AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS,INC.

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TC/TG/TRG MINUTES COVER SHEET

(Minutes of all meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG No. 8.4

TC/TG/TRG TITLE: Air-to-Refrigerant Heat Transfer Equipment

DATE OF MEETING: June 26, 2012 LOCATION: San Antonio TX

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| --- | --- | --- | --- | --- |
| Member present | Year APP TD | Voting Member / Officer Absent | Year APPTD | Ex-officio members and additional attendance |
| Chad Bower (Chair & Research) (VM) | 11 | Jun Wang (Secretary) (VM) | 10 | Chen-Xian Lin |
| Lorenzo Cremaschi (membership) (VM) | 10 | Yunho Hwang (VM) | 08 | Ming Zhang |
| Yi Qu (VM) | 11 | Omar Abdelaziz (VM) | 10 | Kasey Worthington |
| Samuel Yanamotta | 11 | Ebrahim Al-Hajri (webmast) (VM) | 10 | Michael Taras |
| Ram Narayanamurthy (Handbook) | 09 | Edward Vineyard (program) | 09 | Umair Surani |
| Stanislav Perencevic (VM) | 11 | Gary Price (VM) | 11 | Bob Jones |
| Mark Johnson | CM | Man-Hoe Kim (VM) | 09 | Matt Baker |
| Liping Liu | CM | Kevin Dunshee (VM) | 11 | John Hipchen |
| Bill Fox | CM |  |  |  |
| Ray Rite | CM |  |  |  |
| Jay Matter | CM |  |  |  |
| Hyunyoung Kim | CM |  |  |  |
| S.A. Sherif | CM |  |  |  |
| Sankar Padhmanabhan | CM |  |  |  |
| Steve Hancock | CM |  |  |  |
| James Schaefer | CM |  |  |  |
| Kent Perkins | CM |  |  |  |
| Gordon Struder | CM |  |  |  |
| Amir Jokar | CM |  |  |  |
| Kevin Mercer | CM |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC Chairman: Bryan Becker

TAC Section Head: Steve Duda

Professional Development: Gordon Holness

LIAISONS:

RAC Research: David Yashar

Program: Lynn Werman

Standards: Michael Martin

Handbook: Russ Lendeman

Special Pubs: Julia Keen

Chapter Technology Transfer: Nathan Hart

STANDARDS STAFF LIAISON: Claire Ramspeck

TECH SERVICES/RESEARCH STAFF LIAISON: Mike Vaughn

DRAFT Minutes

ASHRAE Technical Committee 8.4

Air-To-Refrigerant Heat Transfer Equipment

San Antonio, TX

Tuesday, June 26, 2012

**I CALL TO ORDER**

Chad Bowers, the Chair of TC8.4, called the meeting to order at **3:38 p.m**.

II SELF INTRODUCTIONS AND ATTENDENCE:

Everyone present introduced themselves, and signed a roster sheet.Chad Bowers identified 4 out of 11 voting members for quorum, which did not confirm the quorum. There were also 18 corresponding members and 3 guests in attendance.

II ROSTER CHANGE

Jay Matter will be the new research sub-committee chair.

III NOTE FROM SECTION HEAD:

The Section Head informed that the activities sheet needs to be filled out and submitted. He clarified the reasons on the speaker and student registrations. Mark Johnson asked how much the registration of the speakers and students will actually impact and if it will be monitored. Liaison explained that the registrations will be monitored. He conveys that the conference registrations of the speakers and students aim to bring the full registration cost down for all the other members.

CEC will pay more attention to the speaker evaluation score evaluation. CEC will offer training session at the winter meetings for everyone who want to attend in order to improve the presentation/speaking techniques.

**IV REPORT FROM PROGRAM LIAISON**

None at this time.

VI MINUTES OF PREVIOUS MEETING

A comment from Lorenzo Cremaschi, the last section on the meeting minutes of Chicago must be removed. It was copied and pasted from the last document by mistake.

Chad will send out the revised meeting minutes for email voting.

**VII Chairman’s notes on TC chair meeting:**

Chad read the minutes from the TC chair handout distributed during the breakfast chair meeting.

1. **The ASHRAE Logo**

ASHRAE Logo was presented in detailed during the TC chair training session on Sunday morning.

1. **ASHRAE Research track in Denver**

ASHRAE Research track will be included in the program in Denver. CEC encourages submitting conference session /seminars of recent or on-going research projects at ASHRAE.

1. **Encourage nomination for the Hightower Award Recipient**
2. **12-13 Roster update process and process for adding provisional CMs**

Jay Matter will be the new research sub-committee chair for TC 8.4.

Two provisional CMs, Kasey Worthington and John Hipchen, were added to the TC8.4.

1. **TC/TG/TRG Chair’s Training Workshop Reminder**

Sunday June 25, 9:45-10:45a there was a TC Chai training workshop. This particular session included at the beginning a brief presentation of the ASHRAE Logo and a presentation on the speaker evaluation procedures from the Conferences & Exhibitions Committee (CEC),

1. **Special effort to welcome new members, and visitors (potential members), particularly international members, to TC meetings**

Potential new members for your committee have been encouraged to drop-by your meeting in San Antonio. As a result, please make a special effort to recognize and warmly welcome all visitors to your meeting – A TC can never have too many willing and able volunteers.

1. **Useful TC/TG/TRG Chair Information on ASHRAE website**

Information for TC/TG/TRG chairs can be found on the Technical Committee page of the ASHRAE website at the following link: <http://www.ashrae.org/technology/page/104>.

The TC/TG/TRG Manual of Procedures (MOP) has been revised to include a new committee type, Multidisciplinary Task Groups (MTGs). MTGs are different from TCs, TGs, and TRGs. The objective of the MTG is to first try and better coordinate and focus the activities of the affiliated TC and non-TC groups (EHC, REF, SSPCs, outside groups, etc) that make-up the MTG on the task for which the MTG was created without duplicating the functions of a TC or TG so that the task can be completed as efficiently as possible. In special cases, MTGs may be authorized by TAC to assume some TC/TG functions, such as research, if it is deemed necessary to better complete their task assignment. Since the need, purpose, and progress of each MTG is reassessed and reaffirmed by TAC each year, there are no term limits for the MTG Chair, Vice Chair, Members and Alternates.

1. **MTG on Low GWP refrigerants**

Multi Task Group on low GWP Refrigerants task. TC8.4 liaison with that MTG is Vikrant.

1. **Upcoming Program Submission Dates**

**Dallas Meeting** - January 26-30, 2013

* Conference site live: January 22, 2012
* Conference Paper abstract/Conf. Paper session proposals due March 19, 2012
* Conference Papers submitted for review are due early July 2012
* Dallas seminar and forum session proposals are due early August 2012
* Conference Website: <http://www.ashrae.org/dallas/>

**Track 1** HVAC&R Systems & Equipment

**Track 2** HVAC&R Fundamentals and Applications

**Track 3** Standards, Guidelines, and Codes

**Track 4** Energy Conservation

**Track 5** Refrigeration

**Track 6** Large Building Design

**Track 7** Facility Management; Operations, Tech. and Energy Improvements

**Track 8 –** Special Interest Track

1. **Option for TC Subcommittee Meetings via Conference Calls and Web Meetings**

More and more TCs are taking advantage of a new Society service that allows TCs to hold subcommittee meetings by phone and/or web. Many TCs are finding this to be a more efficient way for them to conduct subcommittee business and it also allows TC members that can’t travel to meetings on a regular basis a way to still contribute to the TC. Such a change can also eliminate potential conflicts with the TC’s program sessions at Society meetings. Please pass your conference call/web meeting/webinar requests on to the Manager of Research and Technical Services, Mike Vaughn, at [mvaughn@ashrae.org](file:///C:\Users\Chad\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\WCBW1NSY\mvaughn@ashrae.org) or [MORTS@ashrae.net](file:///C:\Users\Chad\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\WCBW1NSY\MORTS@ashrae.net)

1. **Upcoming Conferences:**

* **Purdue Summer Conferences 2012**

21st International Compressor Engineering Conference,

14th International Refrigeration and Air Conditioning Conference

2nd International High Performance Buildings Conference

July 16-19, 2012, on the campus of Purdue University in West Lafayette, Indiana

<http://engineering.purdue.edu/Herrick/Events/2012>

* **COBEE (2ND International Conference on Building Energy & Environment)**, August 1-4, 2012, Millennium Harvest House, Boulder CO <http://www.colorado.edu/cobee2012>
* **ICCCS 2012- International Symposium on Contamination Control 2012**, September 3-7, 2012, ETH Zurich, Switzerland http://icccs.net/
* **12th Cryogenics 2012, IIR International Conference,** September 10-14, 2012,Dresden, Germany, [http://www.icaris.cz/conf/Cryogenics2012](http://www.icaris.cz/conf/Cryogenics2012)) - Abstract deadline January 31, 2012
* **Cold Climate HVAC 2012**, November 12-14, 2012, Calgary, Alberta, Canada. http://www.ashrae.org/events/page/coldclimate2012

1. **REMARKS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS**

RESEARCH LIAISON REPORT

David Yashir introduced himself and informed that he is available for any question or information

LIAISON REPORTS FROM OTHER COMMITTEES

None at this time.

1. **SUBCOMMITTEE REPORTS**

# Program Subcommittee–Ed Vineyard

1. **General Comments and upcoming conferences:**

* Dallas Meeting - January 21-25, 2013
  + Resubmit the seminar on the impact of low GWP refrigerant on HXs. Ed Vineyard said his group in ORNL may have something to talk about it. Chad Bowers also mentioned they might have something too. Lorenzo and Mark Johnson also expressed the interest or potential. Mark Johnson volunteered to chair this seminar. Sam YanaMotta might have an additional speaker for this topic.
* Denver Meeting
  + Research focus for Denver. Seminar in Denver “Effect of frosting and water condensation on mc hx”. Chair: Sankar Padhmanhan. Potential presenters: Mark Johnson, Chad Bower, Lorenzo Cremaschi, Andrew Sommers
* Seminars and conference papers should provide 6 objectives and 10 Q&A. Note these requirements are not necessary for a forum.

1. **Programs for San Antonio meeting:**

TC 8.4 submitted 3 seminars/conference papers/forum requests for San Antonio meeting and none was accepted. The TC informed the program liaison that two seminars in San Antonio were sponsored by the TC8.4 and these seminars were not discussed by the TC8.4. In addition the TC did not have previous knowledge of these two seminars. The liaison clarified on the procedures for the conference session and he will bring this issue to the CEC.

1. **New Program Ideas**:

* None discussed. The TC could not vote but decided to keep the same list discussed in Chicago for further revisions at the Dallas meeting. The topic discussed at the Chicago meeting were as follows:
  + Heat Exchanger corrosion topic: Ed Vineyard reminded that the work has been done so it could be resubmitted. Then TC had a discussion whether to resubmit it in the fourth time. Committee members pointed out that we had a good discussion on this topic during TC 8.4 research meeting and we could address this topic internally. Then Chad Bowers proposed not to submit it in fourth time
  + Conference/ technical paper: David Zietlow proposed “Optimization technique for heat exchangers”. It could be seminar, but paper is preferred.
  + Forum: fouling on indoor air-handler due to more fresh air according to the new energy standard for building. Chad is working on a RTAR.
  + Indoor evaporator requirements for low energy home and high moisture removal (Ram Narayanamurthy). Ram further explained this is about impact from high latent load (i.e. 60% latent load) and low air flow ( 200 CFM/ton) on Indoor heat exchanger design

# Research Subcommittee – Chad Bowers

**Active Research Projects**

Research Project #1564 - Measurement of Oil Retention in the Microchannel Heat Exchangers

Contractor: Prof. Cremaschi, Oklahoma State University

Project Monitoring Subcommittee: Samuel Yana Motta, Amir Jokar, Yi Qu, Omar Abdelaziz

Prof. Cremaschi is moving forward with testing. Condenser testing under way and results will be presented to the PMS in August. One possible bottleneck is obtaining samples of microchannel evaporators.

Research Project #1535 - A Heat Transfer and Friction Factor Correlation for Low Air-side Reynolds Number Applications of Compact Heat Exchangers

Contractor: Prof. Cheng-Xian (Charlie) Lin

Project Monitoring Subcommittee: Chad Bowers, Mark Johnson, Omar Abdelaziz, Xudong Wang

Prof. Lin and ASHRAE finalized contract June 14th so work has only just begun. Prof. gave a brief update. He is currently focusing on the Literature Survey. One possible bottleneck will be obtaining the samples necessary for the testing outline in the statement of work. Looking for suppliers to provide test coils.

**Potential Research Projects**

Work Statement #1645 “Development of New Accelarated Corrosion Test for All-Aluminum Microchannel and Tube and Fin Heat Exchangers” – David Ellerbrock

Work Statement returned from RAC with comments

Confirmed with Xudong Wang, that AHRI will contribute 15% (~$27k) to the project

Work Statement #1577 “Tube to Tube Conduction Effects” Chad will email it out to the committee as it needs to be accepted by RAC prior to Feb 15th, or it will be shelved.

RTAR on “Design of Super Compact Heat Exchangers Optimized Using Biological Principals” Shaobo Jia resent copy to research chair and copies distributed to committee very little feedback. Chad will email the committee for one last opportunity to voice interest. If no interest, this idea will be taken off of the list of potential RTART – may be taken to ASHRAE as an Innovative Research Grant

RTAR on “Investigation of Airside Fouling on Outdoor Condensing Heat Exchangers” – Chad Bowers – Implementing suggestions. Liping Liu has agreed to take over work on the RTAR

**New Ideas**

Daryl Erbs working on charge minimization RTAR for 10.7, TC8.4 will co-sponsor if enough emphasis on air to refrigerant heat exchangers

Jay Matter suggested an RTAR on charge sensitivity in reversible systems with one microchannel and one round tube coil. TC8.11 is currently working on something very similar and it would likely be better for them to write the RTAR and TC8.4 to co-sponsor.

Shankar suggested an RTAR on creating design guidelines for heat pipes, this could go into the Handbook. Shankar has agreed to write the RTAR

##### Standards Subcommittee

* Standard 33 – Ram Narayanamurthy , Method of Testing Forced Circulation Air Cooling and Air Heating Coils.

Status: Completed. A subcommittee of six members (Ram Narayanamurthy, Gary Price, Jose Perez Galindo, Byron Hagan, Shaobo Jia, Bill Fox). Last meeting was held on 6/27/11. It was sent out for public review.

* Standard 25. Gary Price. A subcommittee of three members met. Progresses have been made and more work is scheduled during the next 6 months.
* Standard 20 - Method of testing for Air Cooled Condensers

Gary Price: A subcommittee of two members (Gary Price, Ray Rite) is active. Progresses have been made.

There is going to be a teleconference on this standard on August 2. Mark emphasizes that this teleconference must be routed officially through ASHRAE in order to discuss the standard

# Membership

The TC is in good shape with respect to VMs for the next two years. However, in two years this TC will have 4 VM rolling off.

# Handbook Subcommittee – Ram Narayanamurthy

No activity currently. Next chapter is due to two years from now.

Bill Fox will be the new handbook subcommittee chair.

# IX Web Page

The website is in good shape and includes the new logo.

Please be sure to check the website for TC information.

# X OLD BUSINESS

None.

**XI NEW BUSINESS**

None.

XII ADJOURNMENT

Meeting adjourned at 5:35pm.