

**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. TC 6.5 DATE June 27, 2022

TC/TG/MTG/TRG TITLE Radiant Heating and Cooling

DATE OF MEETING June 27, 2022 LOCATION HYBRID; Sheraton, Kent (2)

MEMBERS PRESENT			MEMBERS ABSENT	
Ongun Berk Kazanci	Robert Bean		Michael O'Rourke	Jaap Hogeling (non-quorum)
Noah Zallen	David Springer		Brett Austin	Fred Bauman
Ryan Westlund	Him Ly		Richard Bowman	

DISTRIBUTION

<i>All Members of TC/TG/MTG/TRG plus the following:</i>	
TAC Section Head:	Doug Reindl
TAC Chair:	Larry Smith
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Steven Hammerling
Standard Liaison Manager Of Research & Technical Services	Craig Wray Mike Vaughn
Research Liaison	Stefan Elbel

MEETING MINUTES
TC 6.5 – RADIANT HEATING & COOLING
2022 ANNUAL CONFERENCE MEETING (HYBRID)
June 27, 2022
2:30 pm – 4:30 pm

TC 6.5 Positions and Subcommittee Chairs

TC Chairperson	Ongun Berk Kazanci
TC Vice Chair	Paul Raftery
TC Secretary	Ryan Westlund

Programs Subcommittee Chair	Noah Zallen
Research Subcommittee Chair	Carlos Duarte
Standards Subcommittee Chair	Robert Bean
ALI & Education Subcommittee Chair	Robert Bean
Handbook Subcommittee Chair	Devin Abellon
Membership Subcommittee Chair	Jun Shinoda

Published Meeting Agenda (Ongun Berk Kazanci, TC Chair)

Meeting Agenda

1. Introduction of members and guests
2. Roll call for quorum
3. Reading of previous meeting minutes and vote for approval
4. Agenda amendments
5. Information from Section 6 Chair meeting
6. Subcommittee Reports
7. Old Business
8. New Business

9. Liaisons introduction and reports

10. Technical presentations

11. Adjourn

Meeting Minutes:

1. **Introduction of members and guests.** **See Appendix A for list of attendees
2. **Roll call for quorum**
 - a. **Voting members:** 6-10 (Quorum ✓)
 - b. **See Appendix A for list of attendees
3. **Reading of previous meeting minutes and vote for approval**
 - a. Motion for approval- R. Bean; seconded- D. Abellon
 - b. Approved unanimously.
4. **Agenda amendments**
 - a. Voting members need to be updated. F. Bauman has retired, and R. Bowman has not been present in the past few meetings. → Contact them before making any decisions. **[ACTION: P. Raftery]**
5. **Information from Section 6 Chair Meeting**
 - a. Relayed by Chair
 - i. Program submissions for 2023 Winter Conference (Atlanta) due August 9th. Accept/reject notifications of submission by October 10th.
 - ii. Changes in FG MOP: Balance of voting members is required so that no single group/entity is the majority. Chair, Vice-Chair, and all voting members require ASHRAE membership.
 - iii. Hightower Award nominations due September 1st. Contact chair for suggestions of nominees.
 - iv. Supplemental documents will be uploaded to Basecamp.
 - b. Interim meetings between winter and annual meetings are encouraged to be held. Subcommittee chairs are encouraged to take the initiative.
 - c. Technical contents related to radiant systems should be shared via Basecamp.
 - d. CBE database of radiant systems should be updated with new buildings, e.g., ASHRAE Headquarters. Many award-winning buildings adopt radiant systems. Could be a potential seminar topic or ASHRAE Journal contribution. To be discussed in upcoming meetings. **[ACTION: ALL]**

6. Subcommittee Reports

i. Programs Subcommittee (Noah Zallen, Retiring Chair → Zachary Londo, Incoming Chair)

1. Upcoming Calendar for Programs
 - a. Atlanta, GA (Winter 2023)
 - b. Tampa, FL (Summer 2023)
 - c. Chicago, IL (Winter 2024)
2. Conference paper submission due July 25th, submission for seminars due August 9th.
3. Brainstorming: ideas for seminars. Create Google spreadsheet to gather ideas.
[ACTION: N. Zallen or Z. Londo]
 - a. Renovation of buildings with radiant systems
 - b. Award-winning designs
 - c. Tracks 4, 5: “Grid Resilience and Thermal Storage”, “Pathways to Zero Energy Emissions and Decarbonization”
 - d. Case studies – cold climate design
 - e. Decoupling with ventilation, in relation to the pandemic

ii. Research Subcommittee (Carlos Duarte, Chair)

1. RTAR – Solar Load (Peter Simmonds)
 - a. P. Simmonds expresses concern that the majority of the research items could be solved with the tool developed in RP 1766. Will follow up with him. **[ACTION: O. B. Kazanci]**
2. PTAR 0001 – Radiant Design Guide (Carlos Duarte)
 - a. Received overall positive feedback, but was rejected.
 - i. Main issue was cost. RAC liaison suggests reducing budget for physical meetings and shifting to online meetings.
 - ii. Contact Mark Owens (Publishing and Education Council) and discuss how to proceed. **[ACTION: C. Duarte]**
3. Other Industry Research
 - a. CBE
 - i. The effect of forced air from ceiling fans on the convective heat transfer coefficient at the radiant surface
 - b. DTU
 - i. [Recent publication](#) on cooling capacity measurement of radiant ceiling panels (to be uploaded to Basecamp as well)
 - ii. Simulation studies of radiant cooling systems and resiliency; part of [IEA EBC Annex 80 – Resilient Cooling of Buildings](#)

iii. ALI & Education (Robert Bean, Chair)

1. Course program needs to be updated. Course materials sent to O. B. Kazanci for review. Ongun to review and update the material and approach ASHRAE with Robert’s help. **[ACTION: O. B. Kazanci]**

iv. Handbook (Devin Abellon, Retiring Chair → Ryan Westlund, Incoming Chair)

1. Ch. 55 (Applications): Radiant Heating and Cooling
Did not make it to the deadline for 2023 publication. No other option but to reaffirm with no changes for print in 2023, and to continue

working on updating the online version. Changes made to the online version will be reflected in the print version in the 2027 edition and possible to update the online version right away.

- i. Motion to reaffirm chapter 55 with no changes- R. Westlund; seconded- N. Zallen
 - ii. Approved unanimously.
 2. Ch. 52 (Applications) Snow and Ice Melting
 - a. No changes have been made.
 - b. Motion to reaffirm with no changes.- D. Abellon; seconded- R. Bean
 - i. Approved unanimously.
 3. Ch. 16 (Systems & Equipment): Infrared Radiant Heating
 - a. No developments. D. Larsson is retired, and a new volunteer is needed.
 - b. Reach out to individuals outside the TC who has expertise and interest.
[ACTION: ALL]
 4. Ch. 34 (S&E): Residential In-Space Heating Equipment
 - a. Same as Ch. 16 above.
- v. Standards & Industry Codes/Certifications** (Robert Bean, Chair)
1. Seeking new liaisons. A list of relevant standards and committees have been created by Ongun.
https://docs.google.com/spreadsheets/d/14F_MVTRCoeEtN0rFm83Ei4h0pgAeFKuEaj8KHIw8y1U/edit#gid=0
 2. Standards 62.1 and 62.2 should be added as well. Temperature control of a surface and chemical reactions at the surface are related to ventilation.

7. Old Business

- i. Update from UMC Radiant Cooling Task Group (L. MacNevin)
 1. Update from Lance:
 The project was a success. The TG's code change proposals for the 2024 edition of the Uniform Mechanical Code (UMC) were accepted through a multi-step process.
 The new definition for "Chilled Water" was accepted in May 2022 through the public comment process; the TC preferred the word "surrounding" to "ambient" to prevent confusion. Here are the approved changes:
 Chilled Water. Water or fluid that is cooled below the surrounding air temperature via mechanical or other means for the purpose of removing excess heat from conditioned spaces or equipment via hydronic piping distribution.
 1217.3 Radiant Cooling Systems. Radiant cooling systems shall be designed to minimize the potential for condensation. To prevent condensation on any cooled radiant surface, the supply water temperature for a radiant cooling system shall be not less than 3°F (2°C) above the anticipated space dewpoint temperature, or in accordance with the manufacturer's recommendation.
 1217.3.1 Minimum Floor Temperatures. The minimum floor surface temperature shall not be less than 66°F (19°C) in general occupied applications.
 1217.4 Chilled Water Supply/Distribution Piping. Chilled water piping, valves, and fittings, and manifolds shall be insulated and vapor sealed to prevent

surface condensation.

Exception: Piping, valves, fittings, and manifolds used to supply radiant cooling systems and where the water temperature is above the space dewpoint temperature shall not require insulation

8. New Business

New TC leadership after this meeting

1. Paul Raftery is the incoming Chair
2. Ryan Westlund is the incoming Vice Chair
3. New Secretary → Jeff Matson is accepted as new secretary.
4. New Programs Subcommittee Chair → Zachary Londo is accepted as new chair
5. New Handbook Subcommittee Chair → Ryan Westlund is accepted as new chair

9. Liaisons introduction and reports

No Liaisons present.

10. Technical presentations

- i. "Suggested modifications to radiant panel testing standards" - Jun Shinoda
- ii. "Affordable homes and infloor heating and infloor cooling"- Aura Lee Macpherson

11. Adjourn

- i. Motion: R. Westlund;
- ii. Second: P. Raftery;
- iii. Passes- Unanimous (TIME: 16:45 EDT)

APPENDIX A: **List of attendees

TC 6.5 Positions and Subcommittee Chairs (9):

Ongun Berk Kazanci, Chair, VM
Paul Raftery, Vice Chair
Ryan Westlund, Secretary, VM
Robert Bean, ALI & Education Subcommittee Chair & Standards Subcommittee Chair, VM
Carlos Duarte, Research Subcommittee Chair
Devin Abellon, Handbook Subcommittee Chair
Jun Shinoda, Membership Subcommittee Chair
Noah Zallen, Programs Subcommittee Chair, VM
Him Ly, VM
David Springer, VM

Additional Attendees:

Lance MacNevin
Nour Youssef
George File
Dragos Bogatu
Jeff Matson
Jim Kendzel
Yuval Berson
Tae Kwon
Panos Fykas
Brett Banadyga
Aura Lee Macpherson
Andrew Koppi
Scott Hellendrung
Zach Londo
Joey Daddese
Ron Gagnon