



DRAFT MINUTES

Pursuant to an announcement sent to all members, ASHRAE Technical Committee TC 6.8, *Geothermal Heat Pump and Energy Recovery Applications*, met on Tuesday, June 28, 2016 at 3:30 PM in St. Louis, MO. The meeting was held in conjunction with the ASHRAE 2016 Annual Meeting.

I. CALL TO ORDER, WELCOME, INTRODUCTIONS

Chair Cary Smith called the meeting to order at 3:30 PM. The Chair welcomed everyone. Members, guests, and ASHRAE Committee liaisons were requested that they introduce themselves. The importance of YEA was noted. The Chair requested that the sign-in sheet be filled out completely, and that attendees check their information on the roster sheet and make any changes through ASHRAE's website. We will begin to track attendance more carefully, partially because we have voting positions opening up soon and will need to select new voting members.

II. QUORUM CHECK

Fifty percent of the voting members of the technical committee, present in person, constitute a quorum for the transaction of business. The roll call revealed that eight (8) of fifteen (15) Quorum members of the technical committee were present. A quorum was available to conduct committee business.

IV. APPROVAL OF MINUTES

The Secretary distributed copies of the minutes of the January 26, 2016 Winter Meeting in Orlando, FL and the Chair requested that members review them.

Jeff Spitler to be added as 'Present' in the minutes as he came in after the meeting began.

MOTION: Jeff Spitler moved that the Minutes of the TC 6.08 meeting in January 2016 be accepted with that one revision, and the motion was seconded by Chris Gray. The Motion carried and the minutes were approved (7-0-0-CNV).

V. ANNOUNCEMENTS

1. Recognition
 - a. Carl Huber recognized for Distinguished Service award
 - b. John Shonder recognized for Crosby Award
2. ASHRAE announcements (from the chair)
 - a. MTGs formed: IAST Impact of ASHRAE Standards and Tech on Energy Performance, OBB Occupant Behaviors in Buildings
 - b. Website template has been altered
 - c. TAC may be making some changes; putting together a presentation template
 - d. RAC gave an update on Innovative Research Grant (IRG)
 - e. ASHRAE offering a letter to be sent to your employer; see email
 - f. Seminar and forum proposals for Las Vegas due August 8
 - g. RAC prioritizing research for residential sector

VI. SUBCOMMITTEES

1. Handbook
 - a. New cloud-based handbook authorship tool is now available
 - b. Chapter 34 (Harrison)
 - i. Changes decided upon
 1. GSHP will be moved up to the front of the chapter
 2. Water use information



Attachments
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3. Updated costs
4. Expanded standing column well section
5. SWHP section updated based on Spitler's research
6. Literature review of multi-source applications
- ii. Talking to new people to help make changes
- c. Chapter 9 (Chris)
 - i. Last revised chapter has been printed – should see it in the mail soon
 - ii. Mike Filler will take over chapter
 - iii. Not sure what the changes will be; a lot of changes made last time so perhaps more minor this time
2. Standards (Cary standing in for Lisa)
 - a. IAPMO 2018 revision
 - i. Poorly written last time
 - ii. Could use support and comments this time
 - b. SPC 194 DX Method of test standard
 - i. Reviewed several possible revisions, getting closer
 - ii. Ready for public review
 - c. ASTM E4415
 - i. No progress
 - d. BSR/CSA C448 Bi-national standard available from CSA or IGSHPA
3. Programs
 - a. St. Louis
 - i. Acceptance rate was about 50%
 - ii. Program on Wednesday on deep boreholes
 - iii. Two other sessions from conference papers on geo
 - b. Las Vegas – submitting three seminars
 - i. Energy/Water Nexus track
 1. Water and energy savings together with geothermal
 - a. Scott will chair
 - b. Jeff will help get support at CEC
 - i. Leon Shapiro is chair for tech programs at LV
 - c. Several residential installations in Sacramento
 2. Sewage-water heat pump systems (recovering gray water and energy)
 - a. Jeff will chair
 - b. They have three speakers
 - c. Cary also has an example in Utah
 - d. Xioabing has an example: Denver Museum of Science (Piljae and Xiaobing)
 - e. Trey Austin has a job, but at the WWTP
 - ii. Other track
 1. BTES
 - a. Michel will chair
 - b. Have a list of six possible speakers
 - c. Long Beach
 - i. Think ahead, not due until after next meeting
 - ii. Research Summit track
 1. Residential GSHP with integrated DHW (100%)
 - a. Swedish system
 - b. Oak Ridge speakers
 2. DX systems
 - a. CO₂
 - b. Parham is doing some research



3. Possible forum on how low cost of GSHP could go
 - a. Xiaobing is willing to submit
 - b. Would like help facilitating the forum
 - c. Chris Gray – what is the endgame? What feedback are we trying to get?
 - i. Is technology the issue? Is it people?
 - ii. Jeff – endgame isn't that critical
 4. Membership
 - a. Rolling off: Cary, Gary, Dave D, Jeremy, Chuck, Jeff
 - b. Rolling on: Scott H, Ed Lorenz, Bruce Baccei, Bill Murphy, Kay Thrasher, Shaojie Wang
 5. Education and Special Publications
 - a. Roxanne not here
 - b. Dennis says he can run things by the chairs; the more we can get on the website the better
 6. Website (Dennis)
 - a. Cary suggests setting up web groups
 7. Research
 - a. RAC announcement
 - i. RAC has updated research manual; need more training for PMS
 - ii. Need award nominations for research
 - b. RP1385
 - i. Dr Spitler has made good progress identifying and adding data as required; hopes to complete this summer
 1. How to get lake temp from EPA database
 2. Adding US Army Corps
 - ii. PMS
 1. Has reviewed Status report
 2. Finds the plan reasonable, the two members here are ready to vote yes
 3. Just have a few clarifications needed
 4. Can we make a vote to support the plan?
 - a. Spitler: I would like a vote of support for my plan
 - b. Cary: would suggest that we vote on our support for the plan
- MOTION: Howard Newton moves to support the Jeff's plan forward; seconded by Chris Gray**
- c. Discussion
 - i. Jeff has identified a variety of additional sources
 1. Included instructions on how to access data from EPA
 2. Found some additional USGS data, pointing to source
 3. Has some spreadsheets with lake data
 4. TVA data
 5. Wants to know whether including links to this is enough, or if he really wants us to do a data analysis project
- The Motion carried (7-0-1-CV).**
- c. MTG: ASEC
 - i. Haven't received formal comments from RAC yet, Carl says it'll come back as comments.
 - ii. Carl: need more detail as to what the outcome will be.



1. Cary: we've asked other TCs for input, to expand this to them. Got comments back from 2 of them, not from others. Needed to broaden because we were initially too narrow.
2. We will continue pursuing.
- d. New ideas for research
 - i. Long term performance of GSHP
 1. What is the best approach for this (3 levels)
 2. Scott Hackel to begin writing
 - ii. Evaluation of GHX designs
 1. Didn't find anyone to develop an RTAR for this idea
 2. Is the HX really that important of an element of the GSHP system
 3. If the ground is good enough it can become a key component
 4. Concern that we'll get skewered if we don't say the right thing about a HX product
 5. Philosophical question about whether ASHRAE should get involved in this kind of rating
 - a. Should we generalize it to low or high BTR?
 6. Testing is expensive. Modeling is modeling.
 7. Could create a standard method of test
 8. This should be discussed on Sunday evening; we need a research committee.
- e. We need a roadmap for our TC's research
- f. Harrison got an informal request to review an RTAR: TC7.5 is submitting an RTAR for monitoring the ground loop: Detection and diagnosis of leakage from GSHPs. Includes determining how big of a problem this is.
 - i. Xiaobing: key issue is whether leakage is common
 - ii. Cary: should we be more concerned with control faults, etc.
 - iii. Scott: 6.8 should co-sponsor this; Cary agrees and suggests that we reach out

VII. LIAISON REPORTS

- a. IGSHPA (Cary on behalf of Lisa)
 - iv. New trainings being created
 - v. Jeff: Will be a research track at Denver in March, 69 abstracts from 15 countries
- b. NGWA (Cary)
 - vi. New driller certification coming out
 - vii. They are actively supporting advocacy; we are trying to talk to ASHRAE but they are not very interested
- c. MTG-ASEC
 - viii. Covered above
- d. RAC
 - ix. Nothing not mentioned above
- e. Geoexchange
 - x. They are taking a strong advocacy position
- f. IAPMO
 - xi. Cary is going to take over liaison here

VIII. OLD BUSINESS

- g. Any FAQ? None to add.

IX. NEW BUSINESS

X. ADJORN



A. MOTION to adjourn the meeting. Cary Smith moved, Jeff Spitler seconded. Motion carried (7-0-0-CNV). Meeting adjourned at 5:40.

Fourteen pages of attachments follow:

1. Committee Assignments
2. Program Subcommittee Report
3. Research Subcommittee Report
4. Handbook Subcommittee Report
5. Standards Subcommittee Report
6. ASHRAE Meeting Report
7. Post-meeting activity, votes, etc.

Committee Assignments (2016)

Programs:

M. Kuk (chair)
L. Meline
C. Smith
K. Thrasher
F. Pucciano
J. Spitler

Research

G. Phetteplace
D. Dinse
S. Hackel
B. Koschka
C. Remund
Stephen Hamstra
Mike Filler
X. Liu (chair)

Handbook Ch. 9:

C. Gray (chair)
C. Paraskevakos
E. Lohrenz
M. Filler
F. Pucciano
G. Phetteplace
C. Haynes

Handbook Ch. 34:

S. Hackel (chair)
M. Kuk
J. Fauber
M. Bernier
A. Chiasson
M. Green
X. Liu
K. Rafferty
K. Mescher
C. Smith



Attachments
St. Louis, MO Summer Meeting
Tuesday 28 June 2016



TC 6.8 Subcommittee Report: Programs

Subcommittee Chair: Michael Kuk

Date: Sunday, June 26, 2016

- 1) **Orlando Meeting:** We had two sponsored seminars and one conference paper session (Session 13 with 5 papers) on the topics of GHP. There were also 1 other talk related to geothermal heat pumps (seminar 61).
 - a. Seminar 2 (Track 7: The great Debate): Centralized vs. Distributed Geothermal Heat Pump Applications (Sunday)
 1. Happy GHP Marriages: Building Types and GHP Loop Options: *Steve Kavanaugh, Ph.D.*
 2. When Should Centralized GHP Systems Be Considered? *Stephen Hamstra, P.E., HBDP, Member,*
 - b. Seminar 30 (Track 5): New Bi-National GLHE/GSHP Standards and Translating GLHE Standards to Code: Good, Bad or Really Ugly? (Monday)
 1. Ground Source Heat Pumps Get Bi-National Attention! *Lisa Meline, P.E.*
 2. Conflicting Codes and Standards: What Happens Now? *Cary Smith, Member, Sound Geothermal Corp.,*
- 2) **St. Louis Meeting:** We had one sponsored seminar, and two conference paper session related to geothermal.

SEMINAR 61: How Deep Can We Go? Designing and Drilling Deeper Geothermal Systems

Track: HVAC Systems and Equipment

Chair: Scott Hackel,

Space limitations and other constraints are forcing engineers to design deeper boreholes for ground-source heat pump systems in buildings. There are advantages and disadvantages to doing deeper than typical boreholes, and there are specific limitations on depth in some circumstances. This seminar covers these considerations, both through calculation and design examples, as well as practical lessons learned from the field. The new, deep/ultradeep borehole, hydrostatic differential calculations from the 2015 ASHRAE Applications Handbook are also presented. The latest developments in non-cementitious grouts are introduced to help designers avoid pipe collapse in deeper boreholes without sacrificing performance.

1. **Installation Practices and Hydrostatics of Deep Boreholes** *Ryan Carda, P.E., Geo-Connections Inc, Elkton, SD*
2. **Swedish Practices and Experience with Deep Boreholes;** *Jose Acuna, Ph.D., Associate Member, KTH Royal Institute of Technology, Stockholm, Sweden*
3. **Evolution of High and Low Density Geothermal Grouts;** *Charles P Remund, Ph.D., Member, GeoPro, Inc., Elkton, SD*

CONFERENCE PAPER SESSION 9 Ground Coupled Heat Pumps

1. **Hybrid Ground Source Heat Pumps: Life Cycle Costs Compared to Non-Hybrids (ST-16-C025)** *Kent Beason, P.E., BEMP, Associate Member, Estes McClure & Associates, Tyler, TX*
2. **Operational and Economic Analysis of GSHP Coupled with Refrigeration Systems in UK Supermarkets (ST-16-C026)** *Pietro Dalpane, Salvador Acha, Ph.D. and Nilay Shah, Ph.D., Imperial College London, London, United Kingdom,*
3. **Accounting for Borehole Thermal Capacity When Designing Vertical Geothermal Heat Exchangers (ST-16-C027)** *Laurent Gagné-Boisvert, Student Member and Michel Bernier, Ph.D., P.E., Member, Ecole Polytechnique de Montreal, Montreal, QC, Canada*
4. **A Simple Process for Testing the Properties of the Ground for the Design of Geothermal Heat Pump Systems (ST-16-C028)** *Kyle Larsen, Ph.D., P.E. and Kayleen Teachman, Eastern Washington University, Cheney, WA*

CONFERENCE PAPER SESSION 20 Environmentally Conscious Building Designs

Track: Renewable Energy Systems and et Zero Buildings

Room: 221

Chair: Kyle Knudten, CPMP, McClure Engineering, St. Louis, MO

HVAC modeling and design can take on some unique variations as engineers seek to make buildings more environmentally sound. This session examines better ways to integrate both building energy modeling and life cycle environmental impacts. It also provides a look at an earth-to air heat exchange system used in a cold climate application; and reviews a hybrid system utilizing solar and geothermal for renewable energy.

1. **Solar Hybrid and Geothermal Combined: New System Solution for Renewables (ST-16-C059)** *Pernilla Gervind and Jessica Benson, SP Technical Research Institute of Sweden, Gothenburg, Sweden*

3) Recent rejected sessions:

- a. (Chicago) Workshop: Calculating Hydrostatic head/ selection of grout materials: Chair: Cary Smith



- b. (Chicago) Forum: EPA 111D (Carbon Reduction) “What impact will this act have on energy efficient design?” Chair: Chris Gray
- c. (Atlanta): How to design ultra-deep boreholes –avoiding pipe collapse (Submitted by Cary)

4) Next Meeting Location(s)

Winter 2017- Las Vegas: Jan 28-Feb 1, 2017
Annual 2017- June 24-28, 2017 - Long Beach, CA

Key next Dates:

Las Vegas

- 7/8/16: Papers will be due
- 8/8/16: Seminar, Forum and Workshop Proposals Due
- 9/7/16: Seminar, Forum and Workshop Accept/Reject Notifications
- 12/2/16: Upload of PPTS Begins
- 1/2/17: All PPTs due online

Long Beach

- 8/29/16: Conference Paper Abstracts and Tech Papers Due
- 9/9/16: Conference Paper Abstract Notifications Due
- 12/9/16: Final Conference Papers Submitted for Review
- 1/2/17: Website opens for Seminar Forum and workshop proposals
- 1/16/17: Conference Paper Accept/Reject Notifications

5) Las Vegas Tracks

- Track 1: Fundamentals and Applications
- Track 2: HVAC&R Systems and Equipment
- Track 3: Water-Energy Nexus
- Track 4: Commercial and Industrial IAQ
- Track 5: Mission Critical Design and Operation
- Track 6: Effects of Climate Change on HVAC&R
- Track 7: Energy Efficient Industrial Buildings
- Track 8: Building Operation and Performance

6) Possible SUBMISSIONS FOR Las Vegas? (to be discussed at Sunday Sub-committee meeting)

- a. Water-Energy Nexus: Cary will work on speakers
- b. At Orlando meeting, Scott tossed out an idea on geo-piles (Urban geothermal applications)
- c. Conference Paper: Design criteria for PV/GSHP (paper) (Zheng oneil- U of Alabama) (apparently was submitted, but rejected)
- d. Zio Bing working on speaker for our TC and/or Forum titled “How Low of Price can we go?” (missed deadline for St. Louis)
- e. Re-try Forum or seminar related to EPA 111D (Cary Leading with support of Xio Bing, Chris Gray). Looking to tie in to Track 8: (Renewable Energy Systems and Net Zero Buildings). Idea of getting speaker from “GEO”, John Shonder from FEMP, reach out to Mark Ames ASHRAE Mngr of Govt Affairs
- f. Carl Huber gave several ideas for talks. Didn’t think we had enough to fill a whole seminar, so I reached out to other TC’s to see if they would be willing to co-sponsor, or take on Carls Talks). This progressed, but nothing materialized for St. Louis.
- g. Carl Huber is proposing several seminars: 1) alternative refrigerants (track 1) (seminar or maybe symposium paper) (possible co-sponsorship with TC 8.1 or 8.11) 2) Benefits of “variable capacity” geo heat pumps (Track 4) (possible co-sponsorship with TC 8.1 or 8.11) 3) Benefits of "wifi" connected geothermal heat pumps with remote monitoring and data logging capability (Track 5) (possible co-sponsor with TC 7.5) 4) Design and Benefits of "vapor injected" geothermal heat pumps. (possible co-sponsorship with TC 8.1)

7) PLANNED SUBMISSIONS FOR LAS VEGAS: (to be determined from sub-committee meeting on Sunday)

8) Long Beach Tracks



Track 1: Fundamentals and Applications

Track 2: HVAC&R Systems and Equipment

Track 3: Refrigeration

Track 4: Building Life Safety Systems

Track 5: Controls: Smart Building Systems and the Security Concerns as Technology Emerges

Track 6: Commissioning: Optimizing New and Existing Buildings and their Operation

Track 7: Net Zero Energy Buildings: The International Race to 2030

Track 8: Residential Buildings: Standards Guidelines and Codes

Track 9: Research Summit

9) Possible SUBMISSIONS FOR Long Beach?

- a. Commissioning of Geothermal Heat Pump Systems: Kuk willing to chair

10) Changes, new News:

- a. Starting in St. Louis, process in place for inviting speakers to have their speaker fees waived.
(heard that this may be up to 5 people)



TC 6.8 Subcommittee Report: Research

Subcommittee Chair: Xiaobing Liu

Date: Sunday, June 26, 2016

1. Update from RAC at research chair breakfast meeting

- RAC look into more Applied Research (Current ASHRAE research strategic plan is extended from 2015 to 2018).
- Evaluate concept of allocating (reserved?) research fund for post project processing that will produce tools, presentations, etc.
- Updated research manual will be posted after St. Louis – New milestone for PMS and other changes. RAC will place emphasis on PMS training (chairs and committee) with new milestones
- Research database online (<http://research.ashrae.org>) and currently have information of about 250 projects
- A2L (Flammable Refrigerants Research Initiative). Transition to low-GWP refrigerants ◌ Safe use of flammable refrigerants ◌ research (\$5.2M initiated by ASHRAE, AHRI and DOE)
- Honors and Awards

2. Update on 1385-RP (Development of Design Tools for Surface Water Heat Pump Systems)

- PI has made progress on identifying additional data sources and collecting temperature data, including US Army Corps of Engineers (USACE), EPA's StoreT database. A tutorial on how to find and use the lake temperatures from EPA's StoreT database has been drafted. (It is to fulfill the work statement for Task 1 "Locate and survey geological information sources for surface water temperatures and historical level fluctuations of surface water bodies. Develop an easy-to-use data base for finding water temperatures and levels for potential SWHP sites.")
- PI has submitted a status report to PMS for review

3. Update on MTG (Guidelines for Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump)

- Revised the work statement several times based on inputs from with MTG member, Section 6 liaison. The revised WS has been submitted to RAC in May. Waiting for decision/comment from RAC.

4. New Research Needs and Ideas

- Study the long term performance of various types of GSHP systems (Scott Hackel and Dennis Koop will develop an RTAR for this topic).
- Evaluate new GHX designs (Is there anyone volunteer for developing an RTAR?)
- Study the impacts of deeper boreholes. How deep borehole can go? (Seminar 61)

Suggestions from Harvey Sachs: Develop a research plan (roadmap) for TC 6.8 and then prioritize the topics. Two current RAC members are from TC 6.8 and encourage TC to submit RTARs.



TC 6.8 Subcommittee Report: Handbook Chapter 34

Subcommittee Chair: Harrison Skye

Date: June 26, 2016

AGENDA and POINTS of DISCUSSION:

- **Approval of Past Meeting Minutes**
- **Need to schedule & request time & meeting space for Handbook Subcommittee (Mark Owen mowen@ashrae.org)**
- **Past Meeting Minutes**
 - Past meeting included ideas for chapter, which are included in “Chapter 34 – List of Revisions” document

Comments:

- **Review the 4-Year Chapter Revision Timeline**

		2015			2016			2017			2018			2019					
		Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul
Review	Current HB received (June 1)																		
	TC selects HB subcom and chair																		
	Review current HB for changes																		
Revise	Decide extent of and outline revisions																		
	Seek and Appoint Reviewers																		
	Revise chapter(s)																		
Approve	Send revised chapter to TC for review																		
	TC approves chapter																		
	Send chapter to HBC liaison																		
Edit & Produce	HQ sends chpt. proof to TC contact																		
	HB sent to printer (April 1)																		
	HB mailed (May 15)																		

Year 2

July 2016–January 2017

- Lead reviser provides chapter revision status Jul. 1
- Lead reviser starts chapter recommendations Jul. 1
- TC subcommittee completes brainstorm session (Topics to consider: latest technology, ASHRAE Research, library books) Jul. 1
- Lead reviser continues chapter revisions Jul. 2016–Jan. 2017



- Issue June meeting minutes August 15

Feb.–June 2017

- Lead reviser provides chapter revision status Feb. 1
- Lead reviser submits proposed chapter to subcommittee Feb. 1
- TC subcommittee reviews and comments on revisions Feb.–Jun.
- Lead reviser continues with cross references Feb.–Jun.
- Issue January meeting minutes Mar. 15

Comments:

- **Discuss ASHRAE’s Authoring Portal**
 - New online tool for collaborative authorship of handbook
 - Automatically tracks changes, versions, and authors
 - authoring.ashrae.org
 - PowerPoint presentation shows details of how to use the system.



- use ASHRAE login credentials
 - ☞ All TC members (voting & corresponding) have access to the appropriate chapter
 - ☞ non-member login available by request (Managing Editor - Heather Kennedy, hkennedy@ashrae.org, cc TC 6.8 Handbook chair – Harrison Skye, harrison.skye@nist.gov)
- Internet Explorer only
- Make sure to save work!
- If you want to work on the document offline
 - ☞ Check out document
 - ☞ Download document
 - ☞ Work on document
 - ☞ Upload document to “New Material” folder
 - ☞ Email Managing Editor (Heather Kennedy, hkennedy@ashrae.org) and CC the cc TC 6.8 Handbook chair (Harrison Skye, harrison.skye@nist.gov) with request to overwrite current chapter version



- ☞ Check the document back in after receiving confirmation that new chapter version has been posted.

Comments:

- **Review Current List of Changes: “Chapter 34 – List of Revisions.docx”**

Comments:

- **Solicit other Revisions from full Handbook subcommittee**
 - Add Revisions to “Chapter 34 – List of Revisions.docx”
- **Selection of Reviewers/Reviser(s) for “Major” Chapter(s) Revisions**
 - Standing Column Wells: *Carl Orio* has volunteered to add this material based on information in his “Construction of Standing Column Wells” report.
 - Cost Data: *Steve Kavanaugh* has volunteered to update cost information from EPRI/TVA/Southern Company Long Term GSHP project & April 2016 ASHRAE Journal Article.
 - Surface Water Heat Pumps: ask Jeff Spitler or OK State student to incorporate key finding from research project
 - Select Revisers for “Major” sections
 - Select Revisers for “Minor” revisions
- **(Skip) Lead Reviser Chapter Revision Status**
 - Chapter reviewer checklist status

Comments:

- Outline of chapter addressed per Authors and Revisers Guide

Comments:

- **(Skip) Chapter Reviewer Checklist Discussed and Updated**

Comments:

- **New Business:**

Comments:

- **Milestones to Reach Before Next meeting (January 2017):**

- Major Revisions substantially complete, ready for review by subcommittee

Comments:

- **Other Comments and Questions:**



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TC 6.8 Subcommittee Report: Standards

Subcommittee Chair: Lisa Meline

Date: June 26, 2016

Standards Report

1) Vote by ASHRAE TC6.8 approved IAPMO Uniform Solar Energy and Hydronics Code (USEHC) proposals submitted by IGSHPA (to be endorsed by TC6.8?) Please check with Steve Ferguson.

2) Joe Parsons (or Chuck High) will need to give an update on the *ASHRAE SPC 194: Method of Test for Direct-Expansion Ground Source Heat Pumps*

3) *ASTM E4415 – Installation, Testing, Commissioning, and Maintenance of Closed Loop, Ground Source Geothermal Heat Exchanger*. No progress to report on this standard – does anyone have any info???

4) *BSR/CSA C448 Bi-national standard for the Design and installation of ground source heat pumps for commercial and residential buildings* has been published and is available for purchase.



TC Activity Form

TC/TG/TRG Activity Feedback Form

Please provide feedback on your TC/TG/TRG activities and return this form by Tuesday night 9:00 pm to your Section Head by email or drop off a printed copy in the Section Head's mailbox folder outside the include activities performed since the last TC meeting (e.g. any letter ballots, submissions to RAC, award PLEASE DO NOT LEAVE NUMERIC CELLS EMPTY. ENTER 0 IN CELLS IF THERE IS NO COUNT.

TC#	6.08	Committee Name:	Geothermal Heat Pump and Energy Recovery Applications							
		Chair:	Cary Smith							
Meeting was Held (City)	St. Louis	(Day)	Tuesday	(Date)	6/28/2016					
Membership		Quorum Established (Yes/No)			YES					
		Number Present	Remote Participants	Total on Committee Roster						
Voting Members (excluding Non-Quorum Members)		7	1	15						
Non-Quorum Members		0	1	1						
Corresponding Members		27	0	111						
Provisional Members		0	0	8						
Visitors/Guests		2	0	n/a						
All members/guests who are ALSO YEA members		3	0	n/a						
Handbook Responsibilities		Standards Responsibilities								
Total Number of Chapters	2		Total Number of Standards	0						
# Chapters voted out this meeting	0		# Standards recommended	0						
Special Publications (last six	1	Title:	Design of Commercial Geothermal Heat Pump Systems (Blue Book)							
Program Activities (For This Meeting)										
Total # of Forums			Total # of Seminars			Total # of Paper Sessions			Other Presentations	
Submitted*	Sponsor	Co-Sponsor	Submitted*	Sponsor	Co-Sponsor	Submitted*	Sponsor	Co-Sponsor	Research Results	Other Papers**
0	0	0	1	1	0	2	0	0	0	0
Current Research Activities (active)					TC Management					
# of new/revised RTARs submitted	0				Minutes completed on time?	YES				
# of other active RTARs	0				Agenda distributed on time?	YES				
# of Work Statements submitted	0				Did Chair attend training?	YES				
# of other active Work Statements	1				Did Vice Chair attend?	YES				
# of active TRPs	0				Did Program Chair attend training?	NO				
# of active RPs	1				Did Handbook Chair attend training?	YES				
problems getting RTAR/WS approved	NO				Did Research Chair attend breakfast?	YES				
Other Technical Activities					Award Nominations (last six months)					
# FAQs updated this meeting	0				# of Distinguished Service Nominations	0				
# New members added to roster	0				# of Exceptional Service Nominations	0				
					# of Other Nominations: Hightower, Research, Fellow, etc	0				
					Specify Award:					
Any Concerns or requests for the Technical Activities Committee? (Please type in Space Below)										

* For submitted sessions, include only sessions which your TC initiated and submitted FOR this meeting.
** Papers from TC in sessions not sponsored by TC



Post-meeting activity, votes, etc.

Email from Lisa Meline on 5/3/2016 regarding vote on IAPMO

Updated per our call + Additional votes received this morning

17 Voting members

15 votes affirmative (includes chair).
2 votes not received

From: Lisa Meline [<mailto:lisa@meline.com>]

Sent: Tuesday, May 03, 2016 10:26 AM

To: 'Liu, Xiaobing'; 'Cary Smith'; 'Trey Austin'; 'Michel Bernier'; 'David Dinse'; 'Jeremy Fauber'; 'Mike Filler'; 'Chris Gray'; 'Scott Hackel'; 'Steve Hamstra'; 'Steve Kavanaugh'; 'Dennis Koop'; 'Michael Kuk'; 'Ed'; 'Howard Newton'; 'Gary Phetteplace'; 'Charles Remund'; 'Cary Smith'; 'Jeff Spitler'

Subject: RE: TC6.8 Review of IAPMO's 2015 USEHC - Second Round

Cary

I count 19 voting members, is that correct? So far on this second round of voting I have

15 votes approving
4 votes not received

Is this sufficient to carry forward to Steve Ferguson for Support by the Standards Committee?

Lisa

.....

Dear Voting Members of TC6.8

Even though I have 14 votes in favor of the proposed Code changes, I had sufficient comments on wording for the proposed Code changes that I felt it important to send the proposed changes out for a re-vote. These changes reflect comments from both IGSHPA and ASHRAE.

Below is a summary of changes to help you go through everything more quickly. I am requesting a re-vote by Monday, May 2, 2016.

Changes from items previously voted on are **highlighted in yellow** in the attached proposals.

Section 703.3

- 1 – updated verification to reflect additional requirements to truly verify the system. Corrected typos.
- 2 – separated portion of this section dedicated to DX verification as a separate proposed change and included the additional reference to CSA C448.8-16.

Section 703.4

- 3 – no changes except item number changed from 2 to 3.
- 4 – made correction to be ‘not more’ instead of ‘not less.’ Item number changed from 3 to 4.

Section 703.4.1

- 5 - no changes except item number (4 to 5). Corrected typo.

Section 703.4.2

- 6 – inserted references to ASTM F2164 for pressure testing. This was not added to 703.4 because the pressure test was only for a single loop. Item number changed from 5 to 6.



Attachments
St. Louis, MO Summer Meeting
Tuesday 28 June 2016

7 – separated the pressure testing from the flush and purge to ensure that each topic is voted on separately by the IAPMO technical committee. This item was added and a new justification provided.

8 – inserted justification for deleting DX section. Item number changed from 6 to 8.

9 – **NEW ITEM**. I recommend deleting the section about fusion in the trenches. This was an error on my part. I had the justification but did not have the proposed change in the body of the section. So, now there are four different changes being proposed to this section.

Section 704.3

10 – no changes except item number (7 to 10).

Section 706.2 was removed. There were no changes required (previously item 8) per Joe Parsons.

Section 707.1

11 – no changes except item number 10 to 11.

Section 708.1 General

12 – corrected typos. Modified item (7) and provided justifications.

Thank you for your continued participation in this process!

Lisa Meline, Chair of Standards Subcommittee



Attachments
St. Louis, MO Summer Meeting
Tuesday 28 June 2016

Email from Chris Gray on 8/11/2016 regarding co-sponsoring TC7.5 RTAR on leakage detection

This motion for TC 6.08 to co-sponsor this RTAR **Passes** 14-0-2, CV. Abstentions due to no response to email ballot.

Chris Gray

From: Gray, Christopher M.

Sent: Monday, August 08, 2016 4:08 PM

To: Gray, Christopher M.; 'shackel@seventhwave.org'; 'mkuk@cerxsolutions.com'; 'fillerjr@yahoo.com'; 'liux2@ornl.gov'; 'lisa@meline.com'; 'bruce.baccei@smud.org'; 'ed@geoptimize.ca'; 'kay@townsend-engineering.com'; 'trey@geoenergyservices.com'; 'michel.bernier@polymtl.ca'; 'hamstras@progressiveae.com'; 'skavanaugh@eng.ua.edu'; 'william.murphy@uky.edu'; 'hnewton@iegltd.com'; 'wsjsxn@gmail.com'

Cc: 'harrison.skye@nist.gov'; Cary Smith

Subject: FW: ASHRAE RTAR co-sponsorship request RE: ASHRAE GSHP Leakage Fault Detection Idea

Importance: High

TC 6.08 Voting Members,

We have had a request on behalf of TC 7.5 to co-sponsor the attached RTAR titled: **Detection and Diagnosis of Leakage for Ground Source Heat Pump Systems (GSHP)**.

The deadline for submission is August 15th, and they need an official vote from TC6.08 if we would like to sponsor.

So, I am requesting a Motion to co-sponsor the RTAR, a second to the motion (if we get said motion), and a vote of Yes or No from each voting member in the "To" line in that order.

This RTAR has been reviewed and comments provided by Dr. Skye as well as Dr. Kavanaugh.

Please respond by August 12th.

Chris Gray, PhD, PE, CEM
Georgia Power Company
Region Sales Manager
Office: (706) 321-3545
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