

June 28, 2004
Committee Meeting Minutes
TC4.1 Load Calculations Data and Procedures
Nashville, Tenn.

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.
 1791 Tullie Circle, N.E./Atlanta, GA 30329
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TC/TG/TRG MINUTES COVER SHEET

(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO.: 4.1 DATE: June 28, 2004

TC/TG/TRG TITLE: LOAD CALCULATION DATA AND PROCEDURES

DATE OF MEETING: June 28, 2004 LOCATION: Nashville, Tennessee

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Gary L. Wingfield	2003	Ken-Ichi Kimura	2001	Mike Filler
Robert C. Doeffinger, Jr.	2003			Rich Swierczynna
Steven F. Bruning				Alan Breitenfeldt
Christopher K. Wilkins	2003			Glenn Hourahan
Charles S. Barnaby	2003			Larry Lisenbee
Douglas C. Hittle	2003			Steve Armour
Curtis O. Pedersen	2003			Xiaobin Liu
Jim Norman*	2002			Fanconnet Mickel
Brian Rock*	2003			Kevin Sok
Jeff Spitler *	2003			Hua Ge
Branislav B. Todorovic*	1995			Bill Wright
Rolando Legarreta	2003			Bruce Wilcox
Lynn G. Bellenger*	2003			J.R. Anderson
Steve Kavanaugh*	2002			David Meredith
	2003			Andrew Braum

DISTRIBUTION: — ALL MEMBERS OF TC/TG/TRG *Non Voting Members

TAC SECTION HEAD: Craig P. Wray

TAC CHAIRMAN: Mark Hegburg

ASHRAE MANAGER OF RESEARCH/TECHNICAL SERVICES: Michael R. Vaughn

ALL COMMITTEE LIAISONS AS SHOWN ON TC/TG/TRG ROSTERS:

<u>Marilyn A. Listvan - Special Publications</u>	<u>Michael J. Brandemuehl - RAC Research</u>
<u>David E. Knebel - Standards</u>	<u>Charles E. Gulledge III - TEGA</u>
<u>Douglas C. Hittle – ALI</u>	<u>Peter Simmonds –Programs</u>
<u>William S. Fleming - Handbook</u>	<u>Chad B. Dorgan – Journal/Insights</u>

ADDITIONAL DISTRIBUTION:

MANAGER OF STANDARDS: Claire B. Ramspeck

"These draft minutes have not been approved and are not the official,
 > approved record until approved by this (council/committee)."

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General

The meeting was called to order by Chair Robert Doeffinger at 2:20 pm in the Opryland Resort, Tennessee Ballroom A

Roll call by Gary Wingfield indicates 6 members present out of 9 total which constitutes a quorum.

Introductions: Chair Robert Doeffinger asked all attendees to introduce themselves and to complete the attendance sheet circulating the room.

Motion (Bruning/Wilkins) Approve minutes of January 26, 2004 meeting as amended to correct the date from 2003 to 2004. Carried 6/0/0

Liaisons

TAC Section Head Craig Wray reported that he is emphasizing communications between the technical committees in his section. He indicated that he concurred with the direction and efforts in progress within TC4.1

Standards committee liaison Rick Hermans offered two requests:

1. That TC4.1 provides a delegate and alternate to serve on ACCA technical review committee as official liaison from ASHRAE.
2. That TC4.1 submits a request for the creation of a standard for commercial (non-residential) load calculations by August 23, 2004.

Doeffinger appointed James Norman to serve as delegate and Doug Hittle as alternate to serve as liaison to the ACCA technical review committee.

Professional Development Committee liaison David Meredith presented two requests to TC4.1:

1. Prepare a 20 page document on *how to calculate building loads* for insertion into an educational manual.
2. Prepare a 3 hour short course on current load calculation methods.

Pedersen reported that he has conducted a short course on load calculations for the January ASHRAE meetings for several years

Doeffinger appointed Bruning to serve as liaison to the professional development committee.

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Research Subcommittee (Wilkins)

ASHRAE Research Project 1199-RP, *Updating the ASHRAE/ACCA Residential Heating and Cooling Load Calculation Procedures and Data* developed two new residential loads calculation procedures:

- Residential Heat Balance (RHB), a detailed heat balance method that requires computer implementation; and
- Residential Load Factor (RLF), a simplified procedure that is suitable for hand or spreadsheet use.

The report documents the development and testing of the methods.

RHB is based on first-principles heat balance models. A research-oriented FORTRAN implementation of RHB, designated ResHB, was developed using ASHRAE Loads Toolkit as a starting point. ResHB extends Toolkit capabilities to multiple rooms and zones, so it can perform load calculations for real buildings. Also added were infiltration, internal gain, and duct loss models appropriate for residential problems.

Motion (Hittle/Wingfield) Approve RP-1191 final research report and forward it to the Research Administration Committee. Carried (7,0,1). Note that Barnaby abstained because of his involvement with the project.

RTAR UPDATE KITCHEN EQUIPMENT INFORMATION

TC5.10 has asked TC4.1 to co-sponsor an RTAR that deals with capture, containment, emissions and heat release from kitchen equipment using ASTM protocol. The product would include an update to Table 5 in Chapter 29 and include information on radiant and convective heat transfer. The heat gain rates from typical commercial cooking appliances currently published in the ASHRAE Handbook were obtained in research project 391-RP completed in 1984 (Alereza and Breen 1984). These rates were determined by applying adjustment factors to cataloged appliance energy input ratings. Design engineers have expressed concern with the accuracy of this information. A small number of revisions have been made to the Heat Gain Table 5 via an industry-developed heat gain measurement protocol (Fisher 1998).

Motion (Wilkins/Barnaby) Co-sponsor RTAR for updated information on kitchen equipment with TC5.10 as lead. Carried(7,0,0)

Doeffinger appointed Legaretto and Hittle to the RTAR project monitoring subcommittee.

1282 RP LIGHTING HEAT GAIN DISTRIBUTION IN BUILDINGS

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April 2004 - November 2005
Oklahoma State University
Principal Investigator, Daniel E. Fisher

Lighting is a major contributor to the heat gain in all buildings. The magnitude of the heat gain from a specific fixture is not difficult to determine because wattage of specific lamps is very well documented. The magnitude is not the only factor relevant to the cooling load and energy calculations. Radiant convective split can affect the time and the magnitude of the peak-cooling load. Another important consideration is the amount of heat from the light fixture that is dissipated to the space vs. the amount of heat dissipated to the ceiling plenum. The objective of this research is to better document the interaction of the heat generated by a light fixture and the surrounding space. Data will be developed for the most typical arrangements and presented in tables and graphs to enhance the ability to engineers to perform load calculations and energy evaluations for conventional and under floor air distributions systems.

Project Monitoring Subcommittee has met. The project should be ten percent complete by the Orlando meeting.

1311 TRP IMPROVING LOAD CALCULATIONS FOR FENESTRATIONS WITH SHADING DEVICES. Proposals received from three organizations. Proposals have been evaluated by the Project Evaluation Subcommittee. Recommendation will be presented for action by TC4.1 in a closed session.

RTAR 2004 Application and Teaching Manual for RTS Load Calculation Method. Work statement requires further revision before submittal in September 2004. TC4.1 action will be by mail ballot.

Research plan for 2005/2006 is to include study of stratification effects on load calculations and under floor distribution systems.

Motion (Wilkins/Pedersen) Approve research plan to include stratification. Carried (8,0,0)

Handbook Subcommittee (Bruning)

Chapter 28 – Residential Load Calculations draft has been prepared by Barnaby and was distributed to the 1199 RP Project Monitoring Committee on May 21, 2004. Copies of the draft were distributed to the TC4.1 committee and interested guests for review and comment.

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Motion(Bruning/Wingfield) Remove from table motion(Wingfield/Pedersen) Residential Chapter 28 to go back in “As-is”: pending final vote in Nashville. Carried (8,0,0)

Motion was withdrawn by Wingfield/Pedersen.

Motion (Bruning/Legaretto) Proceed with the review of the draft of Chapter 28. Return comments to Bruning by 7/23/2004. Determine disposition by mail ballot mid August 2004. Carried (8,0,0)

Chapter 29 final draft for 2005 HOF, dated 6/28/2004 was distributed by Bruning for review and approval by TC4.1.

Friedman reported that TC4.5 was currently conducting research on duct leakage and that the proposed paragraph 9.4.7 should be modified to delete the last sentence that referenced SMACNA.

Motion(Hittle/Wilkins)Approve Chapter 29 Draft as corrected subject to the inclusion of examples. Carried(8,0,0)

Program Subcommittee (Friedman)

Friedman announced that starting with this annual meeting all seminar presentations will be recorded and offered on video. Presenters are required to download presentations to ASHRAE provided computers. At this meeting presenters were offered the option whether to have their presentations recorded.

Friedman recommended that TC4.1 continue to offer basic seminars at annual winter meetings.

2004 Annual meeting (Nashville) A symposium co sponsored by TC9.2 is being presented. Two papers for this symposium were sponsored by TC9.2, one paper by TC4.1 and one paper was provided by ASHRAE staff.

2005 Meeting (Orlando) Three Technical Papers from RP1199 on Residential Load Calculation Procedures will be presented in a technical session. Presentation may be poster or oral. Reviewers for the papers must be prompt in order for the papers to be presented.

Comment [GAF1]: What is a technical session? I am familiar with Symposia, Poster Sessions, Seminars and Forums, but I don't know what a Technical Session is? Is this statement correct?

Motion (Friedman/Barnaby) That TC4.1 sponsors a seminar on “Examples Using Current Load Calculations Methods.” Three presentations to be 1) Heat balance method

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(Pederson) , 2) RTS method (Bruning) and 3) a comparison (Spitler) as the #1 priority for Orlando. Glenn Friedman will serve as seminar Chair. Carried (8,0,0)

2006 Annual meeting (Denver) a seminar on the newly released Handbook of Fundamentals Chapter 29 is planned. Wingfield to present on Systems Effects (Section 9)

Motion (Friedman/Wingfield) That TC4.1 sponsors a seminar on "European Load Calculation Methods and Standards." This is the TC4.1 #2 priority for Orlando. Branislav Todorovic will contact and arrange for presenters. If Glenn Friedman is not around to serve as Chair for this seminar, Brian Rock offered to serve as Chair. Carried (8,0,0)

CLOSED SESSION CONVENED BY DOEFFINGER.

Wilkins presented the 1311 TRP Project Evaluation Subcommittee (PES) recommendation that the project be awarded to the University of Waterloo.

Motion (Wilkins/Hittle) Accept the recommendation of the PES for 1311 TRP to award the project to the University of Waterloo. Carried (7,0,0)

Meeting was adjourned by Doeffinger at 4:10 pm.