

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, N.E./Atlanta, GA 30329
404-636-8400

TC/TG/MTG/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/MTG/TRG No. 1.3 DATE 07/4/15

TC/TG/MTG/TRG TITLE Heat Transfer and Fluid Flow
DATE OF MEETING 30 June 2015 LOCATION Atlanta, GA

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Amir Jokar	2013	Ebrahim Al-Hajri	2011	Lindsey King
Steve Brown	2011	Branko Korenic	2012	S.A. Sherif
Stanislav Perencevic (NQ)	2012	Rick Couvillion	2013	Will Asher
Ray Rite	2015	Liping Liu	2014	Art Geisler
Joe Huber	2013	Zahid Ayub	2011	Icksoo Kyung
Lorenzo Cremaschi	2014			Nataraj Hariharan
Satheesh Kulankara	2015			Omar Abdelaziz
Achim Gotterbarm (NQ)	2014			Man-Hoe Kim
Michael Ohadi	2012			Kashif Nawaz
Tony Jacobi	2012			Yang Zou
				Justin Kauffman
				Vikrant Aute
				Yirong Jiang
				Sankar Padhmanabhan
				Vishaldeep Sharma
				Stefan Elbel
				Yang Zou
				Pat Geoghegan
				Israel Martinez
				Andreas Knoepfler
				Steffen Rieger
				Melanie Derby
				Florian Hudelmaier
				Jay Kohler
				Jay Jayaraman



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DISTRIBUTION

<i>All Members of TC/TG/MTG/TRG plus the following:</i>	
TAC Section Head:	Nadar R Jayaraman
TAC Chair:	Eric W Adams
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Arthur L Giesler, Van D Baxter, Arsen K Melikov, S A Sherif, Darin W Nutter
Manager Of Standards	Stephanie Reiniche
Manager Of Research & Technical Services	Mike Vaughn



**ASHRAE TC 1.3 – Heat Transfer and Fluid Flow
Annual Meeting, 30 June 2015**

Call to Order and Reading of TC 1.3 Scope (Amir Jokar)

Chair Amir Jokar called the meeting to order at 1:00pm. The title, purpose and scope of the TC were read.

Introduction of members and guests (Amir Jokar)

Introductions around the room followed.

Establishment of Quorum (R. Rite)

10 of 13 voting members who count against quorum (2 of 2 NQ) were present, so a quorum was established. Voting members present included: Rite, Cremaschi, Gotterbarm, Kulankara, Jokar, Jacobi, Huber, Brown, Ohadi, Perencevic,

Voting members absent were: Liu, Korenic, Ayub, Al-Hajri

Voting members and the year they roll off are shown below:

Ray Rite (2018)

Liping Liu (2018)

Lorenzo Cremaschi (2018)

Achim Gotterbarm (NQ) (2018)

Satheesh Kulankara (2018)

Stanislav Perencevic (NQ) (2016)

Tony Jacobi (2016)

Branko Korenic (2016)

Michael Ohadi (2016)

Rick Couvillion (2017)

Joe Huber (2017)

Amir Jokar (2015)

Ebrahim Al-Hajri (2015)

Zahid Ayub (2015)

Steve Brown (2015)

Review/Approve Minutes from Chicago, January 2015 (R. Rite)

Motion: Approve minutes as submitted. (Kulankara/Cremaschi) 9-0-0-4-CNV

Liaison/Chairman Comments (Amir Jokar)

It was reported that changes have been made in how one may become a provisional member of a TC. You may now go to the ASHRAE website and join a TC.

Website changes: the TC template will be streamlined in fall.

Every TC committee member will get an e-mail alias account.

Research: RAC will lean toward more support of research projects that address residential energy consumption.

In Atlanta, there was a forum on how to improve the ASHRAE research process: Lorenzo reported that each step (RTAR, WS, Bid, ...) was covered and comments were requested. Comments only collected at this point by RAC.

ASHRAE offers thank you letter for employers: President Thomas Phoenix will do this.

Hightower Award for research: Please let Amir know if you have nominations to offer.

CEC:

The 2016 meetings in Orlando and St. Louis will have tracks called Fundamentals and Applications.

There is a policy that invited speakers will have their registration fees waived. For every conference up to five invited speakers will be funded.



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Amir asked if conference paper reviewers could be given some recognition such as being recognized in the ASHRAE Honors and Awards Program. CEC will consider this. Send Amir name if you want to be a reviewer.

Atlanta Statistics:

Conference Papers: 153 abstracts submitted, 133 approved, 74 papers received, 67 accepted (90%)
Technical Papers: 52 submitted, 36 accepted (69%); Seminars: 144 submitted, 66 accepted (63%);
Workshops: 15 submitted, 5 accepted (32%); Forums: 10 submitted, 4 accepted (40%)

ASHRAE Biography update: Please update employment discipline, only about 1/3 have.

Amir offered a special welcome to new members and guests and urged them to get involved.

MTGs: There is a new one: "Operations and Maintenance Activities That Impact Energy Efficiency"

Art Geisler (Research Liaison)

Residential is a standing committee and ASHRAE is looking for residential projects. To promote this, ASHRAE is teaming with ACCA and others. Research money is tight in 3/4Q15. Nine months from now, Tech should have funds. Prof. Kato from Japan will be new liaison starting 7/1. If you need Art, send to vice chair of RAC alias.

Program Subcommittee (Lorenzo Cremaschi)

Atlanta:

Seminar 29: State of the Art Heat Exchangers on Monday morning. The seminar was well attended. This seminar was approved on the second try.

Orlando:

Request for co-sponsor: UN/IIR inviting TC 1.3 to co-sponsor seminar for Orlando. Goal is to bring the "Highlights of the 24th Intl Congress of Ref. in Japan. Chair Van Baxter, Speakers: Hrnjak(new developments in microchannel heat exchangers), Domanski(summary of results), McLinden(screening and analysis LGWP ref), Lundquist(role of heat pumps)

Conference Paper Session by Grant-in-Aid(GIA) Students. Steve Eckels was pursuing, but have not heard anything about this. Joe had sent email to GIA students but no reply.

New Ideas:

"Innovative Design, Materials, and Manufacturing techniques for heat/mass exchangers." Omar to chair, speakers: Mike Ohadi, Man-hoe Kim, Vikrant Aute, Patrick Geoghegan

Conference Paper (co-sponsor with 8.4): Lorenzo has one on ref-oil MCHX, Omar might have one on high temp ref., need by July 6.

Motion: TC 1.3 to sponsor "Innovative Design, materials, and Manufacturing techniques for heat/mass exchangers." (Rite/ Cremaschi) (8-0-0-5-nvc)

Motion: TC 1.3 to co-sponsor IIR seminar in Orlando (Rite/Perencevic) (8-0-0-5-nvc)

MTG sponsored track in St. Louis on Low GWP Refrigerants. Omar encouraged TCs to sponsor sessions. TC 1.3 might have a couple of conference papers ready by September deadline.

Handbook Subcommittee (Amir for Rick Couvillion)

TC 1.3 is responsible for five Fundamentals chapters 3, 4, 5, 6, and 33. Need more volunteers for Ch. 3 and 4. Ch. 5 has many members. Needs to be voted on by 6/16. Kashif (Ch. 5 chair) had a proposal to



re-write and make it easier to read and update in the future. Mike Ohadi had concerns about maintaining volunteers to get this significant effort done. Should take care of comments first by September, after that consider re-organization. New on-line updates can allow for the re-organization later on. Results of 1352RP (Ammonia) and 1394RP (CO2) will be added to this revision.

Membership Subcommittee (Achim Gotterbarm)

VM rolling off: Jokar, Al-Hajri, Ayub, Steve Brown, Kulankara (due to Kauffman rolling on)

New: Gorgy, Eckels, Kim, Kauffman (as chair)

New secretary: Gorgy will be secretary starting 7/1.

Webmaster/Journal/Insights Reports (Amir for Lindsey King)

Web page is up to date. New template is coming.

Section Head Comments (Jay Jayaraman Section 1): Issues on web site: none. Reminded the TC that chair decides who takes what position on committee. No vote necessary.

Research Subcommittee (Joe Huber)

Research Chair's Breakfast Notes:

61 active projects worth \$10M, since July 2014: 11 completed, 11 new ones approved, 13 TRPs, no projects on hold but might be in fall.

RTARs: 3 accepted, 4 accepted with comment, and 3 rejected; Workstatements: 4 accepted, 2 accepted with conditions, and 2 rejected; URPs: 4 under review.

There will be changes to funding and project monitoring procedures. The motivation is to improve the process for monitoring with a better connection between payments and progress and the ability to stop projects if required in a more timely fashion. (This is a reaction to a \$500k project that should have been stopped but was not due to communications issues.)

Milestone charts with assoc. costs listed as percentages will be required in Workstatements. Bidders must put milestones with \$ costs in bids. Evaluation of milestones will be part of monitoring: questionnaire sent to PMS for approval of milestones, payment for each milestone only after approval. Currently payments are at regular intervals. In the future, will be tied to approved milestones. Tech still deciding if this is for everything or only larger projects. Also, any scope or wording change needs TC approval and budget changes require notification of Mike Vaughan and RAC approval.

Comments: Response to a rare problem. Hope RAC is mindful of the size of a project and milestones. What about no cost extensions? (Jacobi) Concern about more work for PMS members. (Jokar) Experimental research is not predictable especially if something breaks. Is not issue with SW or guideline projects. (Huber)

Joe Huber will put together comments to pass on to RAC.

Initiative 1B in Strategic Plan: Identify energy savings resulting from standards/research. What benefit do standards and research projects have on industry? ASHRAE will take this to consulting engineers to show the value to get more buy in. Need to make sure results of research projects get in handbooks.

Detailed training (Webinars and live) for RTARs, PMS will be provided soon

TC 1.3 Research Status:

1556-RP "Characterization of Liquid Refrigerant Flow Emerging From a Flooded Evaporator



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Tube Bundle" (PI: Steve Eckels, Kansas State University - PMS: Jon Hartfield, Zahid Ayub, Sathesh Kulankara, Satyam Bendapudi) Will Asher presented on Sunday. Starting first bundle with R123. Significant differences with R134a. Are working through next steps.

RTAR 1683 "Experimental Evaluation of Two-Phase Pressure Drop and Flow Pattern in U-Bends with Ammonia" This was sent to VMs in December and approved.

It was then sent to 8.4 for co-sponsorship beginning of May but e-mail ballot did not receive any responses. 8.4 will vote later today. *(After 1.3 meeting, did vote to approve.)*

RTAR "Spray Evaporation on Enhanced Tube Bundles with Low GWP Pure Ref. and Ref./Miscible Oil Mixture" – Amir Jokar/Joe Huber working on it. They may have something by August. 8.5 will co-sponsor. Low GWP MTG will also be asked to co-sponsor as well. (Abdelaziz is 1.3 liaison and Ken Schultz is alternate)

RTAR 1737: "Study of the Effects of Modifying the Wetting Surface of Evap Condensers in Ref. Systems for Performance Improvement" (Lead Author: Amir Jokar) This was rejected by RAC. Kashif will pick this up and try to re-submit.

No further ideas at this time.

New Business (Amir Jokar): No new business.

Schedule Next Meeting (Amir Jokar)

Tuesday, 30 June in Atlanta at 1-3:30PM.

Adjournment (Amir Jokar)

Motion to adjourn at 2:50PM

Submitted by R. Rite as draft on 7/4/15.

Revised and re-submitted per comments by R.Rite on 1/18/16.

Approved 1/26/16.