

ASHRAE TC 7.4 Exergy Analysis for Sustainable Buildings, Long Beach 6-25-2017

Sunday 8am – 10am

Minutes

17 attendances

Minute Taker: David Vernon

1. Call to order by Wangda Zuo (Secretary)

Introduction of Members, Guests, and Liaisons, ALI Liaison is present: Robert Bean

2. Roll Call and Quorum Determination

Name	Attendance	Name	Attendance
Stephen Treado	No	Egils Dzelitis	Yes
Wangda Zuo	Yes	Brian W. Meneghan	No
Birol Kilkis	Yes	SA Sherif	Yes

Multiple voting members were confused by a last minute meeting cancellation announcement due to a calendar cancellation sent by a member.

3. ALI Liaison asked committee to develop a short course and invite Robert Bean

Online and in person course, unsolicited program, 7.4 comes to ASHRAE saying that we want to present a short course

Robert Bean will send examples

Robert Bean will not come back to ask this again until we invite him

4. Review of Agenda (Wangda)
 - a. Changes and additions: none

5. Review of Meeting Minutes of Las Vegas
 - a. Vote to approve by email

6. ASHRAE Liaison Reports
 - a. None

7. Chair's Progress Report (Wangda)
 - a. Publications Committee: ASHRAE Technology Portal makes many resources available to members for free and Conference Papers by subscription
 - b. CEC:
 - i. Updated policy on references in presentations
 - ii. 7.4 can propose a new track for Exergy and needs to submit 1.5 years before it would be implemented, CEC will monitor to see if there are enough talks in the track
 - iii. TC members can get a free badge at registration to attend TC meetings, does not give entrance to seminars
 - c. Chair's Breakfast Meeting updates
 - i. RAC will prioritize for topics for Goal 3: reduce significantly energy consumption for HVAC&R, water heating and lighting in existing homes
 - ii. Winter Conference, Chicago, seminar proposals due August 1st
8. Membership:
 - a. Call for volunteer for Membership Chair: Dollana volunteered
 - i. New members go to TC 7.4 website, click join to register for TC and then you will be included in TC email list
 - b. Proposal to increase the number of voting members, voting members have to come in person at least one time per year for the next two years (need to be provisional TC corresponding member)
 - i. Volunteers: Ongung, Dollana,
 - ii. Encourage other attendees to register to become provisional corresponding members, contact Dollana
9. Handbook: Draft circulated by email for chapter "Rational Management of Exergy in Sustainable Buildings and Built Environment", call for committee review and collaboration
10. RESEARCH:
 - a. RTAR #1 Practical applications of exergy analysis: Develop methodology for real world application of Exergy analysis to answer the following questions from practitioners and modelers: Why should I switch from energy simulation to exergy simulation? What does exergy simulation add to the picture that energy simulation misses?
 - i. Exergy allows comparison of different forms of energy (electricity, fuel, thermal, etc.)
 - ii. Including the quality of energy focuses efforts on reducing consumption of most valuable forms of energy (focus on reducing electrical consumption of pumps and fans in HVAC systems before reducing thermal losses (opportunities to control pumps and fans instead of adding pressure drops in order to control

flows), evaluations of large HVAC systems often do not consider the actual net delivered cooling or heating service)

- iii. David Vernon (UC Davis) and Ongun Berk Kazanci (DTU) to draft preliminary description and communicate with Stephen Treado to get impressions from RAC

- b. RTAR #2 Research to develop standard tool to make it easy to use Exergy analysis for practitioners with a focus on areas where there is an actionable difference between exergy analysis and energy analysis. Several steps 1. Review existing tools, 2. Peer review of tools for technical correctness and possibility for use in cooperation with commonly used energy models such as Energy Plus, 3. Development of a simple post processing tool that highlights actionable differences in energy and exergy analysis (start simple by showing the exergy consumption fractions of different energy end uses in a building).
 - i. Currently Only custom in house tools, IEA Annex 37 and 49 in the last 15 years
 - ii. We do not need a very polished tool or a sophisticated graphic user interface to start out with. Develop a simple excel tool
 - iii. Post processing for existing energy tools (potential cosponsor on TC 4.7, DOE would be interested in developing this)(Wangda is interested and Zidu is interested, Ongun is interested but too busy for the next 6 months)
 - iv. David Vernon will work with Wangda Zuo and Zidu Ma to draft preliminary language

11. Program

- a. CEC did not accept proposal for conference seminar in the standards and codes: PVT panels - promising technology but no standard for performance testing, need exergy analysis in this part, first step in making standard that can be sold in the future
- b. Next conference proposal deadlines August 1st for seminar or debate
- c. Tracks that may be applicable: Modelling throughout building life cycle – modeling that extends into operation phase of building life cycle – (Title: “Where is all the power going? Thermodynamic limits for buildings” or “What is missing in energy analysis?” presentations: Evaluating losses in components, Overall system efficiency including net service provided, Ongun previous results) – Each Author will send me their abstract for their talk, bio, 3 or 4 questions and answers for their talk, and 2 learning objectives (

12. Standards – no active work, proposal for exergy based standard to evaluate Photovoltaic thermal (PVT) systems. Critical to account for the quality of energy for this application.

13. Website – no updates

14. New Ideas