

ASHRAE

TC/TG/TRG NO: **TC 9.9** Date: **June 27, 2016** Location: **St. Louis, MO USA**
General Meeting/ Subcommittee and Liaison Report

TC/TG/TRG TITLE: **Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment**

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VOTING MEMBERS	Employer	Position	Status
Andrew R Baxter	Page Southerland	Member	Present
Thomas A Davidson	DLB Associates	Member	Present
Dr. Dustin Demetriou	IBM	Member	Present
Paul R. Finch	Digital Realty Trust	Member	Present
Jon Fitch	Dell	Member	Present
Jack V. Glass	Retired	Member	Not Present
John C Groenewold	JPMorgan Chase	Member	Present
Greg Jeffers	McKenney's	Member	Not present
David F Kelley	Liebert Corp	Member	Present
Dr. Mukesh K Khattar	EPRI	Member	Not Present
Jason Matteson	Lenovo	Vice Chair	Present
Richard Pavlak	Heapy Engineering	Member	Present
Jeffrey P Rutt	Department of Defense	Member	Present
Robin A Steinbrecher	Intel	Chair	Present
Edward Ka Cheung Tsui	Intelligent Technologies, Ltd	Member	Present

Committee Positions
Name
Robin Steinbrecher
Jason Matteson
John Groenewold (incoming on July 1, 2016)
Roger Schmidt
Don Beaty
Nick Gangemi
Robert McFarlane
Richard Pavlak
John Bean
David Quirk
Ecton English

TC 9.9 Programs, Handbook and Research Subcommittee Meeting –

Sunday, June 26th

The following items were covered:

1) Handbook – Robin Steinbrecher substituting for Bob McFarlane (Not Present)

- ASHRAE is moving future handbook editing to their own Sharepoint site which can be accessed at <http://authoring.ashrae.org>. Normal Word editing capability with multi-author management is available. Anyone who is a committee member has access although editing will continue to be directed by our handbook subcommittee chair. Authors must use Microsoft Internet Explorer or Edge to access documents on Sharepoint.
- DLB Associates server will continue to be used as a file repository for the Datacom series of books as the ASHRAE Sharepoint does not currently support documents outside of the Handbooks.
- During the Q and A session, Suzanne LeViseur was introduced as the Handbook liaison. The issue of updating the Chapter 19 of the HVAC Applications Handbook to reflect the recently approved new lower recommended humidity range was raised. Bob will handle getting that updated. The issue of including a list of the latest versions of the Datacom series of books into Chapter 19 of the HVAC Application Handbook was suggested.
- Subcommittee will begin work on a new chapter for the 2018 Refrigeration Handbook.
- Revised online versions of the handbooks can be updated and are available immediately to the members that subscribe to that service. The committee was advised that animations and color drawings were available for those accessing the online versions of the Handbooks and that future revisions could and should include them.

2) Programs – Nick Gangemi

- Nick distributed a handout with information about the St. Louis and Las Vegas meetings as well as information on the types of sessions that are presented at these conferences.
- CEC program group is in charge of the program content for the conferences and has 22 members. They meet on Sundays at the main ASHRAE meetings and select the programs. There was approximately a 50% approval rate by the CEC.
- Each session is separately reviewed for each conference event. Past approval has no bearing on future approvals. Joint TC presentations have the greatest rate of acceptance. Transactions papers are nearly always accepted and conference papers are 90% accepted.

- The Fellows Debate is a fairly new format. Participants must prepare for both sides of an argument and a coin flip at the time of the debate determines the side taken.
- Las Vegas is the next Winter conference. It will feature a track (#5) on Mission Critical Design. Seminars, workshops & forums are still open for the Las Vegas Winter Conference. See <http://www.ashrae.org/LasVegas> for deadline dates for submissions.
- Long Beach, CA is the next summer conference.

3) Research – David Quirk

- David noted that the 2015 ASHRAE Strategic Plan was carried over to 2016.
- 1755-TRP – Impact of High Humidity and Gaseous Contamination on the Reliable Operation of Information Technology Equipment in Data Centers
 - i. The bid was awarded to Syracuse University.
 - ii. The contract begins on July 1, 2016.
- 1675-TRP – Guidance for CFD Modeling of Data Centers Co-sponsored supporting TC 4.10)
 - i. Florida International University was selected and the contract was awarded.
 - ii. FIU is reporting that the laboratory originally included as part of the proposal is not as represented and will not work due to a large obstruction and is now proposing a new lab setting. The subcommittee is evaluating the lab as to whether it will meet the requirements and will make a determination about the future of the contract with FIU.
- 1739-WS – DC Energy Modeling
 - i. Henry Amistadi held a meeting earlier in the day with subcommittee members to discuss the process going forward in developing the tools required for Data Center energy modeling.
 - ii. Data Center energy modeling will eventually be used to support calculations required by 90.4.
 - iii. Henry Amistadi gave a presentation on the progress and proposed direction of the subcommittee.

TC 9.9 Main Committee Meeting – Monday, June 27th

Opening and Introductions – Robin Steinbrecher

- Approval of prior meeting minutes by Voting Members – Approved by voice vote.
- Introductions of all present at the meeting.

Website – Ecton English/ Robin Steinbrecher

- TC 9.9 has a new website with the format as driven by ASHRAE. All other TC websites follow the same format which is based on the original design by Ecton English: <http://tc0909.ashraetcs.org/index.php>
- Under “Membership” tab there is a button “Join TC 9.9” to request TC 9.9 provisional corresponding membership. Interested parties should go there to request membership. ASHRAE membership is not required to join TC 9.9.
- The website still has an active link to the datacom books in the ASHRAE bookstore.
- Members are encouraged to update their contact information through the ASHRAE website as nobody from TC 9.9 can do this. If a member’s information changes such as email address, that member must update his or her own information on the ASHRAE site.
- There is a link to email the Chair of TC 9.9, Robin Steinbrecher, on the website: TC0909@ashrae.net. There is also a link on the website to the webmaster and Ecton requested any suggestions be submitted through this link.

Programs – Nick Gangemi

- Nick went over guidelines for submission of sessions, technical papers and conference papers. Each session needs a chair. Technical papers are the most sought after and are almost always accepted. Conference papers are accepted at a rate of 90%.
- Nick distributed a handout with information about the St. Louis and Las Vegas meetings as well as information on the types of sessions that are presented at these conferences.
- Las Vegas is the next winter conference. Long Beach, CA hosts the next summer conference. The Las Vegas conference will feature a track (#5) on Mission Critical Design.
- See <http://www.ashrae.org/CITY> where CITY is either lasvegas or longbeach for deadline dates for submissions. Nick can be contacted at n.gangemi@northernairtech.com if any guidance is needed.

Liaison Reports

- 90.1 update – Rick Pavlak
 - 90.1 changed its scope to include computer rooms in 2007. The broad definition took all data centers/computer rooms greater than 20 watts per square foot. 90.1 addendum CZ which would align the scopes of 90.1 and 90.4 and is currently stuck in the mechanical subcommittee. 90.1 CZ scope – computer rooms: A room

whose primary function is to house equipment for the processing and storage of electronic data and that has a design electronic data equipment power demand that is less than or equal to 10 kW or power density that is less than or equal to 20 W/ft² (215 Watts/m²) of conditioned floor area. 90.4 scope – data centers: A room or building or portions thereof, including computer rooms being served by the data center systems, serving a total information technology equipment load greater than 10kW and 20 W/ft² (215 Watts/m²) of conditioned floor area.

- 90.4 update – Dave Quirk
 - 90.4 was voted out for publication and can be appealed in the next 15 days as there were a couple of unresolved commenters. It will publish by September 2016. The 90.4 project committee will transition to a standing committee responsible for continuous maintenance of the standard.
 - There are members of the mechanical subcommittee that want the 90.4 scope to be only data centers greater than 900 kW. 90.4 has an exemption for adds, moves or changes less than 90% change.
 - Ron Jarnagin is the current Chairman for 90.4 and will continue on with the standing committee for one year. The adoption path for 90.4: ASHRAE publication of model code => International Code Council (International Energy Consumption Code)=> Local Jurisdictions (states and other).
 - The next ICC meeting is on October 19-25, 2016. 2018 is the next ICC publication cycle.
 - Adoption of the latest 2018 ICC is dependent upon grass roots support.
 - Members are encouraged to register with the ASHRAE listserv to get notifications concerning 90.1 and 90.4. They are also encouraged to lobby ICC for 90.4 adoption.
- SPC127 – John Bean
 - John reviewed the latest updates. Pure adiabatic processes are not covered. The process must have an enthalpy change to be covered under the standard scope. It will be three months before being voted out for public review which would put it in the September 2016 timeframe for public review. It will be a major rewrite of the standard. This standard is simply a method of test standard and does not dictate minimum performance for equipment. It was originally created by the California Energy Commission.
- AHRI 1360 update - David Kelley
 - Dave reviewed the latest updates. AHRI is working on a page with product regulation information.
- International – Don Beaty
 - Don noted that Paul Finch has been a key participant in EU relations. Paul was requested by ASHRAE to present and make representation at the EU Commission, Brussels, on the work of TC9.9 and in particular the Thermal Guidelines relative to the Ecodesign Consultation Forum meeting on servers and data storage products (GROW Lot 9). GROW Lot 9 is likely to result in policy or legislation in the EU for

minimum server efficiency standards. *There is some conflict between the standards set by TC 9.9 and the EU Commission . TC 9.9 members have been and will continue to work to resolve these conflicts.*

Research – David Quirk

- 1675-TRP – Guidance for CFD Modeling of Data Centers (Co-sponsored supporting TC 4.10)
 - Florida International University was selected and awarded the contract.
 - FIU is reporting that the laboratory originally included as part of the proposal is not as represented and will not work due to a large obstruction and is now proposing a new lab setting. The subcommittee is evaluating the lab as to whether it will meet the requirements and will make a determination about the future of the contract with FIU.
- 1755-TRP – Impact of High Humidity and Gaseous Contamination on the Reliable Operation of Information Technology Equipment in Data Centers
 - The bid was awarded to Syracuse University. The contract begins on July 1, 2016 and has a twelve month duration.
- 1739-WS – DC Energy Modeling
 - Henry Amistadi held a meeting earlier in the day with subcommittee members to discuss the process going forward in developing the tools required for Data Center energy modeling.
 - Data Center energy modeling will eventually be used to support calculations required by 90.4.
 - They will utilize primary and secondary toolkits that were developed previously by ASHRAE but elements specific to data centers will be added. Ultimately the solution will include integration with CFD models. They are looking to provide a simplified tool in the near term as a model for 90.4 compliance.

LBNL DC Activities – Steve Greenberg

- Steve introduced himself as the new representative to the committee from LBNL and has replaced Bill Tschudi who retired. Steve gave a presentation on the activities of LBNL. <http://datacenters.lbl.gov> is a sponsored by the government and contains a lot of good information.

New Publications

- Publication Update – Don Beaty
 - Don Beaty asked the group about any suggestions for new marketing ideas for the Datacom series of books.
 - The full set of Datacom series books is available and for bulk purchases can be personalized. The quantity is very small to get a bulk discount from ASHRAE. The same discounts apply to the digital version.
 - Having sales tables at other conferences was suggested as a channel to sell books. Noted difficulties with accepting payments has been an issue at the conferences.
 - It was suggested that with the frequency of updates to the Datacom series that a subscription may be a good sales option. Translation updates to Spanish is ongoing.
- Datacom Book 13: IT Equipment Design Impact on Data Center Solutions – Dave Moss & Robin Steinbecher

- Dave and Robin gave an overview of the book. The book provides an overview of cooling system design for IT equipment including thermal management. Interaction with data centers including airflow and delta T implications are covered. Previous whitepaper information has been consolidated in the book.
- Data Center Power Equipment Thermal Guidelines and Best Practices Whitepaper – Joe Prisco (for Jon Fitch)
 - Joe gave a presentation on the whitepaper which was released and is available on the TC 9.9 website. See the paper on the website for more information.
- Performance Indicator Assessments for Data Center Performance (The Green Grid) – Mark Seymour
 - Mark presented a very comprehensive presentation on the new performance indicator standard from The Green Grid. This was a preview of the information that will be available from TGG. Refer to TGG for more information.

ITE Subcommittee Report

- Cold weather shipping of ITE and DC acclimation - Joe Prisco.
 - Joe is looking for volunteers from other IT companies for authoring a whitepaper and may have a draft for the next meeting.
- DCIM Whitepaper – Chris Lindberg
 - Chris presented on the progress of the whitepaper. Part of the scope is to define exactly what DCIM means. The team has twice monthly calls for contributors and asked attendees to contact him if they would like to volunteer.
- The Green Grid’s Liquid Cooling Working Group and ASHRAE TC 9.9 – Roger Schmidt
 - Roger provided a verbal update. There still seems to be some overlap with TGG that has to be resolved. They are continuing work on liquid quick
- Liquid Cooling of ITE – Mike Ellsworth
 - Mike presented slides on the update on the whitepaper. The team is focused on the cooling systems and reliability. They will address the ITE and facility level interfaces. They are targeting the winter meeting for a draft review.
- Thermal Guidelines Errata Update – Roger Schmidt
 - There is an error in the environmental table in IP units in the humidity column in latest edition. This will be fixed in an upcoming update to the errata. There has been a debate on minimum humidity number as to whether the two conditions should be an “and” or an “or”. That will be addressed.
 - The economizer flowchart will be updated.
- Power Trends Book Update – Susan Smith
 - Susan presented the results of the survey on users and focus areas for the power trends update. She is targeting a draft to be ready around the time of the winter meeting. This will be the 3rd edition.
- Effect of Temp and Humidity on Copper and Silver corrosion rates – PJ Singh
 - PJ provided an update and some preliminary results of the testing taking place.

He provided a detailed account of the lab setup and testing procedures.

- IEC Standards – Connectors - Roger Schmidt
 - Roger discussed the start of findings DC Connectors (within ITE). Many commonly used DC connectors are only rated to 40 C which is too low for many on the exhaust of ITE. He is looking to have a TC 9.9 representative at the upcoming IEC meeting of the technical group in Japan.
- IEC Standard 62368-1 Impact – Robin Steinbrecher
 - The new standard is causing issues with redesign of ITE enclosure design to comply with new fire propagation standards. The new standard has now integrated the IEC standards from ITE and consumer electronic devices and adopted the more stringent requirements of consumer devices.
 - This change is causing a big impact on the costs and potential energy consumption of ITE systems. The ITE industry is requesting that the IEC standard be revisited and this requirement be revised to reflect the older standard. If not changed, all ITE shipping in 2019 would have to comply.

Attendees for Programs/Handbook/Research Meeting	
First Name	Last Name
Gerardo	Alfonso
Henry	Amistadi
Andrew	Baxter
John	Bean
Donald	Beaty
Matthew	Brown
Chris	Campbell
Michael	Collarin
Thomas	Davidson
Dustin	Demetriou
Jason	Derrick
John	Dumler
Michael	Ellsworth
Ecton	English
Paul	Finch
Joseph	Gangemi
Jeff	Gatlin
Kevin	Gebke
David	Grant
Steve	Greenberg
John	Groenewold
Hugh	Hudson
David	Kelley
Matt	Koukl
Jason	Matteson
David	Moss

Stephen	Mowrer
Christopher	Muller
Michael	Ohadi
Richard	Pavlak
David	Redford
Mark	Reed
Terry	Rodgers
Jeffrey	Rutt
Roger	Schmidt
Justin	Seter
Mark	Seymour
Gary	Shamshoian
Timothy	Shedd
Douglas	Sick
Prabjit	Singh
Grant	Smith
Vali	Sorell
Robin	Steinbrecher
Russell	Tipton
David	Tootle
J	Kao
Zhen	Li
Lance	Brown
Zack	Pardey
Simon	Rees
Marc	Soige
Ben	Dolcich

Attendees for Main TC 9.9 Meeting		
First Name	Last Name	Position
Gerardo	Alfonso	Corresponding Member
Henry	Amistadi	Corresponding Member
Andrew	Baxter	Member
John	Bean	Corresponding Member
Donald	Beaty	Corresponding Member
Matthew	Brown	Provisional Corresponding Member
Michael	Collarin	Corresponding Member
Craig	Crader	Corresponding Member
Thomas	Davidson	Member
Dustin	Demetriou	Member
Jason	Derrick	Provisional Corresponding Member
Supriya	Dharkar	Provisional Corresponding Member
John	Dumler	Corresponding Member
Michael	Ellsworth	Corresponding Member
Ecton	English	Webmaster
Paul	Finch	Member
Joseph	Gangemi	Program Subcommittee Chair
David	Grant	Corresponding Member
Steve	Greenberg	Corresponding Member
John	Groenewold	Secretary

Hugh	Hudson	Corresponding Member
Gwenn	Ivester	Provisional Corresponding Member
Matt	Koukl	Corresponding Member
Stuart	Lawrence	Corresponding Member
Sang	Lee	Corresponding Member
Guillermo	Massucco	Corresponding Member
Jason	Matteson	Vice Chair
David	Moss	Corresponding Member
Stephen	Mowrer	Corresponding Member
Christopher	Muller	Corresponding Member
Michael	Ohadi	Corresponding Member
Richard	Pavlak	Standards Subcommittee Chair
Mark	Pavol	Provisional Corresponding Member
Joseph	Prisco	Corresponding Member
David	Redford	Corresponding Member
Mark	Reed	Provisional Corresponding Member
Terry	Rodgers	Corresponding Member
Jeffrey	Rutt	Member
Roger	Schmidt	Corresponding Member
Justin	Seter	Corresponding Member
Mark	Seymour	Corresponding Member
Timothy	Shedd	Corresponding Member
Douglas	Sick	Provisional Corresponding Member
Prabjit	Singh	Provisional Corresponding Member
Grant	Smith	Corresponding Member
Vali	Sorell	Corresponding Member
Jeffrey	Stein	Corresponding Member
Robin	Steinbrecher	Chair
Russell	Tipton	Provisional Corresponding Member
David	Tootle	Corresponding Member
Edward	Tsui	Member
Marianna	Vallejo	Corresponding Member
Brad	Cochran	Guest
Reza	Ghias	Guest
Korey	Hyde	Guest
Chris	Lindberg	Guest
Joe	Furman	Guest
J	Kao	Guest
Shelwar	Haque	Guest
Sean	Faltermeier	Guest
Zhen	Li	Guest
Zack	Pardey	Guest
Ben	Dolcich	Guest