURB-I/O-FPLR curve should be \(0.0 + 1.0 \times \text{PLR} + 0.0 \times \text{PLR}^2\). That is, your coefficients should be \(0.0, 1.0, 0.0\). The same is true for all DOE-2 FPLR curves.
INTERNATIONAL DOE-2 RESOURCE CENTERS

The people listed here have agreed to be primary contacts for DOE-2 program users in their respective countries. Each resource center has the latest program documentation, all back issues of the User News, and recent LBNL reports pertaining to DOE-2. These resource centers will receive copies of all new reports and documentation. Program users can then make arrangements to get photocopies of the new material for a nominal cost. We hope to establish resource centers in other countries; please contact us if you are interested in establishing a center in your area.

Australasia

Dr. Deo K. Prasad/P. C. Thomas, SOLARCH, University of New South Wales, P.O. Box 1, Kensington, N.S.W. 2033, Australia
PC.Thomas@unsw.EDU.AU / Tel: (61)-2-9311-7136 (P.C. Thomas) / Fax: (61) 2-9662-1378

Australia

Murray Mason, ACADS BSG, 16 High Street, Glen Iris VIC. 3146, Australia
Tel: (61) 885 6586 / Fax: (61) 885 5974

Germany

B. Barath or G. Morgenstern, Ingenieurbüro Barath & Wagner GmnH, Postfach 20 21 41, D-41552 Kaarst, Germany
Tel: (0049) 2131 75 74 90 12 G. Morgenstern / Fax: (0049) 2131 75 74 90 29

Hong Kong, China, Taiwan, Japan

Dr. Sam Chun-Man HUI or K.P. Cheung, Department of Architecture, The University of Hong Kong, Pokfulam Road, Hong Kong (SAR), CHINA
cmhui@hku.hk / http://arch.hku.hk/research/BEER/DOE-2/DOE-2.htm
Tel: (852) 2123 (direct to Sam Hui) / Fax: (852) 2559-6484 / Hui pager 7116 3808 a/c 1830

Korea

Dr. Jun Tae KIM, Room #114 New Engineering Building, Department of Architectural Engineering, Faculty of Engineering, Kong Ju National University, 182 Sinkwan-dong, Kongju, Chungnam, 314-701, Republic of Korea / jtkim@knu.kongju.ac.kr / Tel: (82) 416 50 8653 / Fax (82) 416 856 9388

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tanyune@ccu1.auckland.ac.nz / Tel: 64-9-373-7999 x5647 / Fax: 64-9-373-7410

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art@itime.ineti.pt / Tel: (351) 1-350-29 31 / Fax: (351) 1-716-43 05

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mywwong@ntuvax.ntu.ac.sg / Tel: (65)799-5543 / Fax: (65)791-1859

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mgiljg@puknet.puk.ac.za / Tel: (27 148) 299 1328 / Fax: (27 148) 299 1320

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meldem.energie@bluewin.ch / Tel: +41 21 653-8044 / Fax: +41 21 653-8054
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enersys@infoserve.net / www.enersys.bc.ca/homepage
- Dejan Radoicic, D. W. Thomson Consultants, Ltd., 1985 West Broadway, Vancouver, BC V6J 4Y3,  
  Canada
- Neil A. Caldwell, PE, Tescor Pacific Energy Services, Inc., 1730 - 401 W. Georgia St., Vancouver, BC  
  V6B 5A1  
  Canada  
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- Stephane Bilodeau, PE, Groupe Enerstat, Inc., 79 Wellington N. #202, Sherbrooke (Quebec) J1H 5A9,  
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  bill@aramis.gme.usherb.ca / Tel: (819) 562-8040 / Fax (819) 562-5578
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gshymko@direct.ca / Tel: (604) 685-5350 / Fax: (604) 685-5301

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  Germany,  
  GMW-Ing.buero@t-online.de / Tel: 0049-511 9357440/Fax: 0049-511-935744

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  New Zealand  
eglstaff@earthlight.co.nz

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  Meldem.energie@bluewin.ch / Tel: +41 21 653-8044 / Fax: +41 21 653-8054
- Philip Schluchter, Institut für Bauphysik Klein, Urs Graf-Strasse 1, CH4052 Basel, Switzerland  
  gzwiefel@ztl.ch
- Gerhard Zweifel, Zentralschweizerisches Technikum Luzern (ZTL), Abt. HLK, CH-6048 Horw,  
  Switzerland

### Pocket Guide

ASHRAE has updated its Pocket Guide for Heating, Ventilation, Air-Conditioning and Refrigeration. The guide is a general source of HVAC&R information drawn from ASHRAE Handbook charts, tables, graphs, and equations. The updated guide contains new key information on weather-oriented design factors, automatic controls, refrigeration loads, clean spaces, moisture and air relationships, pipe fittings, types of fans, clothing insulation values, thermal resistance’s to ventilated attics and exhaust hoods. Separate I-P and SI editions. More than 50 pages of new material have been added. Cost is $16 for ASHRAE members and $14 for non-members.

# U.S. DOE-2 ENERGY CONSULTANTS

## Arizona

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Address</th>
<th>City, State Zip</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Marlin S. Addison</td>
<td>M. S. Addison &amp; Associates</td>
<td>1215 West 12th Place</td>
<td>Tempe, AZ 85281</td>
<td>(602) 968-2040</td>
</tr>
<tr>
<td>Chuck Sherman</td>
<td>Energy Simulation Specialists</td>
<td>64 East Broadway, #230</td>
<td>Tempe, AZ 85282</td>
<td>(602) 784-4500</td>
</tr>
<tr>
<td>Sarat Kanaka</td>
<td>EcoGroup, Inc., Suite 301</td>
<td>2085 E. Technology Circle</td>
<td>Tempe, AZ 85284</td>
<td>(602) 777-3000</td>
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## California

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<tr>
<td>M. Gabel, R. Howley</td>
<td>Gabel Associates, LLC</td>
<td>1818 Harmon Street</td>
<td>Berkeley, CA 94703</td>
<td>(510) 428-0803</td>
</tr>
<tr>
<td>George Marton</td>
<td></td>
<td>1129 Keith Avenue</td>
<td>Berkeley, CA 94708</td>
<td>(510) 841-8083</td>
</tr>
<tr>
<td>Jeff Hirsch</td>
<td>James J. Hirsch Associates</td>
<td>12185 Presilla Road</td>
<td>Camarillo, CA 93012</td>
<td>(805) 532-1045</td>
</tr>
<tr>
<td>Leo Rainer</td>
<td>Davis Energy Group, Inc.</td>
<td>123 C Street</td>
<td>Davis, CA 95616</td>
<td>(916) 753-1100</td>
</tr>
<tr>
<td>L. Heshong, D. Mahone</td>
<td>The Heshong Mahone Group</td>
<td>11622 Fair Oaks Blvd, #111</td>
<td>Fair Oaks, CA 95628</td>
<td>(916) 962-7001</td>
</tr>
<tr>
<td>Cliff Gustafson</td>
<td>Taylor Systems Engrg. Inc.</td>
<td>9801 Fair Oaks Blvd., #100</td>
<td>Fair Oaks, CA 95628</td>
<td>(916) 961-3400</td>
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<tr>
<td>Steven D. Gates, PE</td>
<td></td>
<td>11608 Sandy Bar Court</td>
<td>Gold River, CA 95670</td>
<td>(916) 638-7540</td>
</tr>
<tr>
<td>Tom Lanneberg, PE</td>
<td>Constructive Tech. Group</td>
<td>16 Technology Dr., #109</td>
<td>Irvine, CA 92618</td>
<td>(714) 790-0010</td>
</tr>
<tr>
<td>David J. Schwed</td>
<td>Romero Management Assoc</td>
<td>1805 West Avenue K</td>
<td>Lancaster, CA 95354</td>
<td>(805) 940-0540</td>
</tr>
<tr>
<td>Robert E. Gibeault</td>
<td>A-TEC</td>
<td>5515 River Avenue, # 301</td>
<td>Newport Beach, CA 92663</td>
<td>(714) 548-6836</td>
</tr>
<tr>
<td>Martyn C. Dodd</td>
<td>Gabel Dodd/EnergySoft, LLC</td>
<td>100 Galli Drive, # 1</td>
<td>Novato, CA 94949</td>
<td>(415) 883-5900</td>
</tr>
<tr>
<td>Robert Mowris, PE</td>
<td></td>
<td>10 Ridge Road</td>
<td>Orinda, CA 94563</td>
<td>(925) 254-9770</td>
</tr>
<tr>
<td>Greg Cunningham</td>
<td>EnerSys Solutions LLC</td>
<td>114 Sansome St., #1201</td>
<td>San Francisco, CA 94104</td>
<td>(415) 296-9760</td>
</tr>
<tr>
<td>Charles Eley</td>
<td>Eley Associates</td>
<td>142 Minna Street</td>
<td>San Francisco, CA 94105</td>
<td>(415) 957-1977</td>
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<tr>
<td>John F. Kennedy, PE</td>
<td>GeoPraxis, Inc.</td>
<td>18850 Robinson Road</td>
<td>Sonoma, CA 95476</td>
<td>(707) 996-9408</td>
</tr>
<tr>
<td>Chandra Shinde, PE</td>
<td>ENVIRODESIGN GROUP</td>
<td>385 S. Lemon Ave., E-266</td>
<td>Walnut, CA 91789</td>
<td>(909) 598-1980</td>
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## Colorado

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<tr>
<td>David A. Cohen</td>
<td>Architectural Energy Corp</td>
<td>2540 Frontier Ave, #201</td>
<td>Boulder, CO 80301</td>
<td>(303) 444-4149</td>
</tr>
<tr>
<td>Paul Reeves</td>
<td>PRC</td>
<td>140 South 34th Street</td>
<td>Boulder, CO 80303</td>
<td>(303) 499-8611</td>
</tr>
<tr>
<td>Ellen Franconi</td>
<td>P.O. Box 1284</td>
<td></td>
<td>Boulder, CO 80306</td>
<td>(303) 786-7319</td>
</tr>
<tr>
<td>Charles Fountain</td>
<td>Burns &amp; McDonnell</td>
<td>8055 E. Tufts Avenue, #330</td>
<td>Denver, CO 80230</td>
<td>(303) 721-9292</td>
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<tr>
<td>Susan Reilly</td>
<td>Emermal Engineering</td>
<td>1554 Emerson Street</td>
<td>Denver, CO 80218</td>
<td>(303) 861-2070</td>
</tr>
<tr>
<td>Donald E. Croy</td>
<td>Acrossoft/CAER Engineers</td>
<td>814 Eleventh Street</td>
<td>Golden, CO 80401</td>
<td>(303) 279-8136</td>
</tr>
<tr>
<td>Joel Neymark, PE</td>
<td></td>
<td>2140 Ellis Street</td>
<td>Golden, CO 80401</td>
<td>(303) 384-3672</td>
</tr>
<tr>
<td>Norm Weaver</td>
<td>Interweaver Consulting</td>
<td>P.O. Box 775444</td>
<td>Steamboat Spgs, CO 80477</td>
<td>(970) 870-1710</td>
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## Connecticut

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<tr>
<td>Adrian Tuluca</td>
<td>Steven Winter Associates</td>
<td>50 Washington Street</td>
<td>Norwalk, CT 06854</td>
<td>(203) 852-0110</td>
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## District of Columbia

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<tr>
<td>Kurmit Rockwell, PE</td>
<td>XENERGY, Inc., Suite 1110</td>
<td>1025 Connecticut Ave., N.W.</td>
<td>Washington, DC 20036</td>
<td>(202) 872-1626</td>
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## Florida

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<tr>
<td>Philip Wemhoff</td>
<td></td>
<td>1512 South McDuff Avenue</td>
<td>Jacksonville, FL 32205</td>
<td>(904) 632-7393</td>
</tr>
<tr>
<td>Dr. Paul Hutchins PE,CEM</td>
<td>Reynolds Smith &amp; Hills, Inc.</td>
<td>4651 Salisbury Road</td>
<td>Jacksonville, FL 32256</td>
<td>(904) 279-2277</td>
</tr>
<tr>
<td>State</td>
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<tr>
<td>Georgia</td>
<td>Lung-Sing Wong, PE</td>
<td>Building Performance Engrs.</td>
<td>1351 Oakbrook Dr., #100 Norcross, GA 30093</td>
<td>(770) 409-0400</td>
</tr>
<tr>
<td>Illinois</td>
<td>Michael P. Doerr</td>
<td>Skidmore Owings Merrill</td>
<td>224 S Michigan Ave # 1000 Chicago, IL 60604</td>
<td>(312) 360-4623</td>
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<tr>
<td></td>
<td>Gary H. Michaels, PE</td>
<td>G.H. Michaels Associates</td>
<td>1512 Crain Street Evanston, IL 60202</td>
<td>(847) 869-5859</td>
</tr>
<tr>
<td></td>
<td>Prem N. Mehrotra</td>
<td>General Energy Corp.</td>
<td>230 Madison Street Oak Park, IL 60302</td>
<td>(708) 386-6000</td>
</tr>
<tr>
<td></td>
<td>Robert Henninger, PE</td>
<td>GARD Analytics, Inc.</td>
<td>1028 Busse Highway Park Ridge, IL 60068-1802</td>
<td>(847) 698-5686</td>
</tr>
<tr>
<td>Kansas</td>
<td>Dr. Brian A. Rock, PE</td>
<td>A/E Dept, Marvin Hall</td>
<td>University of Kansas Lawrence, KS 66045-2222</td>
<td>(785) 864-3603</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Michael Andelman</td>
<td>JRMA &amp; Associates</td>
<td>421 Watertown St. Boston, MA 02210</td>
<td>(617) 964-8889</td>
</tr>
<tr>
<td></td>
<td>C. Kalasinsky, PE, T.Chan</td>
<td>R.G. Vanderweil Engrs., Inc.</td>
<td>274 Summer Street Newton, MA 02458-1113</td>
<td>(617) 423-7423</td>
</tr>
<tr>
<td></td>
<td>Mark Mullins</td>
<td>DMI, Inc.</td>
<td>450 Lexington Street Newton, MA 02466</td>
<td>(617) 527-1525</td>
</tr>
<tr>
<td>Missouri</td>
<td>Mike Roberts</td>
<td>Roberts Engineering Co.</td>
<td>11946 Pennsylvania Kansas City, MO 64145</td>
<td>(816) 942-8121</td>
</tr>
<tr>
<td></td>
<td>Bruce A. Leavitt, PE</td>
<td>Wm. Tao &amp; Associates Inc.</td>
<td>2357-59th Street St. Louis, MO 63110</td>
<td>(314) 644-1400</td>
</tr>
<tr>
<td>Montana</td>
<td>Michael W Harrison, PE</td>
<td>Harrison Engineering</td>
<td>139 Bluebird Lane Whitehall, Montana 59759</td>
<td>(406) 287-5370</td>
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<tr>
<td></td>
<td>H. Henderson, S. Carlson</td>
<td>CDH Energy Corporation</td>
<td>P.O. Box 641 Cazenovia, NY 13035</td>
<td>(315) 655-1063</td>
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<tr>
<td></td>
<td>Dave Pruitt, Scott Frank</td>
<td>Jaros, Baum &amp; Bolles</td>
<td>80 Pine Street New York, NY</td>
<td>(212) 530-9300</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Hank Jackson, PE</td>
<td>P.O. Box 675</td>
<td>Weaverville, NC 28787-0675</td>
<td>(828) 658-0474</td>
</tr>
<tr>
<td></td>
<td>Gopal Shiddapur, PE</td>
<td>DukeSolutions (MC: ST06A)</td>
<td>230 S. Tryon Street, #400 Charlotte, NC 28202</td>
<td>(704) 373-4439</td>
</tr>
<tr>
<td>Oregon</td>
<td>J. Karasaki, PE, R. Ogle PE</td>
<td>CBG Consulting Engineers</td>
<td>6650 SW Redwood Ln, #355 Portland, OR 97224</td>
<td>(503) 620-3232</td>
</tr>
<tr>
<td>Texas</td>
<td>Jeff S. Haberl</td>
<td>Energy Systems Laboratory</td>
<td>Texas A&amp;M University College Stn., TX 77843-3123</td>
<td>(409) 845-6065</td>
</tr>
<tr>
<td>Virginia</td>
<td>Dave Walker</td>
<td>Walker Engineering</td>
<td>P.O. Box 366 Staffordville, VA 24167</td>
<td>(540) 921-4544</td>
</tr>
<tr>
<td>Washington</td>
<td>Steve Byrne</td>
<td>ITEM Systems, suite 344</td>
<td>321 High School Road NE Bainbridge Island, WA 98110</td>
<td>(206) 855-9540</td>
</tr>
<tr>
<td></td>
<td>Gregory J. Banken, PE</td>
<td>Q-Metrics, Inc.</td>
<td>P.O. Box 3016 Woodinville, WA 98072-3016</td>
<td>(425) 825-0200</td>
</tr>
</tbody>
</table>
### The first two listings are newsgroups, not websites

- **(net) sci.engr.heat-vent-ac**  HVAC discussion group.
- **(net) sci.engr.lighting**  Lighting discussion group.

### These URLs, on the World-Wide Web, start with http://

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<tr>
<td><a href="http://www.eren.doe.gov/buildings/tools_directory/">www.eren.doe.gov/buildings/tools_directory/</a></td>
<td>Building Energy Tools Directory from the U.S. Department of Energy:</td>
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<td></td>
<td>- An electronic directory of software programs under four headings: Whole-Building Analysis, Codes</td>
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<td></td>
<td>17, No. 4, p. 35.</td>
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<td></td>
<td>- See User News, Vol. 17, No. 3; Vol. 18, No. 4, Vol. 19, No. 1, p. 44.</td>
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<tr>
<td><a href="http://www.bso.uiuc.edu">www.bso.uiuc.edu</a></td>
<td>Building Systems Laboratory (BLAST)</td>
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<td><a href="http://www.hike.te.chiba-u.ac.jp/ikeda/CIE/publ/110-94.html">www.hike.te.chiba-u.ac.jp/ikeda/CIE/publ/110-94.html</a></td>
<td>The International Commission on Illumination – CIE</td>
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<td>- See User News, Vol. 16, No. 1, p. 44.</td>
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<tr>
<td></td>
<td>servers by agency. Use this site as a jumping-off point to explore other Federal agencies. See</td>
</tr>
<tr>
<td><a href="http://www.fedworld.gov/">www.fedworld.gov/</a></td>
<td>FedWorld is the U.S. Government's Federal Information Network home page. It lists web servers,</td>
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<td></td>
<td>ftp, gopher, and telnet sites and is organized by subject categories. See User News, Vol. 16,</td>
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<td></td>
<td>No. 2, p. 22.</td>
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<tr>
<td><a href="http://www.fedworld.gov/ntis/ntishome.html">www.fedworld.gov/ntis/ntishome.html</a></td>
<td>National Technical Information Service NTIS gathers and markets scientific, technical, and</td>
</tr>
<tr>
<td></td>
<td>business-related information.</td>
</tr>
<tr>
<td><a href="http://www.caddet-ee.org">www.caddet-ee.org</a></td>
<td>Center for the Analysis and Dissemination of Demonstrated Energy Technologies</td>
</tr>
<tr>
<td></td>
<td>- An IEA program for collecting and disseminating information on energy-efficient and renewable</td>
</tr>
<tr>
<td>crest.org/aceee</td>
<td>American Council for an Energy-Efficient Economy - a non-profit organization for the advance of</td>
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<tr>
<td><a href="http://www.asahrae.org">www.asahrae.org</a></td>
<td>American Society of Heating, Refrigeration and Air-Conditioning - an international membership</td>
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<tr>
<td><a href="http://www.cistif.nrc.ca/irc/irccontents.html">www.cistif.nrc.ca/irc/irccontents.html</a></td>
<td>[Canadian] Institute for Research in Construction - IRC is part of the NRC, Canada’s premier</td>
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<tr>
<td>next1.mae.okstate.edu/lbpa/</td>
<td>International Building Performance Simulation Association - an international society of building</td>
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<tr>
<td><a href="http://www.fsec.ucf.edu/">www.fsec.ucf.edu/</a></td>
<td>Florida Solar Energy Center - State of Florida’s energy institute specializing in energy research</td>
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<td></td>
<td>and education in partnership with private and public organizations. See User News, Vol. 17, No. 1,</td>
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<td></td>
<td>p. 29.</td>
</tr>
<tr>
<td>edesign.state.fl.us</td>
<td>e-design, the online newsletter for Florida’s Design Initiative - See User News, Vol. 17, No. 2,</td>
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<td></td>
<td>p. 25.</td>
</tr>
<tr>
<td><a href="http://www.csemag.com/">www.csemag.com/</a></td>
<td>An online version of Consulting-Specifying Engineer Magazine - See User News, Vol. 17, No. 4, p. 35</td>
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*User News, Vol. 19, No. 3 - 22 - Fall 1998*

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<tr>
<td>windows.lbl.gov/software/resfen/resfen.html</td>
<td>RESFEN-2.4 – calculates residential fenestration heating and cooling energy use/costs</td>
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<tr>
<td>eande.lbl.gov/btp/superlite2.html</td>
<td>SUPERLITE-2.0 – calculates daylight illuminance distributions for room geometries</td>
</tr>
<tr>
<td>windows.lbl.gov/software/window/window.html</td>
<td>WINDOW-4.1 – thermal analysis program to characterize window product performance</td>
</tr>
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<td><a href="http://www.energy.wsu.edu/ep/eic/">www.energy.wsu.edu/ep/eic/</a></td>
<td>Energy Ideas Clearinghouse, 925 Plum St S.E., Olympia, WA 98504-3171</td>
</tr>
<tr>
<td><a href="http://www.energy.wsu.edu/ep/eic/eicsoft.htm">www.energy.wsu.edu/ep/eic/eicsoft.htm</a></td>
<td>Software and files from the Energy Ideas Clearinghouse</td>
</tr>
<tr>
<td>kmp.lbl.gov/bda</td>
<td>The Building Design Advisor (BDA) is a software environment that supports the integrated use of multiple analysis and visualization tools throughout the building design process, from the initial, schematic design phases to the detailed specification of building components and systems. See the <em>User News</em>, Vol. 18., No. 4, p. 26.</td>
</tr>
<tr>
<td>sabu.weea.org</td>
<td>The World Energy Efficiency Association (WEEA) was founded in June 1993 as a private, non-profit organization composed of developed and developing country institutions and individuals charged with increasing energy efficiency. See the <em>User News</em>, Vol. 18., No. 4, p. 26.</td>
</tr>
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</table>

**DOE-2.1E Bug Fixes via FTP**

If you have Internet access you can obtain the latest bug fixes to the LBNL version of DOE-2.1E by anonymous ftp. Here’s how…

- ftp to either aerdem@lbl.gov or to 128.3.254.10
- login:  type anonymous
- passwd:  type in your e-mail address

After logging on, go to directory pub/21e-mods ; bug fixes are in files that end with .mod. A description of the fixes is in file VERSIONS.txt in directory pub. Each fix has its own version number, nnn, which is printed out as DOE-2.1E- nnn on the DOE-2.1E banner page and output reports when the program is recompiled with the fix. You may direct questions about accessing or incorporating the bug fixes to Ender Erdem (aerdem@lbl.gov).
### Featured Sites This Issue

#### World-Wide Web Sites for Building Energy Efficiency

<table>
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<tr>
<th>Linric Company</th>
<th>Numerical Logics, Inc. of Canada</th>
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<tr>
<td><a href="http://www.linric.com">www.linric.com</a></td>
<td>www3.sympatico.ca/numlog</td>
</tr>
<tr>
<td>(Source of Canadian Weather Files)</td>
<td></td>
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</table>

Linric Company is a software developer and HVAC engineering company. They specialize in the development of time-saving tools for engineers and manufacturers.

**PsyCalc 1.5**
A unique tool for HVAC professionals who use psychrometrics to perform their work. A 30-day trial version is available.

**PsyFunc 1.2**
A collection of psychrometric functions for Excel 5.0.

**PsychLib 1.0**
A collection of psychrometric functions packaged in a standard Windows Dynamic Link Library (DLL).

**GlyFunc 1.0**
A collection of five Ethylene and five Propylene functions that will eliminate looking up and interpolating these properties.

- Download a free Psychrometric Chart in Word

Jim Judge, PE  
Linric Company  
44 Green Meadow Lane  
Bradford, NH 03110  
Tel: (603) 472-5640  
Fax: (603) 472-4823  
e-mail: judge@linric.com

Numerical Logics Inc. was established in 1996 to provide consulting services for software development, renewable energy systems simulation and analysis, and weather processing.

The company also distributes and maintains the Watsun family of programs, as well as Typical Meteorological Year (TMY) weather files and Canadian Weather for Energy Calculations (CWEC) weather files, under a service agreement with the University of Waterloo.

**Software for simulation of solar energy systems**
- Watsun family of programs: simulation of active solar and photovoltaic systems
- Solar C/C++ Library: a collection of C functions and C++ objects for solar energy system simulation

**Weather data**
- Typical Meteorological Year (TMY) weather files in WATSUN format
- Canadian Weather for Energy Calculations (CWEC) weather files

**Other software**
- Sundials for Windows: sundial design program
- Prosim simulation platform

Dr. Didier Thevenard  
Numerical Logics Inc.  
119 University Avenue East, 3rd floor  
Waterloo, Ont., Canada N2J 2W1  
Tel: +1 (519) 886-7820  
Fax: +1 (519) 747-0881  
e-mail: numlog@sympatico.ca

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## Weather Data Sources

| BinMaker: The Weather Summary Tool ([www.binmaker.com](http://www.binmaker.com)) (from the Gas Research Institute) | Order No. GRI/98-0026  
| GRI Fulfillment Center  
| 1510 Hubbard Drive  
| Batavia, IL 60510  
| Phone: (773) 399-5414 / Fax (630) 406-5995  
| Email: Fillit@compuserve.com  

BinMaker is a CD-ROM based program that runs under Windows 95 or 3.1. It allows you to create summaries of U.S. hourly weather data (TMY2) then exports the results into spreadsheets or other analysis programs. Cost is $59.95 + $9.00 shipping (with a discount to GRI members).

| DOE-2-Processed Versions of all TMY2 files for PC implementation (except CEARE) | ftp://anonymous:weather@gundog.lbl.gov/pub/ JJHTMY2.zip  

DOE-2-Processed Versions of all TMY2 files for PC implementation (except CEARE)

| Comprehensive collection of TRY, TMY and CTZ weather file libraries, from NCDC, which can be used on all PC versions of DOE-2. Includes original source data and pre-formatted packed versions on a single IBM format CD. Individual sites available. | Jennie Lathum or Martyn Dodd  
| Gabel Dodd / EnergySoft, LLC  
| 100 Galli Drive, Suite 1  
| Novato, CA 94949  
| Phone: (415) 883-5900 / Fax: (415) 883-5970  

European Weather Files

| TMY data sets - download from the World Wide Web  
| TMY2 data sets and TMY2 User Manual - download from the World Wide Web  
| [See User News Vol. 18, no. 2, p. 17]  

TMY (Typical Meteorological Year)  
TRY (Test Reference Year)

| CTZ (California Thermal Climate Zones) | California Energy Commission  
| Bruce Maeda, MS-25  
| 1516-9th Street  
| Sacramento, CA 95814-5512  
| 1-800-772-3300 Energy Hotline  

CTZ (California Thermal Climate Zones)

| WYEC (Weather Year for Energy Calculation) | ASHRAE  
| 1791 Tullie Circle N.E.  
| Atlanta, GA 30329  
| Phone: (404) 636-8400 / Fax: (404) 321-5478  

WYEC (Weather Year for Energy Calculation)

| Canadian Weather Files in WYEC2 Format | Dr. Didier Thevenard  
| Numerical Logics, Inc.  
| 119 University Avenue East, 3rd Floor  
| Waterloo, ON N2J 2W1, Canada  
| Phone: (519) 886-7820 / Fax: (519) 747-0881  
| www3.sympatico.ca/numlog  
| numlog@sympatico.ca  

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User News, Vol. 19, No. 3 - 25 - Fall 1998
DOE-2.1E Documentation for International Users
(except Canada and Mexico)

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http://www.microinfo.co.uk/
DOE-2.1E Documentation for U.S., Canadian and Mexican Users

DOE-2 documentation is available from two sources.

- The National Technical Information Service offers a complete set of DOE-2 manuals, available for purchase separately; prices and ordering information are below.

- The Energy Science Technology Software Center at Oak Ridge, TN, offers the DOE-2.1E updated documentation (which includes the Supplement, Sample Run Book, and BDL Summary) free of charge when you purchase the mainframe or workstation version of DOE-2. See the “DOE-2 Directory of Program Related Software and Services” in this issue for ESTSC’s address.

Also, many of the PC vendors of DOE-2 offer some or all of the documentation when you buy their program. Names and addresses of all DOE-2 vendors are found in the “DOE-2 Directory Software” in this issue.

To order DOE-2 manuals from the National Technical Information Service:

National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161
Phone 1-800-553-6847, FAX (703) 321-8547, http://www.fedworld.gov/ntis/home.html

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Building Energy Simulation User News
(a quarterly newsletter)
Sent without charge, the newsletter prints documentation updates and changes, bug fixes, inside tips on using the programs more effectively, and articles of special interest to users of DOE-2, BLAST, SPARK and their derivatives. The winter issue features an index of articles printed in all the back issues.

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Contact: Kathy Ellington
Fax: (510) 486-4089
kathy@srge.lbl.gov

Help Desk: Bruce Birdshall
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