



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. 6.1 DATE August 22, 2018

TC/TG/MTG/TRG TITLE Hydronic and Steam Equipment and Systems

DATE OF MEETING June 26, 2018 LOCATION Houston, TX

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Jason Atkisson	2016	Michael Brusic	2017	
Niels Bidstrup (NQ)	2015	Larry Konopacz	2015	
Scott Fisher	2015			
David Lee	2015			
Mark Hegberg	2017			
David Lee	2015			
Thomas Neill	2014			
Steve Tredinnick	2015			
Robert Walker	2015			

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

TAC Section Head:	Dawen Lu
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)	ALI/PDC – James W. Bochat Chapter Tech. Transfer – Andrew Babler Research – Omar Abdelaziz Standard – Erick Phelps 2020 HB Systems – Caroline Calloway 2021 HB Fundamentals – Stephanie Mages

Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net
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Note: These draft minutes have not been approved and not the official, approved record until approved by the TC.

1. Call to Order:

Chair Atkisson called the meeting to order at 1:04pm. Chair Atkisson welcomed all in attendance and self-introductions were made. An attendance sheet was passed and signed by those in attendance. A roll call of voting members was conducted and a quorum was present with 9 of 11 voting members.

Technical Committee 6.1 is concerned with all aspects of hydronic and steam systems. This includes the application of boilers, chillers, terminal units, and all accessories and controls making up the total system as well as the design of the integrated system. In addition to comfort applications of both heating and cooling, snow melting systems are included. Cooperation with other TCs is recognized in areas such as control, noise and vibration, refrigeration, pumps and hydronic and service water piping.

Chair Atkisson read the ASHRAE Code of Ethics, *“In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests.”* (See full Code of Ethics at www.ashrae.org/about-ashrae/ashrae-code-of-ethics)

2. Setting of the Agenda:

The Chair passed out an updated Agenda. No objections to the Agenda.

3. Approval of Chicago Meeting Minutes:

Motion by Treddinick, second by Neill to approve the past meeting minutes. Motion passed 8-0-1 CNV.

4. Recognition of Liaisons:

No liaisons were present.

5. Chair’s Report

Chair Atkisson summarized the key items from the Section 6 Breakfast.

- (a) Some TC members recently began to improperly use ASHRAE Letterhead to submit Comments on Standards and Codes in Public Review, which implies to the code authority or standard writing organizations that it is an official comment of ASHRAE. These cannot be submitted on ASHRAE letterhead.
- (b) ASHRAE will be celebrating its 125th anniversary in a couple of years. The Historical Committee has a project to publish articles in the ASHRAE Journal and organize paper presentations celebrating our technical heritage for the anniversary.

They plan to emphasize technical advances after 1920. The Committee is looking for articles, papers, or TC sponsored program sessions for the 2019-20 meetings. The Committee is also interested in suggestions for the best ASHRAE technical papers since 1995.

- (c) TCs are allowed to develop Technical Bulletins. A Technical Bulletin does not result from a technical meeting and is a brief 1-2 page statement on a special interest HVAC&R topic that has been developed by either a technical or grassroots committee of ASHRAE. After the TC approves the Technical Bulletin, TAC is responsible for coordinating a peer review by a minimum of three persons with expertise in the field of the bulletin before it can be posted. Member Hegberg noted a concern the TC that is normally responsible for peer review and questions who will conduct this review that are not affiliated with the TC. Chair Atkisson will take back to TAC for comment.
- (d) ASHRAE President Bjarne Olesen has offered to send letters to the employers of TC volunteers this year thanking them for supporting their employee's service on an ASHRAE TC during Society year 2017-18. If requested by the volunteer, the letter will be sent to his/her employer by the end of July or early August and the volunteer will receive a copy.
- (e) 2018-19 Hightower Achievement Award nominations are due by September 1. This award recognizes outstanding technical leadership and contributions on a TC/TG/TRG during the past four years excluding research and standards activities. The nomination form can be found at www.ashrae.org/tcs. Nomination forms should be sent to Jason Atkisson for submittal to TAC.
- (f) Nominations for the Service to ASHRAE Research Award for TC volunteer efforts in research are due to the RAC research liaison by September 1. Nominating forms can be found for this under www.ashrae.org/research. The nomination form is found at www.ashrae.org/TCs. Nomination forms should be sent to Jason Atkisson for submittal to RAC.
- (g) Program statistics for Houston, with a total of 108 available slots: Seminars – 100 submitted, 72 presented; Workshops – 9 submitted, 7 presented; Forums – 11 submitted, 4 presented; Panel – 5 submitted, 2 presented; Debates – 2 submitted, 1 presented; Conference Papers – 127 abstracts submitted, 105 approved, 67 presented, 20 sessions. Technical Papers – 21 submitted, 14 presented, 4 sessions.
- (h) The Conferences and Expositions Committee (CEC) is seeking ideas for program tracks for the Orlando 2020 winter meeting and annual and winter conferences beyond as well from TC members.
- (i) CEC is seeking TC members interested in supporting content development and quality control for society Technical Programs at Society Meetings. Notify Chair Atkisson if interested in assisting with this.
- (j) The Professional Development Committee (PDC) is seeing ideas for new ASHRAE Learning Institute (ALI) courses. Ideas should be submitted to Chair Atkisson.
- (k) Remember the ASHRAE Meeting in Atlanta is two weeks earlier than normal, January 12 – 16 due to the Super Bowl being held in Atlanta.
- (l) CEC/TAC is reviewing feedback from the Meeting every Saturday of the conference.

6. Sub-Committee Reports

- A. Programs: David Lee (Chair). Subcommittee meeting minutes of June 25, 2018, are attached.

There was one sponsored program at this meeting, Seminar 30 – Have We Succeeded in Decoding Low Delta T?

Chair Lee reviewed upcoming program submissions for Atlanta and Kansas City.

Chair Lee asked for input and suggestions for programs at future meetings.

- B. Research: Jessica Mangler (Chair). Subcommittee meeting minutes of June 25, 2017, are attached.

Chair Mangler asked for inputs of potential research projects.

- C. Handbook: Tricia Bruenn (Chair). Subcommittee meeting minutes of June 24, 2017, are attached.

Chair Bruenn encouraged all members of the TC to attend the Subcommittee Meeting and participate. The meeting is held on Sunday at 5pm.

Member Fisher reviewed the steps in doing chapter reviews; (1) form a review committee (2) review the material (3) submit to staff (4) work with staff to coordinate the final product. This should be a four-year process.

Chair Atkisson advised TC 1.4 has asked to take over the authorship of Chapter 47 – Valves with TC 6.1 assisting. He noted there is more than just control valves in this chapter. Chair Bruenn concurred noting there are only a few references to actuators or controls in the chapter. Chair Bruenn volunteered to attend the TC 1.4 Handbook Meeting, however, no action will be taken until a formal request is received from TC 1.4.

- D. Chilled Water Plant Sub Committee: Steve Tredinnick (Chair).

Chair Tredinnick was unable to attend the scheduled meeting due to personal reasons. While a meeting was not held, there was carry over content from the Handbook committee. Of the 13 attendees 7 individuals specifically showed up for the meeting. Tredinnick will reach out to them in an attempt to recruit more committee members.

- E. Membership: Bob Walker (Chair). Chair Walker reminded all to update their member profiles, especially their e-mail addresses. To be placed on the roster and update their data it must be done by the member through the ASHRAE website.

- F. Standards: Mike O'Rourke (Chair). Chair O'Rourke was not in attendance.

Frank Myers is liaison reported 90.1 proposal put forward and voted by SSPC 90.1 but did not pass in the committee but going out for a continuation ballot. The new section addresses buildings with high capacity space hot water boiler systems shall have a minimum of 90% efficiency. Total weighted average of multiple boilers must meet 90% efficiency.

Frank Myers reported on SPC 155. Comments were reviewed and the standard will be resissued for comments on only the substantial changes that were made from the comments. Myers reports the committee is confident SPC 155 will be approved after this comment period.

G. Web: Mike Trantham (Webmaster). Webmaster Trantham reports the website is up to date.

7. Liaison Reports from other TC's and Organizations.

No liaisons were present.

Robert Bean reported on the following:

SSPC 55 has voted to approve for public review a control classification method for Standard 55, with Class V would be the worst case (occupant has no control), while Class I occupant would have control over more than two metrics.

TC 6.5 has approved for publication **1766-RP** -- Development of a Unified Tool for Analysis of Room Loads and Conditions

T.C. 6.5 has updated the snow melting chapter of the handbook.

T.C. 7.4 Exergy Analysis for Sustainable Buildings is proceeding to develop an unsolicited ALI short course...there is a opportunity for the interest of T.C. 6.1 to contribute to this program.

Standard 65 has been approved for load calculation and modeling.

Frank Myers reported TC 6.6 (Service Water Heating Systems) has a member, Gary Cline, setting up testing on smaller pipe fitting losses to compare actual to published (pipes 1" and smaller) values for use in an open system.

Member Aykut Yilmaz reported TC 6.3 (Central Forced Air Heating and Cooling Systems is looking at a couple of research projects for simplification of test methods; and how smart thermostats affect the usage cycles of furnaces and boilers. These are being reviewed in their committee today.

8. Old Business:

- (a) SPC 208 – Method of Test for Determining Hydronic System Balance Valve Capacity. Mark Hegberg stated he is finishing the paperwork for submittal.

9. New Business:

- (a) TC 1.4 & Guideline 36 Proposal for Special Publication. Guideline 36 will provide sequences of operations for mechanical subsystems which can be connected like Lego blocks to quickly create thoroughly designed and pretested full HVAC

designs. TC 1.4 is asking for input from other committees. Chair Atkisson will respond with TC 6.1 concerns.

- (b) TAC asking for members Survey: TC Strengths-Weaknesses-Opportunities-Threats (SWOT). Due Wednesday 6/27. <https://www.surveymonkey.com/r/S9LRZKB>
 - (c) Roster Specifics and Changes.
 - (i) Larry Konopacz (Vice Chair) has retired and David Lee will be taking his place as Vice Chair. David will continue as Program Subcommittee Chair through the Atlanta Meeting.
 - (ii) Larry Konopacz was a Voting Member. Stan Kutin has agreed to become a Voting Member.
 - (iii) Mike Trentham volunteered to become the Secretary for TC 6.1 replacing Jennifer Leach who has resigned.
- Chair Atkisson will submit the roster changes as noted.

10. Meeting Adjournment:

Motion by Neill, second by Hegberg to adjourn the meeting. Motion passed 8-0-1 CNV. Meeting adjourned at 3:04pm.

Submitted by,
Bob Walker.
TC 6.1 Secretary



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TC Sign-in Sheet

Meeting Info: TC 6.1 - HOUSTON Date: 6-26-18

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	YEA Member? (Yes/No)
Frank Myers	The Myers Group, LLC	fmyers@ix.netcom.com	Corresponding	
Jessica Mangler	AEI	jmangler@gmail.com	Research Subcomm. Chair	Y
Jacob Sevelius	UPONOR	Jacob.sevelius@uponor.com	Corresponding	Y
Andrew Koppi	UPONOR	andrew.koppi@uponor.com	Corresponding	N
Robert Bear	INDOORCLIMATE CONSULTANTS INC	KRAVE@gmail.com 403.560.5769	CM	N
Scott Hellendrung	UPONOR	scott.hellendrung@uponor.com	Guest	N
Mike Trantham	IMI Hydronic	Mike, Trantham@imi-hydronic.com	PCM	N
STAD KUTIN	XYLEM INTL.	STAD.KUTIN@XYLEMINC.COM	CM	N
NIELS BIDSTRUP	GRUNDFOS	nbidstrup@grundfos.com	VM	N

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	YEA Member? (Yes/No)
DAVID CEE	ARMSTRONG FLUID TECHNOLOGY	dlee@armstrongfluidtechnology.com	VM	N
Tricia Bruena	Belimo	tricialb@msn.com	CM	N
Rex Scove	ARMSTRONG Instl	rexsc@armint.ca	CM	N
Scott Fisher	Retiree	Sfishbmi@gmail.com	VM	Y
Steve Tredinnick	Burns & McDonnell	statedred@gmail.com	VM	N
MIGEL SCHWEDLER	TRANE	mschwedler@trane	CM	N
THOMAS NEILL	MESTEK	tneill@mestek.com	VM	N
Maura Hegarty	HAL	mhegberg@newstreet	VM	-
CHRIS HAWS	INTERTEK	CHRIS.HAWSE@INTERTEK.COM	G	N
Kevin Summers	Boiler Equipment Company	KJsummer@gmail.com	CM	Y
CHRIS PHELAN	THERMO	CHRISPHELAN@THERMOFLUIDS.COM	PCM	NO
Aykut Yilmaz	AHRI	ayilmaz@ahri.net.org	CM	Y
Viral Dharaiga	Hays Fluid Controls	viral.dharaiga@haysfluid	CM	N
Phillip Stephens	Weil-McLain	poststeph@weil-mclain.com	G	N
Tom Cappellin	Cappellin Consulting	tcappellin@msn.com	VM	N

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	YEA Member? (Yes/No)
Bob Walker	Belimo	robert.walker@ us.belimo.com	VM	NO
Jason Atkisson	AEI	jatkisson@aeteng.com	CHAIR	No
Navya Madineeli	Hayx Fluid Controls	navya-madineeli@hayxfluid controls.com	Guest	Yes

TC 6.1 Program Subcommittee Meeting - Minutes:

June 25, 2018

Attendees:

David Lee, Armstrong Fluid Technology – Program Subcommittee Chair

Bob Walker, Belimo

Jason Atkisson, AEI

Rex Scare, Armstrong International

Jessica Mangler, AEI

Tricia M. Bruenn, Belimo

Scott Fisher, State Farm – Retired

Mike Trantham, IMI Hydronic

Aykut Yilmaz, AHRI

Anders Nielsen, Grundfos

Niels Bidstrup, Grundfos

Ted Duffy, Laars

Minutes:

- 1 seminar submitted and approved for Houston conference
- Proposed seminars for Atlanta conference (see below for key dates):

Proposed Topic	Chair	Speakers
Common System Issues and Misapplications	Jessica Mangler	Mick & Rex
Building Integrated Renewables and Natural Systems - Geothermal pumping	Stan (resubmit Larry's previous Long Beach program)	TBA
The Engineer's Role In Architecture	Steve Tredinnick	ask Teresa Weston (Dupont) to speak
Condensing boilers – proper operation and maintenance to achieve high efficiency	Rex	Tom Neill and Ted Duffy

Key Dates for Atlanta conference:

- Mar 26, 2018 Conference Paper Abstracts, Technical Papers and Paper Session Requests Due
- Apr 9, 2018 Conference Paper Abstract Accept/Reject Notifications
- Jun 7, 2018 Website Opens for Seminar, Workshop, Forum, Debate and Panel Proposals
- **July 9, 2018 Final Conference Papers Due - Submitted for Review (Includes Bio, Learning Objectives and Methods of Assessment); Request for Conference Paper Sessions Due**
- July 23, 2018 Conference Paper Accept/Revise/Reject Notifications
- **Aug 3, 2018 Seminar, Workshop, Forum, Debate and Panel submissions due**
- Aug 6, 2018 Revised Conference Papers/Final Technical Papers Due
- Aug 20, 2018 Conference and Technical Paper Final Accept/Reject Notifications

To submit a Seminar:

<http://submissions.mirasmart.com/ASHRAEATL2019/Splash.aspx>

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- Proposed seminars for Kansas City conference:

Proposed Topic	Chair	Speakers
Commissioning New & Existing Buildings	Rex	Mark Chmera - would be willing to speak on commissioning
Pump Fundamentals	Niels	David
Lessons Learned in Professional Development	Jessica	Tricia
Co-Sponsor a session with Radiant Heating & Cooling (TC6.5)	TBA	Robert Bean
Optimization track - Analytics of HVAC co-sponsor with 1.4, 7.5, or 7.6 can include domestic hot water data (related to weather patterns or occupants?) etc.	TBA	David to get a speaker, Belimo may have a tentative speaker; also Dan Christensen could be possible speaker?

Key dates for Kansas City conference:

- TBA

Other:

- Best approaches to getting programs approved. Technical papers are given 1st priority followed by Conference papers. Technical papers do not go through CEC. Seminars are the most competitive due to high number of submissions. If proposed program falls into one of the conference tracks (other than Fundamentals/Applications or Systems/Equipment), likelihood of acceptance is higher.

Meeting Notes for Research Subcommittee

ASHRAE Technical Committee 6.1 – Hydronic and Steam Equipment and Systems

2018 ASHRAE Annual Conference, Houston

Monday, June 25, 1:15 to 2:15 p.m.

- Welcome and Introductions
- Attendance
 - Sign-in sheet attached
- Report from RAC / Research Subcommittee Chair Breakfast
 - RTAR - 3 most important things:
 - State the background.
 - Explain why the research is needed.
 - How could the research benefit ASHRAE?
 - Work Statements - 1 important thing
 - Milestone Chart
 - PMS - most important committee in ASHRAE Research
 - project monitoring subcommittee
 - Important task = milestone monitoring
 - Do not forget - disposition form
 - Outgoing Chair - Kishor Khankari
 - Incoming RAC Chair - John Shonder
 - 3 RTARs considered, 1 accepted, 1 conditionally accepted, 1 rejected
 - 3 Work Statements considered. All conditionally accepted
 - Research Awards
 - Grant-In-Aid (GIA)
 - Service to ASHRAE Research
 - Recognizes an individual for excellence in volunteer service to the area of Society research.
 - Homer Adams Award
 - Recognizes a Graduate Student
 - New Investigator Awards
 - Purpose to enhance the academic careers of recent Ph. D. recipients by providing support for research activities.
 - PMS Training - webinar in Fall, prior to Winter Meeting
 - Kishor stated that we need to focus on Research Marketing
 - Increase visibility.
 - Develop "Plain English Abstract" with Work Statements. Non-technical individuals will be able to review.
- 1196-RP
 - Action Needed: Project end date has been tied to completion of Standard 155. Need new estimated end date from TC.
 - PI retired from Iowa State recently but has agreed to complete project if university will allow. University requested an extension in Feb 2016 through July

2017. 2017 even though Dr. Nelson retired but will still work on project. Payment #10 of 12 paid to date.

- Waiting on 155 Chair. Mr. Butcher. PE retired, and the University will allow him to come back to finished. Waiting for Standard 155 to finished to be able to finalize project.
- Frank reported in Chicago that a draft would be ready to SPLS.
 - 155 is concluding. Responding to commenters from last public review.
 - Another public review will go out.
 - Martha Hewitt - Frank says she'll know more about 1196-RP and its contacts. **Jessica to contact Martha.**
- 1736-RTAR
 - TC dropped it in Chicago. No further discussion needed.
- TC 6.8 (Jeffrey D. Spittler) reached out to TC 6.1 about potentially co-sponsoring a research topic on Purging/Flushing of hydronic systems.
 - No draft statements have been written.
 - The project would research methods for exiting air and other debris (pea gravel, shavings, etc.) from hydronic piping systems. Past recommendations have states that fluid velocities of 2 ft/sec would adequately flush systems, but it is not clear what this recommendation is based on.
 - TC 6.1 recommended that TC 6.8 write a draft statement for further review and discussion.
- Al Black contacted TC 6.1 about a possible research topic on CFD modeling.
 - Statement from Al Black:

I am Albert W. (Al) Black, corresponding member of TC 6.1 and former voting member of TC 6.1. I was the research oversight subcommittee chair for several research projects in which fitting loss coefficients were determined experimentally for a range of pipe sizes and multiple fitting configurations, most done by Bill Rahmeier at Utah State University. Last summer I met with Ephraim Sparrow, Professor Emeritus at University of Minnesota ME department, an ASME Fellow and prolific publisher. We spoke of the current state of Computational Fluid Dynamics, and he assured me that CFD could handle fitting losses much easier and more accurately than experimentation. Some twenty years ago we had prospected CFD and were not impressed with the possibilities of calculating fitting losses at that time.

I wanted to see if there was any interest in TC 6.1 in revisiting several of Bill Rahmeier's experimental projects (e.g., elbows, tees, elbows in multiple) with CFD to broaden the acceptance of CFD for calculating fitting losses in building systems. At this point, I am simply prospecting whether there is any interest in ASHRAE for doing this work. If there is, we could contact Sparrow about writing an RFP for the work.
 - Scott Fisher agreed that this research topic had potential but stated that this project would be a two-step research project.
 - Does CFD work?

- If so, can it be expanded to measure losses in fittings that don't have experimental data?
- Mark Hegberg had previously discussed this topic with AI.
- Robert Bean thinks that the Oil & Gas Industry may have a model that we could adopt?
 - **Robert Bean is going to reach out and find a contact.**
- We need to reply to AI Black's email with update
 - **Mark Hegberg will email AI Black for further discussion & update.**
- The subcommittee discussed potential co-sponsorship opportunities with TC 7.5 - Smart Buildings. **Jessica will reach out to TC 7.5 about maintaining constant communication between TC 6.1 & TC 7.5 for research topic ideas and future co-sponsorship opportunities.**

End of Report.

Submitted on 2018-08-07 by Jessica Mangler at jmangler@gmail.com



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TC Sign-in Sheet

Meeting Info: TC 4.1 RESEARCH

Date: 6-25-18

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	YEA Member? (Yes/No)
Bob Walker	Belimo	robert.walker @us.belimo.com	VM	N
DAVID LEE	ARMSTRONG FLUID TECHNOLOGY	dlee@armstrongfluid technology.com	VM	N
Rex Scare	Armstrong Intl	Rexs@armintl.com	CM	N
TED DUFFY	LAADS	TED.DUFFY@GMAIL.COM	GUEST	Y
JESSICA MANGLER	AEI	jmangler@gmail.com	Research Chair	Y
GANG WANG	University of Miami	g.wang2@miami.edu	CM	N
JASON ATKISSON	AEI	jatkisson@aeteng.com	Chair	N
Scott Fisher	Retired	Sfishbmi@gmail.com	VM	N
Tricia M. Bruenn	Belimo	tricia16@msn.com	CM	N

Agenda/Information for Handbook Volume/TC Meetings

2018 ASHRAE Annual Conference, Houston

Sunday, June 24, 9:00 to 10:00 a.m.

- **Welcome and Introductions** (Handbook liaisons identify which TCs they serve)
 - **Information Items**
1. TCs with chapters for the **2019 ASHRAE Handbook—HVAC Applications** should approve their revised chapters now. All remaining 2019 *HVAC Applications* chapters are due by end July 2018, unless an extension has been specifically arranged with your liaison and Handbook staff. Your Handbook Committee liaison can confirm your chapter's specific due date. [NOTE: *Even if you intend no changes to your chapter(s)*, you must confirm this to your Handbook liaison and complete and submit the Chapter Approval Checklist as well as written permissions to reuse material copyrighted by others.] For ASHRAE Handbook Online, TC-approved features or out-of-cycle revisions can be submitted at any time.
 2. To submit your chapter revisions and checklist with all applicable items by email to your Handbook Committee liaison, please also **copy Handbook Editor Heather Kennedy** (hkennedy@ashrae.org) on your email submission, as a safeguard against revisions being lost because of email bounces, etc. If you use the ASHRAE Authoring Portal, notify the editors and your liaison of chapter completion as detailed in the instructions.
 3. Go to [ASHRAE Handbook Central](#) (click on the Handbook link under the Resources and Publications tab on the ASHRAE home page, then click on the link to Handbook Central) for easy access to
 - **ASHRAE Authoring Portal**, the officially approved collaborative authoring tool for developing Handbook content. This optional, online tool allows multiple designated authors to write and/or revise Handbook chapters in Word without needing to email large files or obtain new software. A PowerPoint presentation about the Portal is available on Handbook Central. Use your regular ASHRAE Member login information to access the Portal and your file(s). (**See next page.**)
 - **Important Handbook guidance documents** for Handbook content development
 4. **ASHRAE Handbook Online** (a free member benefit option) incorporates in its base subscription all the chapters in all four current Handbook volumes plus extra content. TCs have the opportunity to obtain or develop extra content or features and submit them for their chapters. Remember that simple spreadsheets or checklists are often the most helpful to users. Related *ASHRAE Journal* articles and case studies make good supplemental content. TC-approved features or out-of-cycle revisions can be submitted at any time. Guidelines are available on Handbook Central.
 5. **ASHRAE Technology Portal** hosts Handbook PDF downloads, ASHRAE Journal Articles and ASHRAE Research Reports—all free for eligible members. ASHRAE Transactions and Conference Papers and ASHRAE Conference Seminars are available by subscription. The portal can be a great resource for finding ASHRAE references to cite for content in your chapters.
 6. **ASHRAE Terminology** is a free online glossary of more than 3700 terms related to the built environment, with a focus on HVAC&R and related topics. This resource can help your publication development efforts if they call for definitions of terms. Your input can also improve ASHRAE Terminology (maintained by TC 1.6) by checking for accuracy and omissions. Check it out at www.ashrae.org/ASHRAETerms.
 7. **Revision histories** of every chapter are available from your Handbook liaison. Compiled by Handbook editorial staff, these records show the level of revision each chapter received in the last several cycles.
 8. Be sure to schedule and officially request time and meeting space for your **Handbook Subcommittee meeting** for the 2018 Winter Conference in Atlanta, and let your Handbook liaison know of changes (your liaison's contact information should be on your TC roster; if not, please contact Handbook Editor Heather Kennedy at 678-539-1187 or email: hkennedy@ashrae.org.) Alternatively, Technology staff can also set up conferences for TCs to work on Handbook revisions.
- **Questions and Answers**
 - **Liaison/TC Consultation**

ASHRAE Webpage July 2018



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[ASHRAE Authoring Portal](#)

An online tool for collaborative content development.

[ASHRAE Authoring Portal Introduction Presentation \(.pptx\)](#) (June 2017)

General Notes:

TC 6.01 Handbook Sub-committee
5:00-6:15 PM on Sunday, June 24, 2018

TC 6.1 Handbook SubCommittee Meeting Sunday 5:00 PM- 6:15 PM

Name	Affiliation	E-mail	Member Status	YEA Member?
Ted Duffy	LAARS	Ted.Duffy@gmail.com	Guest	Yes
Jessica Mangler	Affiliated Engineers	jmangler@gmail.com	Research Chair	Yes
Stan Kutin	Xylem, B&G	Stan.Kutin@xyleminc.com	CM	No
Scott Fisher	Retired	sfishbmi@gmail.com	VM	No
Tricia M. Bruenn	Belimo	tricia16@msn.com	CM, Handbook Chair	No
Jason Atkisson	Affiliated Engineers	jatkisson@aeieng.com	Chair	No
Bob Walker	Belimo	robert.walker@us.belimo.com	VM	No
Rex Scare	Armstrong	rex@armstronginternational.com	CM	No
Caroline Calloway	AERCO	ccalloway@aerco.com	Handbook Liason	No
Tom Neill	Mestek	tneill@mestek.com	VM	No
David Lee	Armstrong Fluid Technology	dlee@armstrongfluidtechnology.com	VM	No
Dawen Lu	Lu & Smith Engineers	dlu6838@gmail.com	CM	No
Ryan MacGillivray	Daniels-Wingprak Engineering	ryan.macgillivray@dwel.com	Guets	No
Niels Bidstrup	Grundfos	nbidstrup@grundfos.com	VM	No

Agenda that was discussed:

- 1) Introductions – Highlighting Chapter Lead Authors
- 2) Discussion of questions of Chapters from January
 - a. Chapter 46 – need vote to eliminate and Chapter Checklist Submitted
 - i. Ask for vote on 6/26/18 meeting, Tricia will submit Checklist
 - ii. Chapter 15. Was not on original sign-up list. *Will go to 6.2*
 - iii. *Chapter 28 – we cannot just “give away” to TC5.8. It does not exist anymore. Will keep for now. No edits. Need to see who can take make-up air or dissolve to other chapters – Chapter 36 to take UV and Unit Heaters in 2024. Need to find TC to take make-up air units. (Heather).*
- 3) Discussion of Due Dates of Chapters
 - a. Chapters 11,13,14,32,36,44 need to be voted on before June 2019 meeting
 - i. Chapters 47, 48, 9898 can be voted on in June 2019.
 - ii. Chapter 47 is actually listed as 6/20/19, but today was told that 1 week later is Ok- 6/29/19.
 - b. Proposed Action on Chapters (2 weeks at least to vote.)
 - i. At Jan meeting, vote on 11,13,14
 - ii. E-mail vote on 15 – send out 4/8 and due back 4/19
 - iii. E-mail vote on 32,44 – send out 4/22 and due back 5/3
 - iv. E-mail vote on 36 – send out 5/20 and due back 6/3
 - v. At June meeting, vote on 47,48.
 - vi. 9898 – need to speak to Steve

Lead Authors of Chapters are responsible for gathering Revisions. We will approve chapters as completed – so these dates above are “worst case” scenario.

- 4) Discussed issues with Authoring Portal, answer questions
 - a. *Please check to see if you are able to access the chapter in the portal if you have signed up as a reviewer. If you are interested in reviewing and did not yet, please contact Tricia M. Bruenn at tricia16@msn.com*
 - b. *It is important to add real life examples into the chapters, and also to verify references.*
- 5) Discussed additions to Chapter Revision List
 - a. Non-members to be added to chapters (email out chapter by lead author for revisions)
 - i. Michael Fiander Michael.Fiander@victaulic.com (Chapter 47)
 - ii. Rafael Mordini rafael.mordini@imi-hydronic.com (Chapter 47)
 - iii. Mohammed Hamza <m.hamza94@yahoo.com> (Chapter 11)
- 6) Review any chapters that are prepared – *reviewed Chapter 11- Steam Systems*
- 7) *For 2021 Fundamentals – Chapter 22 – Scott Fisher accepted position of Lead Author with Rex Scare and Jason Atkisson as reviewers. If you are interested in reviewing this chapter, please contact Scott Fisher directly.*

2020 System Chapters Due Dates

Note: Chapter 15 is TC6.02, Chapter 28 will be submitted with no revisions, Chapter 46 is eliminated.

Chapter No	Short Title	TC	Liaison	MS Due Date
11	Steam	06.01	Calloway	03/14/19
13	Hydronic Htg & Cooling	06.01	Calloway	03/28/19
14	Condenser Water Sys.	06.01	Calloway	04/11/19
15	Med./High-Temp. Water Htg	06.01	Calloway	04/25/19
28	Unit Ventilators	05.08	Sill	05/23/19
28	Unit Ventilators	06.01	Calloway	05/23/19
32	Boilers	06.01	Calloway	05/09/19
36	Hydronic Heat Dist.	06.01	Calloway	06/06/19
44	Centrif. Pumps	06.01	Calloway	05/16/19
46	Pipes, Tubes, Fittings	06.01	Calloway	06/13/19
47	Valves	06.01	Calloway	06/20/19
48	Heat Exchangers	06.01	Calloway	07/04/19
9898	Chilled-Water Plants	06.01	Calloway	07/31/19

Revision Status Stats per ASHRAE for each chapter

Volume	TC	Chapter No	1996S	2000S	2004S	2008S	2012S	2016Sy	Mean
HVAC Systems and Equipment	06.01	11	0	0	0	0	2	1	0.50
HVAC Systems and Equipment	06.01	13	1	1	0	2	0	1	0.83
HVAC Systems and Equipment	06.01	14	0	3	0	0	2	2	1.17
HVAC Systems and Equipment	06.01	15	0	0	0	0	2	0	0.33
HVAC Systems and Equipment	06.01	28	2	0	1	0	1	2	1.00
HVAC Systems and Equipment	06.01	32	1	2	0	2	2	1	1.33
HVAC Systems and Equipment	06.01	36	1	1	0	0	1	2	0.83
HVAC Systems and Equipment	06.01	44	3	2	0	0	2	2	1.50
HVAC Systems and Equipment	06.01	46	1	1	0	0	1	0	0.50
HVAC Systems and Equipment	06.01	47	2	1	0	0	0	3	1.00
HVAC Systems and Equipment	06.01	48		4	0	1	0	2	1.40

Where:

0 =	no changes
1 =	update/minimal changes
2 =	standard revision (5-50% of chapter)
3 =	major revision (>50% of chapter)
4 =	new/rewritten

2020 Systems and Equipment Handbook

List of Chapters and Reviewers

Reviewers as of 07/2018

Chapter 11- Steam Systems	Name	E-Mail
Lead Author	Rex Scare	rexs@armstronginternational.com
Reviewer	Jason Atkisson	jatkisson@aeieng.com
Reviewer	Stan Kutin	Stan.Kutin@xylemnc.com
Reviewer	Kevin Summers	KJSummer@gmail.com
Reviewer	Nick Allen	nallen@mcclureeng.com
Reviewer**to be e-mailed	Mohammed Hamza	m.hamza94@yahoo.com
Chapter 13 - Hydronic Heating and Cooling System Design	Name	E-Mail
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Reviewer	Ryan Mallory	Ryan.Mallory@uponer.com
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Chapter 14 - Condenser Water Systems	Name	E-Mail
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Chapter 32 - Boilers	Name	E-Mail
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Reviewer	Ted Duffy	tduffy@laars.com

2020 Systems and Equipment Handbook List of Chapters and Reviewers (cont.)

Chapter 36 - Hydronic Heat Distributing and Radiators	Name	E-Mail
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Chapter 44 - Centrifugal Pumps	Name	E-Mail
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Reviewer		
Reviewer		
Chapter 47 - Valves	Name	E-Mail
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Chapter 48 - Heat Exchangers	Name	E-Mail
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Reviewer	John Glunt	jglunt@b-g.com
Reviewer	Zeljko Terzic*	zterzic@armstrongfluidtechnology.com
Reviewer		
Reviewer		
* May need access. See David Lee.		

End of Report. Submitted by Tricia M. Bruenn at tricia16@msn.com

Please contact me with any questions. Thank You!