AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.

1791 Tullie Circle, N.E./Atlanta, GA 30329
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TC/TG/TRG MINUTES COVER SHEET

(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO TC 9.9 DATE 12/15/2009

TC/TG/TRG TITLE Mission Critical Facilities, Technology Spaces and Electronic Equipment

DATE OF MEETING 12/15/2009 LOCATION Phone Conference

Voting MEMBERS	YEAR APPTD	PRESENT ABSENT	Voting MEMBERS	YEAR APPTD	PRESENT ABSENT
David Moss	06	P	Chris Malone	06	A
Terry Rodgers	09	P	Tom Davidson	08	P
Richard Pavlak	08	A	Jack Glass	09	P
Roger Schmidt	09	A	Tim McCann	06	A
Mukesh Khattar	09	A	John Groenewold	06	A
David Quirk	09	P	Mike Patterson	06	A
Doug McLellan	09	P	Francis Mills	09	Int'l
Fred Stack	08	P			
Corresponding Members		Not Recorded			

DISTRIBUTION

All Members of TC/TG/TRG plus the following:	
TAC Section Head: Van Baxter	
TAC Chair: Don Brundage	
Manager Of Standards	Stephanie C Reiniche
Manager Of Research & Technical Services	Mike Vaughn

These draft minutes have not been approved and are not the official, approved record until approved by this committee.

Roster Voting Member Role Call

- Quorum not present 6/7/0/1 (Present / Absent / Int'l / Chair)

I am late distributing these minutes so I am including here at the start of the minutes some specific details regarding the schedule in Orlando that are of specific interest to members of TC 9.9.

ASHRAE AWARDS Presentation
Saturday, January 23, 3:15–5:30 p.m.
Plenary Session, Rosen Shingle Creek,
Sebastian K, Level 1

TECHNOLOGY AWARDS
Given in recognition of innovative designs that comply with ASHRAE standards for indoor air quality and energy efficiency
Category IV—
Industrial Facilities/Processes—Existing
Mukesh K. Khattar, PhD, *for High Density Data Center Cooling/Heat Containment, Austin, Texas*

Congratulations Mukesh !

Continuing Education courses

Saturday, January 23
8:00 a.m.–3:00 p.m.
Data Center Energy Efficiency
Rosen Shingle Creek, Sebastian L3, Level 1
Data centers offer plenty of opportunities to save energy due to the increasing amount of the total energy used by commercial facilities. However, these increases have a downside in that they have caused a significant increase in the power required and the heat dissipated by the computing equipment. This power requirement and heat dissipation is to the point that it has become difficult to power and cool these systems in data centers and telecommunications rooms. This course examines the best practices for data center energy efficiency by focusing on thermal guidelines for data processing, datacom facility energy efficiency and actual high density data centers in operation today. Gain an understanding of equipment environment specifications while learning methods for measuring performance and developing means to evaluate effectiveness of data center cooling. Also, instructions are provided on the use of the U.S. DOE's DCPro web-based energy modeling tools for data centers. In addition to the course manual, attendees receive a discount toward the purchase of Thermal Guidelines for Data Processing Environments, Design Considerations for Datacom Equipment Center, and High Density Data Center – Case Studies and Best Practices.

Instructors: Roger Schmidt, Don Beaty and Jack Glass

TC 9.9 Meetings

TC 9.9 Program/ Handbook/ Research	Sunday 5:00-7:00p	Gatlin AI
TC 9.9 General Meeting	Monday 2:15 -9:30p	Panzacola H 3&4
TC 9.9 Long-Term Planning Workshop	Tuesday 1:00-5:00p	Gatlin AI
SPC 127 Workshop	Tuesday 1:00-4:00p	Suwannee 21 (2)

Specific TC 9.9 Meeting Agenda

Sunday

5:00 – 6:00 Programs Subcommittee Meeting (Vali will prepare a formal handout prior to the meeting to accomplish this task in one hour)

6:00 – 7:00 Handbook Committee – final review of recommendation, preparation for vote on Monday

Monday

1:00 – 1:30 General Introductions, review prior minutes & Vote on acceptance of Handbook changes

1:30 – 2:15 Programs Subcommittee Report

2:15 – 3:00 Research committee Report on ESD RTAR & Work statement as well as presentation by PJ Sing on the status of the Contamination RTAR

3:00 Break

3:15 – 3:30 Program update – DOE training program (The Tuesday workshop will be the first phase of the training / certification program for trainers)

3:30 – 4:00 Training Session – what is SPC 127 and what is their scope of effort that begins on Tuesday 2 – 5.

4:00 – 6:00 Training ASHRAE 90.1 Panel discussion. What is it? What are the specific changes anticipated? How will they effect Data Center's

6:00 Break

7:30 – 9:00 Review Economizer Book

Tuesday

1:00 – 5:00 DOE train –the-trainer effort utilizing the current material approved by the TC 9.9 voting members (Lead by Don Beaty and Roger Schmidt)

2:00 – 5:00 Separate Room Meeting of SPC 127 to begin the process of updating this standard

Transactions and Seminars

Sunday

11:00 A.M.–12:30 P.M.

TRANSACTIONS 2 (INTERMEDIATE)

High Density Cooling Issues Update

Track: Energy Conservation and Alternative Energy Sources/Solutions

Room: Panzacola F4

Sponsor: *9.9 Mission Critical Facilities, Technology Spaces and Electronic Equipment*

Chair: *Ecton English, Member, Department of Defense, Ft. Meade, MD*

Cooling of high-density electronic equipment installations such as data centers and telecommunication facilities are addressed. Data center power densities of 400 watts per square foot or higher are increasingly commonplace. The papers in this session will aid the engineer with some methods to reduce energy usage in a data center.

1. Top-Level Energy and Environmental Dashboard for Data Center Monitoring (OR-10-003)
Magnus Herrlin, Ph.D., Member, ANCIS Incorporated, San Francisco, CA and Craig Compiano, Associate Member, Modius, Inc., Oakland, CA
2. System Architectures and Fluids for High Heat Density Cooling Solutions (OR-10-004)
Lennart Stahl, Member, Emerson, McKinney, TX
3. Cold Aisle Containment Re-thinking The Data Center Space (OR-10-005)
Herb Villa, Member, Switch & Data Corp., Tampa, FL

Monday

8 :00 A.M.–9:30 A.M.
TRANSACTIONS 5 (INTERMEDIATE)
Climate Impact on Data Center Efficiency
Track: Energy Conservation and Alternative Energy Sources/Solutions
Room: Panzacola H1/2
Sponsor: *9.9 Mission Critical Facilities, Technology Spaces and Electronic Equipment*
Chair: *Terry Rodgers, Member, Syska Hennessy Group, Concord, NC*
Methodologies for evaluating PUE, DCiE, Mechanical and electrical PUEs are presented based on field knowledge from 30+ data center energy audits. Instantaneous power measurements lead only to instantaneous efficiency metrics since IT load and cooling loads vary from day to night and from one season to another. In order to generate an average metrics over the time period of interest, either extensive measurements over a period of time or a combination of instantaneous measurements and energy model are required. In addition, analyses of utility bills and BMS historical trending data are essential components as well. Case studies are presented to show how one can utilize existing data center information and retrieved data to generate a comprehensive energy assessment of the data center and hence average efficiency metrics.
1. Design Consideration of Applying Airside and Waterside Economizer to Data Centers (OR-10-012)
Yury Lui, Member, EYP Mission Critical Facilities, Chicago, IL
2. Data Center Energy Auditing and Benchmarking: Progress Update (OR-10-013)
Munther Salim, Member, EYP Mission Critical Facilities, Chicago, IL
3. Numeric Analysis of Telco and Data Center Cooling and Humidification Options (OR-10-014)
Bruce Hellmer, P.E., Member, Tier IV Consulting Group, Lee's Summit, MO

Tuesday

9:45 A.M.–10:45 A.M.
TRANSACTIONS 9 (BASIC)
Contamination Issues in Datacom Environments
Track: IAQ/Comfort
Room: Panzacola G1
Sponsor: *9.9 Mission Critical Facilities, Technology Spaces and Electronic Equipment*
Chair: *Joe Prisco, P.E., Member, IBM, Rochester, MN*
This transactions session will cover on a variety of issues that are pertinent to particulate and gaseous contamination in datacenters, telecommunications facilities, and combinations thereof. Issues of recent concern include the use of air-side economizers, filtration, control and prevention, geographical considerations, susceptible areas of datacom equipment, hardening of datacom equipment, and the impact of RoHS legislation.
1. What's Creeping Around in Your Data Center? (OR-10-023)
Christopher O. Muller, Member, Purafil Inc., Doraville, GA
2. Contamination in the Data Center the Impact of CRAC Belt Dust (OR-10-024)
J. Stack, Member, and Daniel Fannin, Emerson Network Power, Columbus, OH

Wednesday

8:00 A.M.–9:00 A.M.
SEMINAR 56 (INTERMEDIATE)
Intergration of Server and Facilities Controls in Data Centers for Lower Costs and Higher Efficiency

Track: Green Buildings/Sustainability
Room: Panzacola H1/2
Sponsor: *9.9 Mission Critical Facilities, Technology Spaces and Electronic Equipment*
Chair: *Michael K. Patterson, Ph.D., P.E., Member, Intel, Hillsboro, OR*
Energy efficiency and cost savings in data centers are a key factor in their success. Recent advances in server technology, manageability, and software has allowed the server temperatures to be used to control the data center cooling systems. This seminar details the demonstration of this application in a case-study format, as well as looking at what this new capability can mean for the future efficiency improvements in data centers.
1. Server Data for the Facility; the Holy Grail
Michael K. Patterson, Ph.D., P.E., Member, Intel, Hillsboro, OR; Prasad Pusuluri, Intel, Santa Clara, CA
2. Connectivity and Control for Servers and the Building Management System
Dennis A. Nasont, Intel, Santa Clara, CA; Bill Storey, Wunderlich-Malec, Pleasanton, CA
3. Designing Efficient Sustainable Data Centers with Enhanced Visibility to the Server Status
Vali Sorell, P.E., Member, Syska Hennessy, Charlotte, NC; Michael K. Patterson, Ph.D., P.E., Member, Intel, Hillsboro, OR

- Program for Albuquerque
  - One Transaction Section with three papers has been submitted by M Scofield. With a theme of Evaporative Cooling of Data Centers
  - We have been approved for four Conference Paper Sessions containing 10 papers. Vali solicited volunteers to be session chairs as well as Reviewers. The list below is after theses session chairs have volunteered and been accepted – Thanks to all for the quick response.
- Session 11-1: Temperature Requirements in Data Centers: Mike Patterson
- Session 11-2: The Importance of Air Delivery in Data Centers: Herb Villa
- Session 11-3: Energy Efficiency Issues in Data Centers: Nick Gangemi
- Session 11-4: How to Operate Your Data Center Successfully: Craig Crader
  - No Forum is planned
  - No Seminars have been submitted yet, but there is plenty of time.

Note from Vali. A suggestion has been submitted to grant all reviewers of transaction papers free admission to the conference. This suggestion is under review by ASHRAE.

ASHRAE 90.1 Mechanical Sub-committee by Rick Pavlak

- Richard Pavlak has been formally named as the liaison to the 90.1 MSC
- The MSC has assigned a new prime liaison to work with TC 9.9 to help resolve the comments from the last public review of the addendum BU. That person is Ned Heminger. The results of this new effort may be a complete start over of the bU public review cycle with many changes to the document. More details will be provided at the General Session in Orlando.

Handbook subcommittee report

- The current draft of the suggested changes to the Handbook is be posted on our web site for members to review and comment. All comments and final adjustments will be discussed in Orlando at the Sunday evening session and a vote will be taken first thing at the Monday General session

SPC 127 Subcommittee

- Nothing to report. The first meeting will be in Orlando.

Research subcommittee report By Robin Steinbrecher

- The RTAR workstatement for the ESD program was completed and voted on unanimously. It has been submitted to the ASHRAE research committee for approval
- The RTAR for the gaseous contamination program being lead by PJ Sing is targeting having a final proposal ready for Orlando for vote by TC 9.9. This will then be submitted to ASHRAE for their approval in May.

DOE Save Energy Now Data Center Best Practice Awareness Training Program

- Committed to having the current version of the teaching materials sent to all members for final comments. This was done on 1/4/2010. All comments are being incorporated and a final version will be sent to the voting members for acceptance on 1/12/2010. This training material is a live document. We expect updates every 6 – 9 months. So keep the comments coming.
- We will begin the trainer certification program in Orlando with a train-the-trainer course on Tuesday 1:00 – 5:00

Data Center - Energy Management Practitioner Program

- This is not a TC 9.9 program, but we continue to provide updates as many persons within TC 9.9 will be trained and certified as the assessment practitioners. For more details on the program please see the 11/3/2009 meeting minutes on the http://tc99.ashraetcs.org/index.html web site.

The next TC 9.9 phone meeting will be in Orlando. See you there.