

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

1791 Tullie Circle, NE / Atlanta, GA 30329
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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 25, 2013 LOCATION: Denver, CO

Member present	Year APP TD	Voting Member / Officer Absent	Year APP TD	Ex-officio members and additional attendance
Chad Bower (Chair) (VM)	11			John Hipchen
Lorenzo Cremaschi (Vice Chair) (VM)	10	Kevin Dunshee (VM)	11	Steve Duda
Gary Price (VM)	11	Edward Vineyard (program)	09	Laura Petrillo-Groh
Yi Qu (VM)	11	Man-Hoe Kim (VM)	09	Jun Lee
Stanislav Perencevic (VM)	11	Jun Wang (Secretary) (VM)		Eric Berg
Vikrant Aute (VM)	12			Vijay Suri
Omar Abdelaziz (VM)	10			Yirong Jiang
Ebrahim Al-Hajri (webmast) (VM)	10			Zan Liu
Mark Johnson	CM			Javier Brugos
Bill Fox	CM			Matt Baker
Ray Rite	CM			Richie Mohan
Hyunyoung Kim	CM			Bruce Nelson
Cheng-Xian Lin	CM			Rusty Tharp
Sankar Padhmanabhan	CM			
Kasey Worthington	CM			
Gordon Struder	CM			
Pradeep Shinde	CM			
Jon Hartfield	CM			
S.A. Sherif	CM			
Rick Larson	CM			
Liping Liu	CM			
Daryl Erbs	CM			
James Schaefer	CM			
Kishan Padakannay	CM			
Kent Perkins	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: _____ Rick Larson _____

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
DENVER, CO
TUESDAY, JUNE 25, 2013

I CALL TO ORDER

Chad Bowers, the Chair of TC8.4, called the meeting to order at **3:30 p.m.**

II SELF INTRODUCTIONS AND ATTENDANCE:

Everyone present introduced themselves, and signed a roster sheet. Chad Bowers identified 8 out of 11 voting members, which confirmed the quorum. There were also 17 corresponding members and 13 guests in attendance.

II ROSTER CHANGE

Lorenzo Cremaschi will be the new Chair.

Jun Wang will be Vice Chair after serving as Secretary for over 3 years.

Shenghan Jin will be Secretary.

Chad Bowers will be Research Subcommittee Chair

III NOTE FROM SECTION HEAD:

The Section Head noticed this TC meeting is well attended and thanks everybody for attending. He also offered any assistance if needed.

IV REPORT FROM PROGRAM LIAISON

It was noted that presentation containing videos can be difficult to get working correctly as there is no easy method of uploading this kind of supporting material in the current process for presentation submittal

VI MINUTES OF PREVIOUS MEETING

Meeting minutes from the TC 8.4 meeting in Dallas were voted on, and approved by the four Voting members (7-0-1).

VII Chairman's notes on TC chair meeting:

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

1. 13-14 Roster Access and Distribution

Remember, the 2012-2013 Roster is in effect until after the Denver meeting. The new rosters for 2013-2014 will go into effect on July 1, 2013 based upon the update information that each TC turned into their section head last January.

By now, each TC chair should have received a PDF & MS-Excel file of their 2013-2014 roster from staff for distribution to the TC membership. In addition, each member can view all of the rosters of their committees on the ASHRAE Website. Go to www.ashrae.org, click on the "Membership" tab in the header, click on "Manage Your Membership" text in the left sidebar, and log in (if you have not logged in lately, you might need to set up a new username and password). Click on the "Biographical Record System" link. Now, you should see your current "bio info". Click on "My Committees" on the left sidebar; all of the committees you are a member

of will appear. Click on the "blue" roster text at the left hand side of a committee to reveal the roster with linked contact information. Make sure everyone on your committee also knows how to access the roster.

2. TC/TG/TRG Chair's Training Workshop Reminder

Sunday June 23 9:45-10:45a in the Governor's Square 14 Room – Concourse Level – Plaza Building – Sheraton Denver Hotel. As with the Breakfast meeting, both the Chair and Vice-Chair are expected to attend; attendance will be tracked so that we can assess who has been trained. Bring questions - if you need an answer, it's quite likely others also need the same answer. This session will focus on general TC operations and the role of your Section Head. An "On the Horizon" slide will mention a new Section Head Tool and Activity forms for use in Denver. A few slides will also provide a listing of informational resources for the TC Chairs which includes updated ASHRAE website links.

3. Location of Section Head Mailboxes at this Society meeting & Free WiFi Access at this Society meeting

Just outside ASHRAE Headquarters Office (Sheraton Denver Hotel – Tower Building – Majestic Level – Vail Room). Also, all meeting attendees staying at the Sheraton Denver Hotel this meeting can have free WiFi access in their sleeping rooms if they ask for it at check-in.

4. Useful TC/TG/TRG/MTG Chair Information and forms on ASHRAE website

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

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 to 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 also 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.

5. 2013-2014 Hightower Award Nomination Process and Deadline

Nominations for the 2013-2014 George B. Hightower Technical Achievement Award are due to you Section Head by **September 1, 2013**. The award recognizes outstanding technical leadership and contributions on a TC/TG/TRG during the past Society year, excluding research and standards activities. Please go to the Technical Committee page of the ASHRAE website at the following link under the "Procedures and Forms..." heading:

<http://www.ashrae.org/standards-research--technology/technical-committees>

2013-2014 Service to ASHRAE Research Award Nomination Process and Deadline

Nominations for the 2013-2014 Service to ASHRAE Research Award for TC volunteer efforts in research are due to RAC research liaison by **September 30, 2013**. Please go to the Research page of the ASHRAE website at the following link under the "Research Grants and Awards" heading: <http://www.ashrae.org/standards-research--technology/research>

6. New ASHRAE Award Summary Sheet for use by TC members

TAC has developed a new summary sheet of ASHRAE awards that TC members are likely to be eligible for in order to make it easier for deserving members to be recognized.

7. New TAC Presentation template for TC members to use with local Chapter

The new presentation template that allows TC members, without a lot of effort, to give a presentation to their local chapter on TAC and the TCs in general and to also customize a few

slides with information specific to their own TC or TCs is now available. The template is posted on the Technical Committee page of the ASHRAE website for download

<http://www.ashrae.org/standards-research--technology/technical-committees>

8. New MTGs that have been formed

TAC approved the formation of the following new Multidisciplinary Task Group (MTG):

MTG.CCDG, Cold Climate Design Guide

Scope: MTG.CCDG will coordinate TC/TG/TRG technical activities to help support the technical basis, development, and publication of a “Cold Climate Design Guide” in conjunction with REHVA and SCANVAC. Responsibilities include the development of supporting research, presentations, and content for the “Cold Climate Design Guide” special publication.

The chair and vice chair of the MTG are Frank Mills and Bjarne Olesen, respectively. For more information on this MTG and the six other MTGs, please go to the MTG section on the following web page: [http://www.ashrae.org/standards-research-- technology/technical-committees](http://www.ashrae.org/standards-research--technology/technical-committees)

If your TC would like to have a voting representative on a particular MTG, please contact the ASHRAE Manager of Research and Technical Services, Mike Vaughn, at MORTS@ashrae.net.

9. Employment Discipline added to ASHRAE BIO Online Input Form

A new input field titled Employment Discipline has been added to the ASHRAE online member (BIO)graphical input form and **TAC would like ALL TC members to selfdeclare their employment discipline prior to the start of the new Society year on July 1, 2013** by going to the Members Only section

(<https://eweb.ashrae.org/eweb/DynamicPage.aspx?Site=ASHRAE&WebKey=8396a37a-9fc2-4f50-9332-5eebebe73494>) and entering their employment discipline information. The link should take you directly to the screen, which is located under demographics. You will need your login and password to enter. Employment Discipline is located in the third section.

10. E&P Beta Test #4 TC meetings being Held in Denver

The 4th beta test of Electronic and Present (E&P) meetings, which allows some TC members to participate in the TC meeting from a remote location electronically, will occur in Denver and the following TCs have agreed to participate in this test: TCs 1.5, 1.8, 2.2, 2.8, 5.8, 7.9, 8.8, 8.12, and 9.3 (PMS RP-1603). The chairs of those TCs participating should provide to their Section Head with feedback on their E&P meeting experience before TAC meets on Wednesday morning, 6/26.

11. TC Volunteers willing to Support Content Development and Quality Control for Society Technical Program at Society Meetings

Provide to your Section Head after each Society meeting a list of qualified volunteers from your TC that are potential Technical Session chairs and reviewers of session papers that are related to TC's scope for use by the Conferences & Exhibitions Committee (CEC) in developing technical content for future technical programs. CEC is particularly in need of paper reviewers for the **1st International Conference on Energy and Indoor Environment for Hot Climates**, February 24-26, 2014, in Doha, Qatar. Interested TC members should contact Tony Giometti at Giometti@ashrae.org before the end of July.

12. CEC proposed or recently implemented technical program changes

TC Program Subcommittee Chair Training in Denver Please notify your program subcommittee chair that CEC will be offering training to them as follows in Denver: Tuesday, 6/25, 11:15 a.m. – Noon, Plaza Court 3 room (Concourse Level) – Plaza Building – Sheraton Denver Hotel Program Focus on Research Going Forward at Each Annual Meeting Starting at the Denver Conference, the Society's annual conference program will have a special emphasis on research.

13. New TC Activity Form

TAC has developed a new TC activity form that they would like all TCs to use at this meeting to report to their section head. Attached is a copy of this form for your information and note taking. Section heads will provide an electronic copy of the form for you to complete and return to them.

14. New Sign-in Sheet

TAC has also developed a new sign-in sheet for tracking attendance at TC meetings. Attached is a copy of this new form for your information and note taking. Hardcopies of the form are also available in the TC bins outside ASHRAE HQ office here in Denver (See Reminder #3 for location)

15. Report on TC/TG/TRG websites in Section (SHs need to report to TCs which sites are not up to date.)

Is your committee website up to date? If not, please ask your webmaster to at least post the latest minutes and the Denver meeting times and agenda. If your website has been neglected, add an action item for this meeting to appoint a responsible member of the TC/TG/TRG who will bring it back to life. This form of communication is critical to the efficient operation of your committee, and for attracting new members.

TAC and the Electronic Communications Committee (ECC) recently posted a webinar recording on how to set-up and maintain a basic TC website using the ASHRAE server and TC website template at the following link: <http://media.ashrae.biz/webinar/TrainingWebinar.wmv>

16. 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 Denver. 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.

17. Thank You Letters to Employers

ASHRAE President – Tom Watson – has offered to send letters to the employers of TC volunteers this year thanking them for supporting their employee's service on an ASHRAE TC during Society year 2012-2013. If requested by the volunteer, the letter will be sent to his/her employer by the end of July or early August and the volunteer will receive a copy. Please let your committee members know that they will be receiving an email about employer thank you letters in early July with details on how to request a thank you letter.

18. 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 or MORTS@ashrae.net

19. Upcoming Program Dates

New York Meeting – January 18-22, 2014

- Conference Site Live: June 3, 2013
- Web Site Opens for Seminar and Forum proposals – June 3, 2013
- Final Conference Papers Submitted for Review – July 3, 2013
- Technical Papers final review due August 12, 2013
- New York Seminar and Forum Session Proposals are due August 12, 2013
- All presentation files (PPT) due online – January 3, 2013
- Conference Website: <http://www.ashrae.org/newyork/>

Seattle Meeting - June 28-July 2, 2014

- Conference Paper Abstracts due September 23, 2013
- Technical Papers Due for Review – September 23, 2013
- Acceptance/Reject Notifications issued for Conf. paper abstracts – Oct. 7, 2013

- Conference Site Live: January 6, 2014

- Web Site Opens for Seminar and Forum proposals – January 6, 2014
- Final Conference Papers Submitted for Review – January 9, 2014
- Seattle Seminar and Forum Session Proposals are due February 13, 2014
- Technical Papers final review due February 25, 2014
- All presentation files (PPT) due online – June 2, 2014
- Conference Website: <http://www.ashrae.org/seattle/>

The Conferences and Expositions Committee (CEC) oversees ASHRAE's annual and winter conferences and other specialty conferences and expositions globally. The CEC continually works to improve the conference experience for all attendees. To help keep a "pulse" on the technical issues facing professionals in the HVAC&R marketplace, the CEC seeks ideas for tracks for the Seattle and annual and winter conferences beyond as well as topics for specialty conferences from TC members. Please submit your suggestions to ASHRAE Staff member Tony Giometti (Giometti@ashrae.org)

20. Retiring TC/TG/TRG Chair Certificates

TC chairs that are completing their terms as chair at this Society meeting will be presented with a certificate of appreciation. Please coordinate with your Section Head as to when and where at the meeting you would like to be presented with the certificate (Section meeting or TC meeting).

21. Upcoming Workshops and Conferences:

- **ECOS 2013**, July 16-19, 2013 - Guilin, China. Endorsed by ASHRAE. Contact ecos2013-china@iet.cn or <http://tinyurl.com/d6s3gnk>.
- **CIAR XX**, July 22-23, 2013 - Cartagena, Colombia. Endorsed by ASHRAE. Contact ciar2013@acaire.org or <http://tinyurl.com/CIAR2013>.
- **IBPSA 2013 (13th International Conference of the International Building Performance Simulation Association)**, Aug. 25-30, 2013 - Chambéry, France. Endorsed by ASHRAE. Contact: <http://www.bs2013.fr/>
- **AHR Expo-Mexico 2013**, Sep. 23-25, 2013 – Mexico City, Mexico. Endorsed by ASHRAE. Contact www.ahrexpomex.com/eng
- **5th International Conference – Solar Air Conditioning**, Sep. 25-27, 2013 - Black Forest, Bad Krozingen, Germany. Endorsed by ASHRAE. Contact: <http://solaircon.com/>
- **7th CLIMAMED Mediterranean Congress of Climatization**, Oct. 3-4, 2013 - Istanbul. Endorsed by ASHRAE. Contact 90 3124194571, ttmd@ttmd.org.tr, or www.climamed.org.
- **ICEBO (13th Annual International Conference for Enhanced Building Operations)** Oct. 8-11, 2013 Montreal, QB, Canada. Contact <http://ietc.tamu.edu/home> or <http://icebo.tamu.edu/home>
- **IAQ 2013: Environmental Health in Low Energy Buildings**, Oct. 15-18, 2013 Vancouver, BC, Canada. Contact ASHRAE at 800-527-4723, ext. 1158, IAQ2013@ashrae.org, or www.ashrae.org/IAQ2013.
- **iMechE BIM Seminars: Manufacturing with BIM: Ensuring Cost-Effective Integration**, Oct. 17, 2013 Manchester, UK. Contact: <http://events.imeche.org/>
- **The 12th Asia Pacific Conference on the Built Environment**, Nov. 5-7, 2013 Shangri-la Hotel Makati, Manila, Philippines. Contact: <https://www.ashrae.org/membership--conferences/conferences/ashrae-endorsedevents/2013/12th-asia-pacific-conference-on-the-built-environment>
- **iMechE BIM Seminars: Manufacturing with BIM: Ensuring Cost-Effective Integration**, Nov. 7, 2013 London, UK. Contact: <http://events.imeche.org/>
- **1st International Conference on Energy and Indoor Environment for Hot Climates**, February 24-26, 2014, Doha, Qatar. Contact: www.iea-hpc2014.org or <http://ashraem.confex.com/ashraem/ihc14/cfp.cgi>
- **49th AiCARR International Conference of 2014**, February 26-28, 2014, Rome, Italy.

Contact: <https://www.ashrae.org/membership--conferences/conferences/ashraeendorsed-events/2014/49th-edition-of-aicarr-international-conference-of-2014>

• **2014 International Sorption heat Pump Conference (ISHPC2014)**, Mar. 31 – Apr. 3, 2014, College Park, MD, USA. Contact: <http://www.ceee.umd.edu/events/ISHPC2014/>

• **2014 ASHRAE High Performance Buildings Conference – San Francisco, CA USA**

• **2014 ASHRAE/IBPSA-USA Joint Building Simulation Conference – Atlanta, GA USA Sep. 10-12**

• **Efficient, High Performance Buildings for Developing Economies** — April 24 - 25, 2014 - Manila, Philippines Conference Paper Abstracts due July 12, 2013.

<http://ashraem.confex.com/ashraem/dev14/cfp.cgi>

• **11th International Energy Agency (IEA) – Heat Pump Conference**, May 12-16, 2014, Montreal, Canada. Contact: www.iea-hpc2014.org. See attached call for papers pamphlet. Paper Abstracts due date extended to June 30 and if someone needs more time that will be ok too.

22. TC 5.2 in need of Reviewers and Contributors for Duct Design Guide special publication

TC 5.2 needs people to contribute and review the new ASHRAE Duct Design Guide special publication, which is in the final stages of development. The purpose of the guide is to combine all of the practical aspects of duct design including layout, fan, acoustics, pressure drops, and other relevant aspects for the air delivery system directed to practicing consulting engineer.

Please contact Larry Smith, incoming chair of TC 5.2 (tc0502@ashrae.net or Larry.Smith@lindab.com) if interested in helping.

VIII. REMARKS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS RESEARCH LIAISON REPORT

None at this time

LIAISON REPORTS FROM OTHER COMMITTEES

None at this time.

IX. SUBCOMMITTEE REPORTS

PROGRAM SUBCOMMITTEE– OMAR ABDELAZIZ for ED VINEYARD

1. General Comments and upcoming conferences:

- Denver Meeting (this meeting)
 - Seminar on Effect of frosting and water condensation on microchannel heat exchangers. Chair: Sankar Padhmanhan. Presenters: Mark Johnson, Chad Bower, Lorenzo Cremaschi, Andrew Sommers
The seminar was well attended and appeared to be very successful

- New York meeting (January 2014)
 - Discussed sponsoring a workshop on heat exchanger design for low GWP fluids. If it is not possible to do a workshop it will be submitted as a Seminar
 - Conference paper session with TC8.11. Liping Liu and Chad Bowers have conference papers submitted for review that could be grouped together as a conference paper session that TC 8.4 could sponsor

- Seattle meeting (June 2014)

Voted 7-0-1 to co-sponsor a mini-conference spearheaded by MTG-Low GWP

2. New Program Ideas:

- High latent load evaporators
- A follow up seminar with more work on evaporator refrigerant distribution and condensate management

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 provided a verbal update. Test facility has been modified to provide better conditioning capability and the PI has agreed to conduct additional testing. PMS recommended that the PI be granted a 9 month no-cost extension as additional testing is being performed. TC voted 6-0-2 to approve no cost extension (Chair and PI abstained from voting)

- 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

Professor Lin provided an update. Testing is underway with first samples. Uncertainty analysis is underway. PI still working with suppliers to obtain more sample heat exchangers.

Potential Research Projects

- RFP #1645 “Development of New Accelerated Corrosion Test for All-Aluminum Microchannel and Tube and Fin Heat Exchangers” The RFP went out and bid(s) were received and reviewed by the PES. David Ellerbrock, (chair of the PES) and the PES had some comments that they wanted addressed prior to making a recommendation to RAC. David has submitted these comments to Michael Vaughn for him to provide to any bidders and they will then have a chance to respond to the PES. If the responses are sufficient the PES will then make a recommendation to RAC for them to vote on in their next meeting.
- WS #1705 “Investigation of Airside Fouling on Outdoor Condensing Heat Exchangers”

Liping Liu submitted WS 1705 and it was returned with comments by RAC. Liping will update based upon RAC’s comments and it will be resubmitted once approved by TC and co-sponsorship is approved by TC8.11

- Charge Minimization

Daryl Erbs submitted RTAR #1706 for TC10.7. It was returned with comments. The comments will be addressed in a works statement. TC8.4 will co-sponsor if enough emphasis on air to refrigerant heat exchangers. Once works statement is completed, it will be resubmitted to RAC

New Ideas

- Reverse flow in microchannel heat exchangers suggested by Bill Fox – Chad Bowers agreed to work on RTAR
- Acoustic issues in microchannel heat exchangers – Sankar Padhmanabhan agreed to work on an RTAR
- Screening of heat transfer and pressure drop characteristics of low GWP refrigerant in small diameter tubes. Omar Abdelaziz and Yi Qu agreed to work on an RTAR
- Unconventional materials for heat exchanger construction (i.e. polymer heat exchangers)
- Active heat transfer enhancement (i.e. Sandia Cooler)
- TC1.3 working on RTAR for NH3 in U-bends. TC8.4 may be interested in co-sponsorship

STANDARDS SUBCOMMITTEE – GARY PRICE

Standard 33 – Method of Testing Forced Circulation Air Cooling and Air Heating Coils.

Completed. Needs to be sent out for public review

Standard 25 – Forced and Natural Convection Air Coolers

Should go out for public review prior to New York meeting

Standard 20 - Method of testing for Air Cooled Condensers

Work is moving forward. Gordon Struder proposed looking into Standard 64 in parallel.

HANDBOOK SUBCOMMITTEE – RAM NARAYANAMURTHY (BILL FOX PROVIDED UPDATE)

3 Chapters in 2012 Systems and Equipment

Need to consider how to add work done on frosting, microchannel evaporators, and heat pump coils.

Bill Fox will be the new handbook subcommittee chair.

MEMBERSHIP

New Roster takes effect July 1.

Liping Liu volunteered to be chair membership subcommittee

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

It was requested to add an official time during the TC meeting to allow MTG liaisons to provide updates. This was approved by a vote of 6-0-1

MTG Cold Climate was formed. TC 8.4 voted 7-0-1 to be a part of this MTG and has appointed Sankar Padhmanabhan as the liaison.

XII ADJOURNMENT

Meeting adjourned at 6:00pm.