

*ibpsa*NEWS

Spring 1989

International Building Performance Simulation Association, Inc.

Volume 2, Number 1

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BUILDING SIMULATION '89 GET YOUR RESERVATIONS IN!

Building Simulation '89 will soon be here, and it is time to make your reservations if you have not done so already. With the ASHRAE conference and the popularity of Vancouver as a summer vacation spot, hotel space will be tight. Refer to the conference brochure and contact the Vancouver Convention Bureau for room reservations. Also, send your conference registration to MCC Systems Canada.

Building Simulation '89 promises to be an excellent conference featuring speakers from a dozen countries covering a wide range of building simulation topics. Doug Hittle, a pioneer in building energy analysis who is currently at Purdue University, will be the keynote speaker. The conference luncheon speaker will be architect Roderick Robbie of Toronto who designed the Toronto Skydome and other innovative buildings.

If you did not receive a conference brochure, or if you need additional information, write or call:

Dr. Marianne B. Scott
MCC Systems Canada, Inc.
30 Wellington Street East, #202
Toronto, Ontario
CANADA M5E 1S3

Phone: (416) 368-2959

See you in Vancouver!

BUILDING SIMULATION '89

June 23-24, 1989

Vancouver Hyatt Regency Hotel
Vancouver, British Columbia,
Canada

JUNE IBPSA MEETING

The next meeting of IBPSA will be held in conjunction with *Building Simulation '89* in Vancouver, British Columbia, Canada. The IBPSA committees will meet Saturday, June 24, between 1 p.m. and 4 p.m. The general IBPSA meeting will begin at 4 p.m. The exact locations for the meetings are not known at this time, watch for announcements at *Building Simulation '89*. All IBPSA meetings are open to anyone interested in building simulation.

IBPSA COMMITTEE MEETINGS

Saturday, June 24, 1989
Times to be announced.

IBPSA GENERAL MEETING

Saturday, June 24, 1989, 4:00 P.M.

Exact locations to be announced.
Vancouver, British Columbia,
Canada

JOIN AN IBPSA COMMITTEE

IBPSA currently has 7 active committees. Most of these committees will meet in Vancouver prior to the general IBPSA meeting. Watch for meeting notices when you get to Vancouver. If you are interested in serving on one of the IBPSA committees, please contact the committee chairperson listed below.

Executive Committee

(Elected society officers only)
Ed Sowell, Society President

Building Simulation '89 Program Committee

Carol Gardner, Chairperson

Membership Committee

Taghi Alereza, Chairperson

Finance Committee

Taghi Alereza, Chairperson

Newsletter and Publications Committee

Mike Witte, Chairperson

Long Range Planning Committee

Ed Knipe, Chairperson

Research Committee

Linda Lawrie, Chairperson

INPUT REQUESTED ON IBPSA RESEARCH AGENDA

The IBPSA Research Committee, chaired by Linda Lawrie, is charged with developing a long-range research plan for the society. Some of the key objectives of IBPSA revolve around a complete and current research agenda to guide research activities sponsored by IBPSA and by other agencies. As the leading organization in building simulation, it is the responsibility of IBPSA to set the direction of future research in this field.

The current research agenda consists of suggestions gathered at early IBPSA meetings. The research committee is seeking additional input from the IBPSA membership. Please review the topics listed below and send additional topics to:

Michael J. Witte

University of Illinois

140 Mechanical Engineering Building

1206 W. Green Street

Urbana, Illinois 61801

USA

At the Vancouver meeting, the research committee will begin the task of prioritizing the IBPSA research agenda.

IBPSA RESEARCH TOPICS**1. COMPONENT-MODELS*****1.1. OCCUPANT***

Occupant response to building performance.

1.2. COOLING-COILS

Improved cooling coil models. Perhaps develop standard models.

1.3. INFILTRATION

Improved infiltration algorithms.

1.4. AS-INSTALLED-MODELS

Models/performance data for HVAC components "as installed" rather than using idealized manufacturer's data.

1.5. AS-CONSTRUCTED-CONDUCTION

Improved construction models covering constructions such as masonry walls, steel stud walls, etc.

1.6. ZONE-STRATIFICATION

Implementation of thermal stratification of zone air in thermal loads programs for a better coupling between building and system through more realistic thermostat behavior.

1.7. DYNAMIC-MODELS

Use of component testing data, especially dynamic results, in building component simulations. If the admittance framework

is assumed, then the issue becomes the development of routines to translate admittances into response factors or equivalent thermal circuit elements.

2. NON-HVAC-SIMULATION

2.1. TRAFFIC-FLOW

Traffic flow simulations for building design (doors, stairs, elevators, hallways, etc.) for normal use and for emergency use.

2.2. MAINTENANCE

Building maintenance simulation to determine long range costs for operation and retrofit.

2.3. DESIGN-COST

Develop software with the goal of improving the cost efficiency of designing building systems.

2.4. ENERGY-MANAGEMENT

Integration of simulations into energy management systems for diagnostics and control.

2.5. OTHER-OPPORTUNITIES

Study the current state-of-the-art in simulation software, consider opportunities for expanding the role of simulation software, and recommend future roles for simulation software in building design, delivery, and use.

2.6. CONTROLS-SIMULATION

Use performance simulation as part of building control systems.

3. NUMERICAL-METHODS

3.1. INTEGRATION-METHODS

Better numerical integration algorithms for fast solution of building/system coupling, aiming at complex control strategies.

3.2. SPEED-ENHANCEMENTS

Improve computational speed and reduce memory requirements of current codes for predictive on-line utilization and for improved design productivity.

4. COMPUTER-AIDED-DESIGN

4.1. CAD-SIMULATION-INTERFACE

Develop standard I/O interface between CAD software and simulation software. In a broader sense, these standards should extend to cover all CADD and engineering analysis software.

4.2. INTEGRATED-DESIGN-TOOLS

Provide a forum for discussion of the integration of design and energy analysis methods, including optimization techniques.

4.3. INTEGRATED-DESIGN-TOOLS

Develop integrated building design tools to assist in the design and operation of energy-efficient buildings.

5. USER-NEEDS

5.1. SURVEY

Survey users to determine the most needed technical enhancements to the current energy analysis codes.

5.2. INTERFACE

Improve user interfaces for simulation software.

5.3. INTERFACE

Choose a preferred user I/O interface (e.g., MS Windows, C, GEM, etc.) to be supported by IBPSA.

5.4. COMPUTER-EQUIPMENT- USAGE

Survey users to determine the type of computer that the majority of simulations are performed on.

6. VALIDATION

6.1. STANDARD-DOCUMENTATION

Develop a standard method for documentation and testing of computer algorithms and programs.

6.2. CODE-VALIDATION

Develop code verification procedures for energy analysis programs and other simulation software.

6.3. MODEL-VALIDATION

Develop model verification procedures and conduct model verification research directed toward specific small models (e.g., optical performance of glazing).

6.4. INTEGRATED-COMPONENT-TESTING

Integration of component testing and characterization into whole building simulations.

6.5. MODEL-CALIBRATION

"Calibration" of simulations using building metered data to lead to a better understanding of how simulations can be improved and what the "error" or "variation effect" is likely to be.

6.6. STANDARDIZATION-RECOMMENDED-USAGE

Standardization of acceptable algorithms (or programs) or reporting on recommended simulation tools to use. IBPSA could serve as a focal point for making recommendations on the use of existing tools and describing a long term approach to new, improved tools.

7. TIME-STEP-ISSUES

7.1. CONTROL-WITH-ONE-HOUR-TIME-STEP

Develop ways to reasonably represent control behavior in models which use a one-hour time step.

8. ANALYSIS-METHODS

8.1. EXPERT-SYSTEMS-TO-GUIDE-INPUT

Develop expert systems to guide user input and interpretation of output results.

8.2. BASED-ON-SHORT-TERM-TESTING

Develop building simulations based on data from short-term tests.

8.3. STANDARDIZATION OF MODEL SPECS

Standardize model specifications, perhaps through the use of representative structures.

8.4. STANDARDIZATION OF RULE BASE NAMING

Develop standard set of nomenclature for rule-base naming for development of expert system applications.

8.5. STANDARDIZATION OF GKS NAMING

Survey current GKS nomenclature and other current standards for naming related to simulation tools.

8.6. STANDARDIZATION OF LITERATURE

Perform a literature search (cross search of ASHRAE, ASME, IEEE, ASES, ASPE, etc.) to assemble a keyword database for use by IBPSA members.

8.7. SOFTWARE DIRECTION SURVEY

Survey software vendors for development trends such as device independent code, macros, etc., to determine future software availability.

8.8. KERNEL-SYSTEM-ARCHITECTURE

Research into architecture of a kernel-based simulation system.

8.9. EXPERT-SYSTEM-MODEL-DEVELOPMENT

Apply expert system techniques to model development.

8.10. EXPERT-SYSTEM-USAGE

Apply expert system techniques to use of energy analysis models.

8.11. PARALLEL-COMPUTATION

Develop parallel computation techniques for building simulation.

8.12. LOAD-SYSTEM-PLANT-COUPLING

Couple heat balance load calculation with system simulation via weighting factors to obtain the best combination of heat balance and weighting factor methods.

8.13. MACRO-MODELING

Integration of post-construction evaluation methods with "design values" simulation. How are building response data related to

simulation inputs? How are macro-models integrated with micro (component) models?

8.14. DOCUMENTING-ALGORITHMS
Classification and cataloguing of algorithms and methodologies in the area of building energy simulation (supplied in computer readable format).

TIME FOR 1989 DUES

Invoices have been sent to all IBPSA members for payment of 1989 dues. Please return your payment promptly. If you are not yet an IBPSA member, please contact Taghi Alereza at the address listed below.

ibpsaNEWS NEEDS INPUT

The IBPSA membership is the primary source of material for *ibpsaNEWS*. The editors of *ibpsaNEWS* welcome any news, announcements, commentaries, etc., that would be of interest to the members of the society. Please send material to the editors at the address listed below.

ibpsaNEWS is published periodically by the International Building Performance Simulation Association. The editors are Henry Amistadi and Michael Witte.

Please send articles and announcements to:

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If possible, please submit material in magnetic form on either IBM-PC or Macintosh diskette. Acceptable formats are: Microsoft Word (MS-DOS or Macintosh), MacWrite, ASCII text only, RTF interchange format, PICT format, PAINT format. *Please include a printed copy of the material.*

JOIN IBPSA TODAY!!

If you are not already an IBPSA member, join today!
For membership information, please contact:

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