AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, NE / Atlanta, GA 30329
(404) 636-8400

TECHNICAL COMMITTEE 9.11 MEETING REPORT

TECHNICAL COMMITTEE (TC):
9.11

TC TITLE:
CLEAN SPACES

DATE OF MEETING:
January 26th, 2015

LOCATION:
Chicago

DATE RE-ISSUED:
Approved 6/29/15

RECORDED BY:
Art Giesler

<table>
<thead>
<tr>
<th>VOTING MEMBERS</th>
<th>YEAR</th>
<th>PRESENT (Y/N)</th>
<th>Sub-committee Chairs</th>
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<tr>
<td>Dr. Kishor Khankari, PhD</td>
<td>07/12</td>
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<tr>
<td>Arthur Giesler</td>
<td>07/14</td>
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<tr>
<td>Gary Shamshoian</td>
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<td>Peter Gardner, PE</td>
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<tr>
<td>Vinod Gupta, PE</td>
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<td>Dominador De Guzman Castro (JoJo)</td>
<td>07/14</td>
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<td>Michael Amstadt</td>
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<td>Roland Charneux</td>
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<td>Kenneth Mead, PhD, PE</td>
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<td>Matt Middlebrook</td>
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<td>David Poetker</td>
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<td>Gordon Sharp</td>
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<td>Wei Sun</td>
<td>07/14</td>
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<td>Mitchell Swann, PE</td>
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<td>Ivan Thomas</td>
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<td>John Varley</td>
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<td>R Vijayakumar, PhD</td>
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<td>Christopher Weaver</td>
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<tr>
<td>Gabriel Jimenez, (Non Quorum)</td>
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<td>CORRESPONDING MEMBERS (CM)</td>
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<td>Philip Naughton</td>
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<td>Paul Lemestre</td>
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<td>Jacob Edmondson</td>
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<td>Davor Novosel</td>
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<td>William Frantz</td>
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<td>Ina Parker</td>
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<td>Jose Palma</td>
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<td>Julian Rochester</td>
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<td>Tim Walsh</td>
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**ADDITIONAL ATTENDEES**

- Zacc Poots  Nailor Industries  zpoots@nailor.com
- Dan Haas  Clarcor Air  dhaas@clari.com

**SOCIETY LIAISONS, ETC.**

- Lynn Werman  TAC Section 9 Head  N
- Jeff Gatlin  Section 9 Research Liaison  Y
Meeting Report:

ASHRAE Annual Meeting
Chicago, Monday, January 26th, 2015

1. Chairman Kishor Khankari called the meeting to order at 2:15 PM. Fourteen out of eighteen voting members including the chair were present at the start of the meeting. Non-Quorum member not present.

All voting members, corresponding members and guests were self introduced.

Review on voting members as minutes from Seattle show Phil Naughton as voting and Kishor as non-voting. Kishor to verify changes.

2. Minutes:

Wei Sun moved to accept the Seattle meeting minutes as amended. Motion second by Vinod Gupta.

Motion passed (13/0/0 CNV)

2. Sub-committee reports:

5.1 JOURNAL -MICHAEL AMSTADT -
- Phil Naughton taking lead on article on energy efficiency in cleanrooms. R Vijayakumar, PhD book published “Aerosol Mechanics for the rest of us”.

5.2 WEB PAGE – JO JO CASTRO
- Each subcommittee chair to send info for Jo Jo to upload

5.3 RESEARCH – VINOD GUPTA, PE
- Report presented from research subcommittee meeting.
- Mitch Swann RP-1399 Status Update: Project is on track. Contractor obtained access to two biotech companies to measure particles. Contractor is facing challenges gaining access to medical manufacturer’s and blood plasma companies. Three facilities are currently being used with 4 and 5 under discussion. Eight total to be used. Contractor may not be able to obtain access to blood plasma facilities for testing. More data points to be gathered in other areas. No cost change in scope of data points to be requested.
- R. Vijayakumar RP-1604 Status Update: No cost extension to March 2016 to be voted. Construction of facilities and obtaining of equipment has slowed project down.
- RP-1431 and RP1344 are accessible on the ASHRAE website.

5.4 PROGRAMS : P. GARDNER
- Two programs in Chicago. Attendance in the 75 – 85 range on Seminar 12 Emerging Technology in Real-time Particle-Microbial Sensing and Demand Flow Control for Cleanrooms.
- Deadline for Atlanta for seminars and workshops is Feb 9, 2015.
- Orlando Conference papers due date is March 23, 2015.
- Committee can do conference papers (multipresenters)
- Orlando will be looking at Clean Build Protocols for projects besides cleanrooms

5.5 HANDBOOK – GARY SHAMSHOIAN
- Handbook complete for this cycle. Continuous maintenance is available for the electronic handbook.
5.6 DESIGN GUIDE : WEI SUN
- Section 5 not finished. PubEd will allow us to approve other sections so editing and other work at Society may occur. Finished Sections are to be sent out for review and then to the committee to vote on acceptance.

5.7 SHORT COURSE – R. VIJAYAKUMAR
- Planning to prepare short course for Atlanta. R Vijayakumar, PhD gave short course presentation to Mechanical Contractors Assn. of America in St. Louis.

5.8 ENERGY EFFICIENCY – PHIL NAUGHTON
- Meeting at 4:00 PM today. Sub-committee is preparing white paper (5000 words) with four authors. Draft review planned for Atlanta meeting.

6. Liaison Report

6.1 ISPE – Peter Gardner
- ISPE is publishing sustainability guide for pharmaceutical.

6.2 USP – KEN MEAD
- USP 800 “Hazardous Drugs” Open mic meeting on Feb 20, 2015 2-4 PM EST.

6.3 TC 9.6 Healthcare – KEN MEAD
- RTAR ACH for Infection Control. FGI is interested in possible confounding.

6.4 TC9.10 Laboratory Systems – Kishor Khankari
- Exploring ACH issue in labs. Opportunity for possible joint authorship for RTAT ACH (ventilation effectiveness, dilution, etc.) for literature review with three possible projects for Labs, Healthcare and Clean Spaces.

6.5 TC 7.2 Design Build Contractor and TC7.1 Integrated Building Design – Mitch Swann
- 9.11 should have more collaboration with TC 7.1 and 7.2.
- College of Fellows to have debate about BIM in Atlanta.

7. Old business

None

8. New business

Need names for Vice Chair and Secretary

Mitch Swann moved to accept change in scope for RP-1399 as proposed by the PI to leave number of sites the same and change the distribution of site types. Seconded by Gary Shamshoian. Motions carried 13/0/0 CNV.

Adjournment:

Meeting adjourned at 4:13 PM

Respectfully Submitted,
Art Giesler