

**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. 5.5 DATE 2015-3-27

TC/TG/MTG/TRG TITLE Air to Air Energy Recovery  
DATE OF MEETING January 27, 2015 LOCATION Chicago

MEMBERS PRESENT	YEAR APPTD	MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT
<b>Mr Ronnie R Moffitt, PE, VM Chair</b>		<b>Peter Grinbergs VM non-quorum</b>		
<b>Mr Paul L Pieper, Eng, PE, VM Vice Chair</b>		<b>Bede Wellford VM non-quorum</b>		
Matthew Friedlander, Secretary				
<b>Helen Davis, VM Programs</b>				
John T Dieckmann Research				
<b>Drake Erbe VM</b>				
<b>Xuan Le, VM</b>				
<b>Dr. Gursaran D Mathur, PE, VM Handbook</b>				
<b>Tom Rice VM</b>				

**DISTRIBUTION**

<i>All Members of TC/TG/MTG/TRG plus the following:</i>	
TAC Section Head:	Mr Kenneth C Peet kcpeet1@gmail.com
TAC Chair:	Dr Eric W Adams eric.adams@carrier.utc.com
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Mr James A Arnold, PE <a href="mailto:jim@haslettmechanical.com">jim@haslettmechanical.com</a> Mr Ricardo Esbri, PE esbri@hotmail.com Mr Patrick CMarks, PE patrick.c.marks@jci.com Dr Piotr A Domanski piotr.domanski@nist.gov Mr Rick A Larson rick.ashrae@gmail.com Mr Michael R Vaughn MORTS@ashrae.net
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn
TC 5.5 Membership	<a href="mailto:TC0505@ashrae.net">TC0505@ashrae.net</a>

Meeting convened 3:35 pm

Roll was called and quorum was established.

Pieper Motion Davis second to approve the minutes

Chairman's remarks. TC 5.5 was scored at 5.7. TC's are now able to hold seminars within the TC meetings. Participants are reminded to re-acquaint themselves with the ASHRAE Code of Ethics.

Multi-Disciplinary Group OMG being formed – Management of operations and Maintenance Section.

All of Section 5 is not currently shown on the list of stakeholder sections. Chair requested feedback and members expressed that TC 5.5 should be involved. There were no volunteers to act as representatives to the MDG. This was communicated to Section 5 Head Ken Peet.

Peet also spoke to the option that seminar proposals that are sponsored by more than one TC are more likely to be accepted.

Chair reported that ASHRAE has developed an instructional presentation providing guidance on writing standards for mandatory language to be used in code-intended standards. A macro also has been developed to find instances of non-code-appropriate language in draft standards.

Chair pointed out that the TC 5.5 90.1 liaison position is currently vacant, although Drake Erbe has acted as such on an ad hoc basis. 90.1 liaisons are generally called to report at the beginning of 90.1 meetings on Saturday, Sunday and Monday mornings. Drake Erbe reported that 90.1 liaisons are expected to provide two-way communication between the relevant TCs and the 90.1 SSPC. Formally-appointed liaisons are on the SSPC roster and thus have access to the relevant SSPC documents and to all meetings.

Bede Moved Pieper second appointment of Friedlander as 90.1 Liaison. 7 yes 2 abstain

#### Handbook – Prakash Damshala / G D Mathur

Damshala reported that the deadline for submittal of revisions to the Chapter is July 6, 2015. The revised chapter is to be published in the 2016 Handbook, which coincidentally will be the final handbook to be published in paper.

Prakash forwarded a list of candidate topics to be added to the chapter, this list will be circulated to the TC membership for input and for validation that the topics are within the scope of the TC. It was discussed that a number of technologies use energy wheels to condition air in ways that are similar but not identical to classic ERV, and that there may be differences of opinion as to what applications are in the scope of the chapter.

Mathur stated that he will set up bi-weekly conference calls for review of the Chapter text.

## Program – Helen Davis, SC Chair

TC 5.5 sponsored a very-well attended seminar at this Annual Meeting 1/27.

Conference Papers have been accepted for the Summer Meeting in Atlanta. Authors are Paul Pieper (Outside Air, Economizers and Exhaust Air Energy Recovery), Ronnie Moffitt (Dedicated Outdoor Air Systems with DUAL Energy Recovery Applied with Distributed Sensible Cooling Equipment) and Mike Scofield (A VAV System HEAT Recovery Economizer to Furnish Free Humidification and Exceed Standard 62.1 Ventilation Requirements in Winter). Paul and Ronnie's are in the high performing buildings track and Mike's is in the indoor air quality track.

Davis reported that a seminar with two speakers has been proposed for presentation in Atlanta in the Indoor Air Quality track: John Fischer on "Ensuring Health and Safety when Applying Total Energy Recovery in a Critical Environment", Hoy Bohanon and Nathan Ho on "exhaust energy, requirements, and other energy techniques".

Other possible future seminar subjects identified included ERV system maintenance potentially with TC 7.3, and seminars co-sponsored with sections interested in advanced dehumidification (e.g. 8.12, 6.7) for presentation at Orlando. Davis will correspond with those sections.

Helen reviewed the tracks for Atlanta and Orlando.

Bede Moved Pieper second approval of program as proposed. 6 yes, 1 abstain

## ALI

Pieper reported having delivered one of the two extant short courses on ERV

Pieper reported that the course presented 1/25/15 had 52 attendees. He intends to develop a third ERV short course for ERV controls, hopes to have a draft for TC input by the summer meeting. He intends to provide a draft of that third course to the TC at or by the summer meeting. He reported as well that he, Harriman and Bohannon have been invited to present at Okinawa military base.

## Research – John Dieckman

Dieckmann reported on discussion and proposal by the SC. Three draft RTARs had been previously proposed by past Research SC Chair Bob Besant, and these had been discussed along with others as below.

1. Expression for re-capture rates for specific contaminants (as previously proposed by Besant); the SC did not recommend action on this RTAR.
2. A new small-scale MOT for wheels using transient response (as previously proposed by Besant); the SC did not feel this was an appropriate topic for an ASRHRAE-sponsored RTAR at this time.

3. Research to investigate the degree to which performance of large-scale exchangers can be extrapolated or scaled from the performance of similarly-constructed smaller exchangers; scope could include plates, pipes and wheels. Dieckmann circulated a draft RTAR. Moved Erbe Seconded Wellford to endorse development of this RTAR, 8 yes, 0 no, motion passes unanimously.  
Davis will explore possibility of AHRI co-funding. Dieckmann will engage SC to refine the RTAR Request form.
4. Humidity-transfer membrane air-to-water desiccant run-around exchanger systems -- development of metrics for performance characterization and MOT. This is of interest but of lower priority than items #3 and #5.
5. Development of appropriate algorithms for simulating ERV performance that can be incorporated in energy-modelling software. Dieckmann circulated a draft RTAR. Moved Wellford Seconded Mathur to endorse development of this RTAR, 8 yes, 0 no, motion passes unanimously.  
Davis will explore possibility of AHRI co-funding. Dieckmann will engage SC to refine the RTAR Request form.

TC 5.5 is Co-sponsoring a design guide for DOAS, Dieckmann reported as a member of the PMS that the current contractor seems to be making good progress.

Tom Rice reported that TC 9.10 is working on an RTAR "Cross-contamination in Energy Recovery Devices in Laboratory Exhaust Systems" with target co-sponsors of 62.1 and 90.1.

Tom Rice suggested as an RTAR topic purge efficiency in wheels at variable airflows.

SC members were designated as Philip LePoudre Xuan Le, Paul Pieper, Tom Rice, and John Woollett. The next deadline for RTAR submission is May 1 (or 15).

#### Standards - Friedlander

It was reported that fixed-mass alternating-flow heat exchangers are starting to enter commercialization, and it was questioned whether ASHRAE 84 can be used to characterize performance of this. Discussion followed. It was suggested this could be topic for future research or for a presentation of the issues. There was no direct recommendation with regards to the Standard. Friedlander reported that the Standard was most recently published in 2013, and thus in principal requires affirmation/revision or withdrawal in 2018.

#### Membership

Chair announced the following membership changes to be effective July 1, 2015:

Moffitt rolls off as a VM and will take over Program SC Chair.

Pieper moves to Chair.

Davis moves from Program SC to Secretary.

Friedlander rolls off as Secretary and becomes a VM.

## 90.1 Update

Drake Erbe reported on developments at 90.1 of interest to the TC:

Addendum ar: definition of energy recovery effectiveness. The addendum would replace in 6.5.6.1 the term “energy recovery effectiveness” with “sensible energy recovery ratio” and “enthalpy recovery ratio”. Members are encouraged to submit comments.

Addendum aw is an attempt to remove the current exception from ERV requirements where no single exhaust point comprises more than 75% of the total system exhaust. Members are encouraged to submit comments.

Erbe reported that the inclusion of TMY3 weather data in 90.1 will require re-evaluation of all the energy efficiency measures such as ERV and economizers.

Erbe strongly encouraged active involvement by TC 5.5 members in the 90.1 Mechanical SC needs.

Chair will send out reminder of review of addendum to committee when they are up for review.

Meeting was adjourned at 5:59.

### Other Attendees

Kristin Sullivan Trane

Jaroslav Chkup 2VV s.r.o.

John Bloemer AprilAire

Johnny Glisson Mitsubishi Electric

Philip LePoudre Venmar CES

Brandon Damas HTS

David Baird Valent Air

Solveig Brandvold dPoint

Scott Laurila Greenheck

Doug Tucker Mitsubishi Electric

Mark Piegay Kathabar

Chris Barr dPoint