AMERICAN SOCIETY OF HEATING REFRIGERATING AND

AIR-CONDITIONING ENGINEERS, INC.

TC/TG/TRG NO: **TC 9.9**   Date: 0**1-31-2011**   Location: **Las Vegas, NV, USA**

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

Attendees

First	Last	First	Last
Don	Beaty	Nemat	Lotfi
Gerrado	Alfond	Bill	Maltz
Terry	Alton	Bob	McFarlane
Andrew	Baxster	Doug	McLellan
John	Bean	David	Meadows
Clark	Bisel	Frank	Mills
Jim	Buckley	David	Moss
Tahir	Cader	Shlumo	Novotry
Brad	Cochran	Michael	Patterson
Fran	Coffey	Rick	Pavlak
David	Copeland	Vijay	Perannan
Craig	Crader	David	Quirk
Carl	Crow	Terry	Rogers
Tom	Davidson	Jeff	Rut
Vello	Ehvert	Roger	Schmidt
Ecton	English	Mike	Scofield
Cliff	Federspiel	Ian	Seaton
Jon	Fitch	Mark	Seymour
Stephan	Fok	Saurahh	Shrivasrara
Nick	Gangemi	Parabjit	Singh
Art	Giesler	Steve	Smith
Leon	Glicksman	Ankit	Somani
Ted	Jagusztyn	Vali	Sorell
Greg	Jeffers	Jonathan	Spreeman
Rich	Jones	Fred	Stack
Muesh	Khattar	Brad	Stanley
Michael	Koerner	Jeff	Stein
Chris	Kurkjian	Robin	Steinbrecker
Geoff	Lawler	Herb	Villa
Sang	Lee	Marlin	Vogel

Standard 90.1 Review ~ Rick Pavlak

- 90.1-2010 – Impact on Data Centers
    - o 35 Year old standard with continuous updates
    - o Updated every 3 years
    - o Adoption to code
    - o Mandatory Provisions
    - o Prescriptive Path
        - ▪ Economizers
        - ▪ Basics of econ exemptions
    - o Datacom Exemptions
    - o Update to ECB for Data Center energy modeling
    - o Interpretations can be submitted at any time.

Save Energy Now Review ~ Nick Gangemi

- DOE and TC 9.9 collaboration
- TC 9.9 provided the trainers
- 8 Total presentations given since March 2010
- Attendance about 50 people per session
- Student feedback has been very good
- Can the presentation be shared to TC 9.9
- Explore the idea of making this into an ASHRAE short course for Chicago.

Forum – Failure mode and effects analysis and risk management in data centers.

- Failures due to human error
- Reliability standards – Uptime
    - o Tiers 1 – 4
    - o Controls
- Suggestions by tier
- May miss the big picture – where the facility is located.

IT subcommittee ~ Roger Schmidt

- 15 IT manufacturers
- Working on 3 topics
    - o Power trends out to 2020
    - o Thermal guidelines
    - o Contamination
    - o
- Power Trends Books update book
    - o Break out components

- Processors
- Memory
- Graphics cards
- Hard Drives
- Solid state drives
  - Idle and peak running kW (Spec power)
    - Controllability (turn down)
    - Energy Star
  - POE (power over Ethernet)
  - Water cooling Trends
    - Correlate water to cpu temp
    - Cooler CPU temps with liquid
    - Willingness of customers to deliver water to the rack
    - Trend on water temps over time
  - Liquid cooling guidelines
    - Refrigerants
    - Dielectrics
  - Add new CMOS trends
    - New "switch" after CMOS
  - Status 80% complete and draft complete by April
  - IT and BAS communications

- Thermal Envelope
  - 2004 Guideline
    - created common set of conditions and where it's measured
  - 2008 Guideline
    - Expanded recommended temperature and humidity range
  - 2011 Guideline
    - High interest of free cooling
    - Governmental influence
    - Use of recommended vs. allowable
    - Understand reliability, power, and performance with temps
    - Time rate of temp change
    - Elevation de-rate starts near 900 meters
    - New classification
    - Timeline
      - Target white paper Feb/ March 2011
      - Target ASHRAE publication June/ July 2011

- Contamination Update
  - 12 IT manufacturers participated
  - Recommends controlling gaseous contamination

- o Copper corrosion should be less than 300 Å/month
- o Airside economizers
  - ▪ Concern over outdoor air prolusion
- o Copper creep corrosion
  - ▪ Miniaturization of electronics
  - ▪ RoHS
  - ▪ Sulfur content high in certain geographic locations
- o Target whitepaper update Feb/March 2011

Publications ~ Don Beaty

- ASHRAE Datacom Series
- Updating
  - o Thermal Guidelines
  - o Power Trends
- CD is $199 for all the books and TC 9.9 papers
- Book discounts
  - o 1-9 no discount
  - o 10 – 99 50% discount
  - o 100 or more 60% discount
- Reviewed intent of all 10 books
- Book 10 Green Tips book has been printed
- Economizer book delayed for thermal guidelines
- New book on controls and monitoring IT level

Standard 127 ~ Fred Stack
- 4th revision of 127
- Reviewed changes made
- Next phone Meeting 02-21-2011
- Rev 5 will go to public review after Feb conf call

Research ~ Mike Patterson

- Existing Projects
  - o TRP-1499 – Humidity approved to release for bid
  - o RTAR–1619 Data Center Gaseous Contamination limits and means of Monitoring
    - ▪ Conditionally accepted for further development
  - o RP-1487 Simplified Rack level modeling
    - ▪ Working with TC 4.10
  - o Improved pressurization control methods
    - ▪ Does TC 9.9 want to co-sponsor
- Future Projects – Research Prioritization
  - o Online surveys will be emailed prior to meetings

o   We will re-evaluate the project list.

Industry Trends ~ Dave Quirk

- Covered industry trends and Emerging topics
- LEED for data centers should we comment as a TC

Handbook ~ Doug McLellan

- 2011 proofs have not been sent yet
- Applications Handbook – 2015
    o   Name change to - Data processing and telecommunication facilities
    o   Doug will lead the chapter revision
- Revision schedule –
    o   Doug will start contacting people to form a new committee
- Revisions for 2015
    o   Edits missed in 2011
    o   Energy conservation methods
    o   Metrics
        ▪ Energy, Thermal, Airflow, Cooling, IT, Electrical, Reliability –availability, Productivity
    o   Update graphics
    o   New technologies
- Can the TC rewrite the entire chapter start with an outline
    o   Discovery outline to be done by Don B and Roger S and then shared with the TC to ensure the correct topics are covered in the 2015 handbook

Programs Update ~ Vali Sorell

- Vali handing over the programs chair to Nick Gangemi after this meeting
- Reviewed the types of programs we sponsor
    o   Technical paper - up to 30 pages
    o   Conference Paper - up to 8 pages
    o   Seminars - Abstract only no paper
    o   Forums – Abstract only
- All submissions should align to the "Tracks" for the conference
- Schedule/ Date Review –
    o   Montreal
        ▪ Seminar and Forum Programs – 2-14-2011
    o   Chicago
- Topics – For conferences
    o   Seminar idea's for Montreal
        ▪ Data center environmental limits (temp, humidity, particulate) – Roger Schmidt

- Sustainability Water, energy, etc.– Kris Kurkjian
- Ways to make 90.1 more data center friendly – Mike Patterson

Availability/ reliability

Other notes:

Book: The human element of data centers
- Failures/ failure modes
- Optimization
- Continual maintenance (water treatment, filters)
- Reliability and maintenance how to balance extra units.
- How efficient can we get with capital
- Gen set starting shut down OA dampers

CFM/kW out to 2020