

ASHRAE Meeting Minutes-Toronto

TC4.10- Indoor Environmental Modeling

Main Committee Meeting

Monday, June 22, 1998

2:15 pm

1. Meeting was **called to order** at 2:20 PM by Chairman Jianshun Zhang.
2. A **welcome and introduction** by Dr. Zhang was offered.
3. 9 of 15 voting members were present at the **roll call**. Minutes from the last meeting were approved 9-0-0.
4. Announcements :the announcements were made during the Research review (see * below).
5. Membership: Dr. Hosni requested business cards from the corresponding members that were present in order to update the mailing lists.
6. In Dan Clark's absence, Jianshun reported the following from the **Research** Subcommittee:

RP-903 *"Experimental Validation of Multizone Models for Predicting Air Contaminant Transport in High Rise Buildings"* The test site has been moved. The Chicago site was unavailable, the university of Nebraska will be the new site. An extension in the completion date to July 30, 1999 was voted and approved unanimously (PMS Chairman Dave Ensor, PI Gren Yuill)

RP-978 *"Interaction of Room Air Motion and the Human Body in Confined Spaces"* . This project is on schedule. The velocity measurement technique has been demonstrated. An excellent presentation by Mike Richardson (KSU) was provided at the subcommittee meeting explaining the PIV technique. (PMS Chairman Steve Emmerich, PI Byron Jones)

RP-949 *"Displacement Ventilation"* is a research program cosponsored by TC5.3. This project is ahead of schedule for an August completion. The report is available from Yan Chen. (PI Yan Chen)

1009-TRP *"Simplified Boundary Conditions for Numerical Simulations"*. Discussion was delayed on this project until later in the meeting.

1097-WS *"Modeling VOC Sorption of Building Materials and Its Impact on Indoor Air Quality"*. The work statement has been submitted and the comments were received. It is

back in the technology council and will remain in the research plan until approved. Although cosponsorship of TC2.3 was recommended, no one on that committee has seen it. It was decided rather that the PMS should have a member from TC2.3 instead. A copy of this work statement is attached. (author, Yan Chen)

The research sub-committee has prioritized the projects as follows:

1. 1097 WS *"Modeling VOC Sorption of Building Materials and ItsQuality"*.
2. New WS *"Guidelines on the use of CFD for Indoor Environmental Modeling"*
3. New WS *"Modeling Low Velocity Large Scale Fluctuating Flows"*
4. New WS *"Determination of Turbulent Length and Time Scales in Ventilated Rooms"*

*At this stage of the meeting, the section head of TC4, Jeff Biskup and the research liaison, Carl Speich, introduced themselves. They were present to help the committee with work statement issues. Carl reported that the work statement 1097 has passed its first stage of approval on June 19, 1998 and has moved to the Tech Council. The work statement was amended to require project monitoring committee approval of the VOC sampling. The research manager, Bill Seaton expedited the revision. A TC vote for re-submission was not required in this case since the changes were minor. Carl went on to say that the work statement about CFD guidelines should not give the impression that CFD modeling is a simple process. Finite element (or volume) analysis requires unique skills and details. There is merit in the approach if the end product is more than a tutorial. Many readers will be unaware of the entire scope of CFD especially regarding things such as computing resources required and the many codes that are available. Finally, he left a copy of a recent survey on recommended research from an *Insights* magazine, and a copy of the most recent work statement procedures.

Chairman Zhang provided the mission statement developed by the research subcommittee based on a description compiled by Steve Emmerich and Mo Hosni. After some discussion, the following statement was proposed:

Research Objective

" The research objective of TC4.10 is to advance the science and technology of indoor environmental modeling and promote its application to HVAC industry"

The mission statement was motioned and approved 11-0-0. (two additional members had arrived). The mission statement will be used by review committees to check project scope.

The last research item was a decision to resubmit the work statement for *"Guidelines on the use of CFD for Indoor Environmental Modeling"*. Walter Schwarz will incorporate recommended changes.

7. Program

A reminder was provided by Steve Emmerich for members to attend Symposium TO-98-23 "*Modeling, Measurement Techniques, and Experimental Data on Material Emission Rates*" on Wednesday. This symposium is chaired by our own Dr. Fariborz Haghighat and sponsored by TC2.3.

The symposium, "*Applications of Multi-zone airflow and Contaminant Models to Performance of Residential Ventilation Systems*", has been rescheduled to the Chicago meeting.

Farzad Baban had contacted the author of the work statement "*Modeling Computer Rooms with Large Heat Loads*" (Roger Schmidt). There is a new session proposed on the subject entitled "*Modeling Rooms Enclosing Electronic Equipment*". A seminar or forum will be conducted first followed by a symposium (i.e. with papers). The room heat loads will range from 50 to 400 W/ft². The meeting dates have not been finalized.

Dr. Hosni will chair a symposium on *displacement ventilation* and innovative ventilation methods at the Seattle meeting. It is cosponsored by TC5.3 and TC 5.8. A title for the symposium hasn't been selected yet.

A new symposium on *multi-zone modeling* and testing was tentatively scheduled for the Dallas meeting. The symposium will target zonal IAQ. Professeur Francis Allard graciously agreed to chair this one.

Another new symposium has been tentatively scheduled for the Dallas meeting. The topic will be *airflow in enclosures*. Papers will be due next April. This symposium will be chaired by Dr. Allan Kirkpatrick.

The program schedule was voted and approved 11-0-0.

8. Handbook- Ray Horstman will be setting up a handbook committee meeting in Chicago. It will probably be held before the research sub-committee of TC4.10 on Sunday.
9. Standards- no action
10. Activities in other TC's-

TC1.2 *Instruments and Measurements*- Planning a symposium on Instrumentation error.

TC2.1 *Physiology and Human Environment*- Work on thermal comfort is underway for slightly cool or slightly warm environments to validate heat balance models, including efforts to determine preference of cool/low-velocity vs. warm/high-velocity environments. Thermal comfort will be based on complaint frequency of a five building study and will eventually produce a parametric estimator for predicting comfort.

TC2.3 *Gaseous Air Contaminants/Removal Equipment*-Interest is building in VOC's and research into renovation emission activities but no action yet.

TC5.10 *Kitchen Ventilation*- Kevin Knappmiller will be running a forum on CFD and kitchen ventilation research on June 23, 1998, member attendance is encouraged.

11. No **new business**.

12. No **Agenda suggestions for next meeting**.

13. A move to **Adjourn** was made and approved, however, eligible members remained to evaluate proposals for the project "*Simplified Boundary Conditions and test Methods for Numerical Simulations*"

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