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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 No. 6.7 DATE June 28, 2016

TC TITLE Solar Energy Utilization

DATE OF MEETING June 28, 2016 LOCATION St. Louis, MO

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Marija S Todorovic	2014	Vinay Ananthachar	2014	Harvey M Sachs (Research Liason)
James Leidel	2014	Keith W Bryan	2014	Farzin Rad (Guest)
Constantinos (Costas) Balaras	2014	Reda Djebbar	2014	Kushagra Juneja (Guest)
Khalid Nagidi	2014	Gaylen V Atkinson	2014	Gabrielle McMorrow (Guest)
Svein O Morner	2014	Ram Narayanamurthy	2014	
Janice K Means	2014	Eleftherios Bourdakis	PCM	
Michael P Case	PCM	Elena Dascalaki	PCM	
Ongun Berk Kazanci	PCM	Mohammad Abu Rafe Biswas	PCM	
Tim Merrigan	CM	Richie Mittal	PCM	
Richie Mittal	PCM	Ali Rashid Al-Alili	CM	
Cary Smith	CM	Seenu Sundararajan Pillai	CM	
		William P Bahnfleth	CM	
		Didier J Thevenard	PCM	
		Joseph M Brillhart	CM	
		Mehdi Zeyghami	PCM	
		Andrew D Chiasson	CM	
		Charles J Cromer	CM	
		David W Gerlach	CM	
		Myrna Dayan	CM	

		Richard B Hayter	CM	
		Brian P Dougherty	CM	
		Mark A Hertel	CM	
		Kelton Friedrich	CM	
		Pamela M Immekus	CM	
		Joshua D Kading	CM	
		Andrew I Lowenstein	CM	
		Sanford A Klein	CM	
		Wilfred Laman	CM	
		Lucio Mesquita	CM	
		Filippos Mprezas	CM	
		Etizaz Shah	CM	
		Ming Qu,	CM	
		T Agami Reddy	CM	
		Vijay K Suri	CM	
		William A Schulte	CM	
		Athar Syed	CM	
		Christian Vachon	CM	
		Cenk Cy Yavuzturk	CM	
		Michael R Wassmer	CM	
		Yanda Zhang	CM	
		Scott E Wayland	CM	
		Yongfang Zhong	CM	
		Bede W Wellford	CM	

DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:

TAC Section Head: Mark Hegberg	SH6@ashrae.net
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.) Research - Harvey Sachs Standards – Cyrus Nasser Chapter TT - Maggie Moninski Handbook System Vol - Nicolas Lemire	RL6@ashrae.net SL6@ashrae.net CTTC6@ashrae.net HBS3@ashrae.net
Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net

“These draft minutes have not been approved and are not the official, approved record until approved by this committee.”



DRAFT MEETING MINUTES
ASHRAE TC 6.7 – SOLAR ENERGY UTILIZATION
Annual Meeting – June 28, 2016
St. Louis, Missouri, USA

Call to Order/Quorum/ Introductions/Code of Ethics Statement

- 1) The meeting was called to order by Chair Marija Todorovic at 1:15 pm.
- 2) An agenda was distributed and an attendance sheet was circulated (copy attached). The following voting member attendance and end of current term were noted:

Dr. Svein Morner	6/30/2016	Present
Dr. Costas Balaras	6/30/2016	Present Non Quorum
Mr. Khalid Nagidi	6/30/2017	Present
Mr. James Leidel	6/30/2018	Present
Dr. Marija Todorovic	6/30/2016	Present
Ms. Janice Means	6/30/2018	Present
Mr. Vinay Ananthachar	6/30/2018	Absent
Dr. Reda Djebbar	6/30/2018	Absent Non Quorum
Mr. Gaylen Atkinson	6/30/2018	Absent
Mr. Ram Narayanamurthy	6/30/2016	Absent

- 3) Six voting members were present including one non-quorum member, therefore a quorum (6/9) was met.
- 4) Self-introductions were made by all attendees.
- 5) The ASHRAE Code of Ethics was read by Costas Balaras.

Agenda Review

The agenda was reviewed and the Chair called for additions or changes.

New secretary: Vinay Ananthachar will not be able to attend meetings and need a new TC Secretary. Michael Case will take over as the new Secretary.

No other changes were requested.

Minutes

- 1) Complete minutes were not available from the January 26th, 2016 Winter Meeting in Orlando. Partial notes were read by the Chair but no minutes were

approved. An effort will be made to track down the minutes following the meeting.

Chair's Report

- 1) Roster: Chair discussed the current roster, as well as ingoing and outgoing members and chairs.

The chair noted that Dr. Costas Balaras will be the incoming TC 6.7 Chair, beginning July1, 2016.
- 2) Information from TC Chairs' meeting: Chair reported on notes from Chair breakfast meeting. See attached handouts for agenda and notes. Chair made a case for digitization of old ASHRAE Handbooks, citing initial program that started to do this but was suspended.
- 3) TC 6.7 Sponsored Sessions: Chair listed the titles of seminars 20 (Computer Aided Renewable Energy System Design with Case Studies, held Monday at 8:00 am) and 64 (N-ZERO from Foundation to Financing: Residential Buildings, to be held at 11:00 am on Wednesday.)
- 4) Leaving Chair remarks – Program & Research need cooperation with other TCs.

Subcommittee Reports

1) Handbook Report – Costas Balaras

Costas reported that the Subcommittee meeting was held on Monday evening; 8 people attended.

S37 “Solar Energy Equipment” 2016 HVAC Systems & Equipment has been published

A35 "Solar Energy Use" 2019 HVAC Applications The Chapter has an on-going long list of items. Although the hardcopy version will be due in 2018, any new material could be considered for the electronic version. May want to have new items.

There is a new online review process that should make things easier and more streamlined. Costas did not manage to attend the training session, since the room was fully packed. There will be a training session on the online handbook review process in Las Vegas. Costas briefly reviewed the ongoing action items and encouraged all to follow up and start transforming the ideas into actions. Do not want to leave this for last minute. In particular, there are a couple of interested volunteers (Jim Leidel and Ongun Kazanci) to work on the BIPV section.

Action item: Jim Leidel – coordinate with Ongun Kazanci to distribute work.

F34 material. Janice submitted a short paragraph on renewables, since there was no time to work on more material for the upcoming 2017 edition. Janice

will work with TC 2.8 HB Subcom Chair if there is an interest to provide more for the electronic version or the next cycle.

Cary Smith reported on his attendance at the TC 2.5 Committee Meeting. There will not be a new Climate Change chapter in the Fundamentals HB until the next cycle. An outline has been approved by TC 2.5. Cary offered that we will be happy to assist TC 2.5 in the development in regard to renewable energy systems. Our offer was accepted.

Svein Morner will take over as the new Handbook Subcommittee chair as of July 1, 2016.

The HB Subcommittee draft minutes are attached.

2) Research Report– J. Leidel

Jim apologized for missing the previous meeting. He supplied a rough outline by email for consideration of future meetings. There is a portal where all can communicate by TC. Marija asked that Jim put together a list of historical RTAR work. Jim reported that there is a list of all RTARS funded. He will supply the URL. Janice Means added what was discussed at yesterday's meeting, which follows:

Harvey Sachs, Research Liason – Each RTAR needs a champion. Make sure to send RTARs, even if incomplete, to Harvey prior to submitting. Projects involving multiple TCs are generally viewed more favorably. RTARS that address needs of practitioners, such as producing guidelines or a design guide, may be better received than more academic work such as might be done by a National Laboratory. Deadlines for RTAR submission fall in August, December, and the Spring. See the ASHRAE website for exact dates. Most RTARS are conditionally accepted with a list of questions. Each comment must be addressed to go forward. There is a standard RTAR form to fill in on the ASHRAE web site.

The following research ideas were discussed:

Mike Case – USACE – micro-grids (spiders)/ distributed integration/

Cary Smith – design manual for integration

Grid security (PV w/ flow batteries - resiliency, way to monetize

Peak loads/demand charges/ combine packaged storage units w/PV

Product to get heating, electricity and cooling (night) using PVs (Orgun) integration to building systems, e.g., with chilled beam, etc.

Several TCs w/ Building integrated PV w/IEC

New material in Handbooks

Simulation tool for solar PV (allow to select for products to optimize) TC 4.7(ENERGY CALCULATION) has gotten a lot of modules for TRANSIS (modules from TRANSIS to ENERGY PLUS)

Marija planning to put together RTAR – will send title.

Jim will flesh out ideas and send out.

Marija emphasized need for responsible person for each RTAR with a due date included.

3) Program - Khalid Nagidi

Abstracts due for Las Vegas Seminar on August 8, 2016.

Have received volunteers to be presenters.

- Svein Morner
- Andy from Svein's office
- Jim Leidel
- Marija Todorovic
- Khalid Nagidi (will confirm)
- Mike Case – will work with colleague at Corps of Engineers to get a presentation.
- Farzin Rad

Target presentation of two seminars.

Costas will chair one seminar and Khalid (if not a speaker).

All potential speakers should send Title, abstract, Learning objective, and two Q&As, as soon as possible.

Long Beach

- Due date for abstract August 29th.
- Marija intends to submit a conference paper.
- Ogut may submit one on PVT with Thermal Storage
- All should look up due dates

Khalid – read tracks for Long Beach.

Future topics – lots of interest in integrating solar with other technologies.
General discussion of other topic areas followed.

4) Standards – Svein Morner

No report

5) Website - Svein Morner.

There is a new web site. Can sign up to be in emailing list. Discussed how to get and use email list. Janice clarified that when someone signs up, it automatically emails TC Chair. Svein encouraged everyone to sign up when the get back from conference. All agreed to use old list in parallel while transitioning to new one. Svein mentioned that he has received requests from outsiders to post links on web site. Costas proposed that any requests should come to the committee for consideration. Svein will send to the TC members the 7-8 links that he has already received.

Action item – renew list. Add to Las Vegas Agenda.

Marija – recommend that those who propose adding links sign up and be offered corresponding membership.

Liaison Reports from Society & Other Organizations

- 1) Cary Smith reported information on the IAPMO USEHC code committee and about reviewing and commenting on the code revisions. Has yet to receive a representative from TC 6.7 on proposed MTG ASEC – Standard Method for Quantified Waste Energy and Renewable avoided source energy consumption.
- 2) **Action Taken: Marija appointed herself as TC 6.7 representative and Jim Liddell as alternate.**

Old Business

- 1) Name change for TC 6.7. This was discussed in Orlando and a decision was made. However, since there were no minutes, for the record the item was reintroduced for consideration.

Costas Balaras moved and Janice Means seconded to **Change the name of TC 6.7.**

Discussion: possible names: Khalid- “Solar and other Renewable Energies” Marija – “Solar and Integrated Energy Systems.” Janice – “Solar and Other Renewable Energy Systems.”

Vote called on considering the name change.

Results: 5 – 1 – 0– CV

Motion passed.

Janice Means moved and Costas Balaras seconded to

Change TC 6.7 name to “Solar and other Renewable Energies.”

Discussion: Will have to also consider necessary changes to the TC Scope

Vote called.

Results: 4 – 1 – 1– CV

Motion passed.

Action: Costas will circulate existing TPS (scope) and find out if tied to existing name change in next two weeks. Name change proposal will need to be submitted to Section head and TAC for approval.

New Business

- 1) Welcomed new Chair, Costas Balaras. Thanks to departing Chair, Marija Todorovic for her service.

Adjourn

- 1) Meeting adjourned at 3:20 pm

Next face to face meeting will take place during the Winter Conference in Las Vegas

<u>ST. LOUIS</u> NAME	TCG.7 Position	Affiliation	Email
Costas Balaras	VM	NOA	costas@noa.gr
Michael (Mike) Case	provisional	US Army CELL	michael.p.case@usace. army.mil
Svein Mørner	webmaster	SEG	smorner@sustameng. com
Farzin Rad	CM?	Union Gas	frad@uniongas.com
JANICE K. MEANS	Voting Member	Lawrence Tech. UNIV.	jmeans@LTU.EDU
TIM MERRIGAN	CM	NREL	tim.merrigan@nrel.gov
RICHE MITTAL	CM	OVERDRIVE	RICHE MITTAL@GMAIL.COM
JAMES LEIDEL	VM	OAKLAND UNIV.	leidel@oakland. edu
Ogon B. Kazanci	Prov. CM	Tech. U. of Denmark	onka@byg.dtu.dk
KHALID NAGIBI	EXECUTIVE PROGRAM	ETIC GROUP	KHALID.NAGIBI@ETIC.GR
Marija Todorovic	Chair	Univ. of Belgrade	mtodor@unibg.ac.rs
Kushagra Juneja	PROV. CM	DESIGNZ OCCUPANCY SERVICES LLP	KJUNEJA@ DESIGNZ OCCUPANCY COM
CARY SMITH	CM	SOUND GEOTECHNICAL CORP.	desmith@sisna. com
Gabrielle McMorrow	guest	University of Wyoming	gmemorr1@uwyo.edu

deresut@unf.it

AGENDA
SECTION TC/TG/TRG CHAIR'S BREAKFAST MEETING
2016 Annual Meeting
St. Louis, MO

Sunday, January 26th
6:30 A.M. – 8:00 A.M. EDT

Marriott St. Louis Grand – ALL Section meetings located on either CP2 or CL level

Section 1, Majestic H Room – CP2	Section 2, Landmark 2 Room - CL
Section 3 Landmark 3 Room - CL	Section 4, Landmark 1 Room - CL
Section 5, Majestic G Room CP2	Section 6, Landmark 6 Room - CL
Section 7, Landmark 7 Room - CL	Section 8, Majestic C Room – CP2
Section 9, Majestic F Room – CP2	Section 10, Landmark 5 Room - CL

- I. CALL TO ORDER
- II. ROLL CALL AND INTRODUCTIONS (5 minutes)
- III. ADDITIONS AND/OR CHANGES TO THE AGENDA (5 minutes)
- IV. REVIEW MINUTES/NOTES, SPECIAL ASSIGNMENTS, ACTION ITEMS FROM LAST MEETING, AND NEW ISSUES (30 minutes).
New Assignments:
A. **To be determined**
- V. IDENTIFY SHARED OPPORTUNITIES AND CHALLENGES FOR SECTION (10 minutes).
Society Strategic Plan? Research Strategic Plan?, Handbook workshop recommendations?, etc.
- VI. REVIEW SECTION MBOs (10 minutes).
Discuss section and TC MBOs for this year and coming year and how the section can work together to address them or establish section and TC MBOs if not already done.
- VII. DISTRIBUTE WRITTEN INFORMATION AND REQUESTS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS (30 minutes).

Additional Potential Announcements/Reminders:

A. **NEW!**

1. Discuss and confirm that TGs, TRGs, and MTGs in section will continue in 16-17 Society Year
2. 16-17 Rosters Access & Distribution
3. MTGs that have been formed since Orlando Meeting – MTG.IAST & MTG.OBB
4. Other potential new MTGs being considered by TAC – MTG.ACR (Air Change Rate)
5. Updated TC Website template – Initial Feedback or Suggested Improvements, if any?
6. Oversight of TC websites with regard to Technical Bulletins and alignment with Society
7. Additional TC E-mail Position Aliases Now Available
8. New Restructured TC MOP (Manual of Procedures) to be issued after St. Louis Meeting
9. Distribution of TC minutes changed in TC MOP
10. How to Import Your TC Roster Information into MS-Outlook
11. Updated TAC Presentation Template Available for TC members to use with local Chapter
12. Basecamp Information from ECC
13. Conference & Exposition Committee (CEC) On-going Issues with Program Presentation Submissions

B. **AT THIS MEETING**

1. On-Site Training Options
2. RAC Seminar 47 – Update on the ASHRAE Innovative Research Grant Program and Future Plans for It - Monday 11 am
3. Location of Section Head Mailboxes & Free Wi-Fi Access at this Society Meeting
4. RPM (Remote Participation Meetings) – Formerly known as E&P meetings
5. Retiring TC/TG/TRG/MTG Chair Certificates

Conferences and Expositions Committee Information Items for Technical Committees
Annual Meeting, St. Louis 2016

1. 2017 ASHRAE Winter Conference in Las Vegas, NV: <http://www.ashrae.org/LasVegas>
 - a. Conference Papers are due on July 8, 2016
 - b. Seminar, Forum, and Workshop proposals are due August 8, 2016
 - c. Confex opens for presentation uploads December 2, 2016
 - d. All presentations due online January 2, 2017.
 - **Track 1: Systems and Equipment**
Track Chair: Chuck Curlin Email: ccurlin@shultzeg.com
 - **Track 2: Fundamentals and Applications**
Track Chair: Michael Collarin Email: Michael.Collarin@parsons.com
 - **Track 3: Water-Energy Nexus**
Track Chair: Gary C. Debes Email: gcdebes@verizon.net
 - **Track 4: Commercial and Industrial IAQ**
Track Chair: Kevin Marple Email: kmarple@benzco.com
 - **Track 5: Mission Critical Design and Operation**
Track Chair: Carrie Anne Crawford Email: carriecrawford@eeace.com
 - **Track 6: Effects of Climate Change on HVAC&R**
Track Chair: Rocky Alazazi Email: mralazazi@yahoo.com
 - **Track 7: Energy Efficient Industrial Buildings**
Track Chair: Corey Metzger Email: corey.metzger@resourcece.com
 - **Track 8: Building Operation and Performance**
Track Chair: Cynthia Moreno Email: cindym@tmmechanical.com
2. 2017 ASHRAE Annual Conference in Long Beach, CA: www.ashrae.org/LongBeach
 - a. Conference Papers Abstracts due August 29, 2016
 - b. Conference Papers due December 9, 2016
 - c. Seminar, Forum and Workshop proposals are due February 6, 2017
 - d. Confex opens for presentation uploads May 1, 2017.
 - e. All presentations due online June 2, 2017.
 - **Track 1: Fundamentals and Applications:**
Track Chair: Frank Schambach Email: frankschambach@mindspring.com
 - **Track 2: HVAC&R Systems and Equipment:**
Track Chair: Jennifer E. Leach Email: pennst8jen@yahoo.com
 - **Track 3: Refrigeration:**
Track Chair: Vikrant Aute Email: vikrant@umd.edu
 - **Track 4: Building Life Safety Systems:**
Track Chair: Robert Alan Neely Email: alan_neely@pghcoming.com
 - **Track 5: Controls – Smart Building Systems and the Security Concerns as Technology Emerges:**
Track Chair: Melanie Derby Email: derbym@ksu.edu



ASHRAE Summer Meeting, St Louis
DRAFT MINUTES

TC 6.7 Solar Energy Utilization HANDBOOK Subcommittee
Monday June 27, 2016
6:30 pm – 8:30 pm 132 (1)

1. Call to order/ Introductions

Costas Balaras (NOA)
Janice Means (Lawrence Tech Univ)
Svein Morner (Sustaineng)
Khalid Nagidi (EMC Group)
Eleftherios Bourdakis (Tech Univ of Denmark)
Ongun Kazanci (Tech Univ of Denmark)
Cary Smith (Sound Geothermal)
Marija Todorovic (Univ of Belgrade)

2. Approve minutes from Orlando

3. Old Business

A. Ch 37 "Solar Energy Equipment" 2016 HVAC Systems & Equipment (Balaras)

✓ Published

B. Ch A35 "Solar Energy Use" 2019 HVAC Applications (Balaras)

➤ Ongoing work (electronic version or next round edition)

AI-1: Costas Balaras reported that the new online review process "ASHRAE Authoring Portal" was announced in St Louis. The short orientation organized was impossible to attend since the room was packed and was not possible to attend. Will hold another session in Las Vegas. There is time to get acquainted with the process till the next round edition.

New material should follow the existing format, terminology etc. All interested should consider comments/edits to existing material and new input.

i) *Review chapter and identify sections/topics that need changes, updates (ALL)*

No input yet

ii) *Add a new section on " Heat Pump Assisted Multipurpose Solar" (Todorovic)*

No input yet

iii) *(old) Fig 21 and the cold water supply directly to the solar storage tank, may need to add a resistance for preheating (comment from Hertel - may be able to assist). No input yet*

AI-2: Chair to contact HQ and request original drawings (pending the new review process). No information available yet, since it was not possible to attend the orientation. Need to followup.

iv) *Expand section on PV applications; Champion (Atkinson) will prepare an outline but will need help for write up; Nagidi to contribute in sections dealing with sizing/calculations; Thevenard also interested to contribute*

AI-3: Khalid Nagidi to prepare a short general section on site assessment with three calculation examples; Grid tied PV systems, Off-grid PV systems, Solar thermal systems

v) *Consider editing the f-chart section and example; Champion (Morner)*

AI-4: Svein Morner will follow up again with Sandi Klein (has previously agreed to assist; probably no need for major revision since the method has not changed); any new input is welcome

vi) *TC 4.2 will update weather climate data for 2017 version; include extraterrestrial, monthly solar rad data in the electronic version; Need a Champion (Volunteer?); Thevenard (could contribute monthly average solar horizontal rad intensity W/m2 if of interest).*

vii) *Leidel to provide material for enhancing the section on BIPV*

AI-5a: Jim Leidel will prepare a draft of the new material on BIPV.

AI-5b: Ongun Kazanci is also interested to contribute with new material on BIPV. Coordinated efforts to avoid duplication. When new material becomes available could consider for the online version.

viii) *Ali Hasan (email: idea to provide more info on wind turbines);*

Could also consider building integration of small wind turbines

C. New material/contribution on RES in Ch 34 "Energy Resources" for 2017 Fundamentals maintained by TC 2.8 (Means)

Janice Means provided a short paragraph to be inserted in F34, also referencing S37 and A35 for more information. The text was discussed during the TC2.8 HB Subcom meeting.

AI-6: *Janice Means to coordinate communications with TC2.8; confirm that there is an interest from TC2.8 to receive more information before engaging people and start working on more/enhanced material on RES for the online version and next round edition.*

D. TC 2.5 New Handbook Ch XX - Climate Change for 2017 Fundamentals (Means)

Matt Ritter, Chair of TC 2.5 subcom charged with writing the new chapter

Update by Janice Means: Received no information/update since Orlando; unlikely that this will progress. They meet on Tuesday at the same time with TC6.7

AI-7: Cary Smith will attend their meeting and report back on their status/progress.

➤ *Interested to contribute: Todorovic; Gueymard (e.g. on global dimming and brightening of solar radiation)*

4. New Business

Svein Mørner will be the new HB Subcom Chair as of July 2016

5. Adjourn

The meeting was adjourned at 19:05