

**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:** June 25th, 2012 **LOCATION:** San Antonio

**DATE RE-ISSUED:** Draft (Rev. 0) **RECORDED BY:** R. Charneux

VOTING MEMBERS	YEAR		PRESENT (Y/N)	Sub-committee Chairs	
	On	Off			
Roland Charneux	07/07	06/12	Y	Handbook	Gary Shamsioian
Arthur Giesler	07/09	06/13	Y	Research	Kishor A. Khankari
Shih-Cheng Hu	07/09	06/13	N	Programs	Peter B. Gardner
Larry Hughes	07/09	06/13	N	Web Page	David Poetker
Roger Lautz	07/09	06/13	N	Journal	Michael Amstadt
Roger Lautz	07/07	06/12	Y	Design Guide	Wei Sun
Kenneth Mead	07/09	06/13	Y	Short Course	R. Vijayakumar
Mitchell Swann	07/07	06/12	Y		
R. Vijayakumar	07/09	06/13	Y		
Christopher Weaver	07/09	06/13	N		
Charlie Shieh	07/10	06/14	Y		
Pete Gardner	07/11	06/15	Y		
David Poetker	07/11	06/15	N		
Wei Sun	07/11	06/15	Y		
Matt Middlebrooks	07/11	06/15	Y		
John Varley	07/11	06/15	Y		

## Technical Committee 9.11: Clean Spaces

<b>CORRESPONDING MEMBERS (CM)</b>	<b>PRESENT (Y/N)</b>	<b>CORRESPONDING MEMBERS (CM)</b>	<b>PRESENT (Y/N)</b>
Kishor K Khankari	N	Chris Malanga	N
Dennis Ligsay Alejandro	Y	Norm Maxwell	N
M. Scott Alexander	N	Roderick G McLeod	N
Michael Amstadt	Y	Susan D Morrison	N
Nejat Babur	N	Mark A Mueller	N
Russell T Bailey	N	Christopher O Muller	N
Kimberly A Barker	N	Gredory M Munter	N
Cheryl Baylie	N	Philip J Naughton	Y
James R Beasley	N	Eric Z Nejat	N
David Bess	N	Victor A Neuman	N
Steve Blaine	N	Sean O'Reilly	N
Reg Brown	N	Taner F Ozkaynak	N
Bernardo Cardenal	N	Riyaz A Papar	N
John P Castelveccchi	N	Sharad V Paranjape	N
Dominador De Guzman Castro Jr.	N	Zivojin B Perisic	N
Robert E Chase	N	Kent W Peterson	N
Allan D. Chasey	N	David Y.H. Pui	N
Kyung-Ju Choi	N	Mark A Renn	Y
Donald J Clarke	N	Christopher S Robertson	N
James J Coogan	N	Julian Rochester	N
Manuel A Del Valle	N	Peter H Rumsey	N
Low Han Guan Den	N	Vincent A Sakraida	Y
Charles E Dunn Jr.	N	Emil Sandru	N
David S Ensor	N	Raymond K Schneider	N
Christopher Flaherty	N	Ted N Schnipper	N
William H Frantz	N	EC "Chuck" Schroeter	N
Daniel Albert Ghidoni	N	Anad K Seth	N
Vinod P Gupta	Y	Ronald E Hill	N
Gabriel A Jimenez	N	Michael Shelton	N
Michael D Jue	N	Charles W Soltis	N
Yu-Hao Kang	N	Kevin A Sweeney	N
Hemant S Kavathekar	N	William Tschudi	N
Charles F Kern	N	George E Wells, III	N
Kevin D Knappmiller	N	Philip J Winters	N
Elizabeth A Kolacki	N	Tengfang Tim Xu	Y
Thomas H Kuehn	N	Gordon P Sharp	Y
William A Kumpf	N	Thomas R Spearman	N
D. Randall Lacey	N	Michael M Starke	N
Paul R Lemestre	N	Ivan Thomas	Y
Matthew C Lemieux	N	Fu-Jen Wand	N
Cesar Luis D L Lim	Y	Richard B White	N
Zhongping Lin	N	Alfred W Woody	N
Junjie Liu	N		
Dawen Lu	N		

## Technical Committee 9.11: Clean Spaces

### ADDITIONAL ATTENDEES

Kurt Rindoki	Y
Don Hill	Y
Gerald Williams	Y
Uri Raimish	Y
Jose Palma	Y
Davor Novosel	Y
Joel Davis	Y
Gary Shamshoian	Y

### SOCIETY LIAISONS, ETC.

Thomas Lawrence	TAC Section 9 Head	N
Carl Huber	Section 9 Research Liaison	N

## Technical Committee 9.11: Clean Spaces

### Meeting Report:

#### ASHRAE Winter Meeting San Antonio, Monday, June 25th, 2012, 2:20 – 4:25 PM

1. Chairman Roland Charneux called the meeting to order at 2:20 PM. Eleven (11) voting members including the chair were present, on a total of 15 voting members (including one international).

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

2. **Minutes:**

Correction to article 5.4, RP-1604 title should be "Demand based control for clean rooms" instead of "Demand controlled filtration for clean rooms" of the Chicago minutes.

Wei Sun moved to accept Chicago winter meeting minutes with the above mentioned correction.

Motion passed (10/0/0 CNV)

3. **TC Breakfast Report:** (Roland Charneux)

- 2 new multidisciplinary groups has formed (MTG)
  - MTG-LOWGWP – Alternative lower global warming potential refrigerants
  - MTG-EAS – Energy efficient air handling systems for non residential building
- Quality control for society technical program. Each TC to propose a list of technical session chairs and reviewers. List to be sent to Tom Lawrence
- Conference and exposition committee (CEC)
  - Evaluation of speakers continues; 25 speakers had rating below 3.5 in Chicago and received a letter
  - Track chairs will manage the review process
  - 95\$ registration fees for speakers starting in Dallas
  - San Antonio sessions

	Submitted	Accepted	Scheduled	
Tech papers	43	31	10	
Conf. papers	86	43	14	
Seminars	120	67	67	
Forum	17	8	8	

- Mini-conference in Denver on research
- TC websites, logo should be changed to new logo by TC's webmasters
- Thank you letters. TC members will receive an email for that
- Subcommittees web-meeting available. Ask Mike Vaughn for arrangements : [mvaughn@ashrae.org](mailto:mvaughn@ashrae.org)
- New ASHRAE terminology wiki launched with over 6 000 definitions at [www.ashraewiki.org](http://www.ashraewiki.org)
- TAC prepare a PowerPoint presentation on TC's that could be used at chapter dinners to explain what are the activities within a TC.

4. **Membership:**

Membership continues to be strong. Many active corresponding members are in the committee.

- Rolling off June 30, 2012
  - Roland Charneux
  - Roger Lautz
  - Mitchell Swann
- Rolling on July 1<sup>st</sup>, 2012
  - Kishor Khankari
  - Gordon Sharp
  - Paul Lemestre
  - Ivan Thomas
  - Kishor Khankari will be chair starting July 1<sup>st</sup>, 2012.

Art Giesler will be vice-chair and secretary starting July 1<sup>st</sup>, 2012.

## Technical Committee 9.11: Clean Spaces

### 5. Sub-committee reports:

#### 5.1 HANDBOOK – GARY SHAMSHOIAN

- Will need more people helping
- Looking into new electronic format

#### 5.2 JOURNAL – MICHAEL AMSTADT

- No articles related to cleanrooms since January
- Roland asked people to submit articles in the interest of general membership

#### 5.3 WEB PAGE – DAVID POETKER

- No report

#### 5.4 RESEARCH – VINOD GUPTA

5.4.1 Many projects overall rejected because : not innovative, not new work, too much work, or limited value to ASHRAE.

5.4.2 Review of written report :

5.4.2.1 1399-WS : bids accepted, U-MN recommended, RAC prefers more bidders, not yet awarded. Might need to be re-bid. VJ suggested that it is not appropriate to rebid the same scope and it seems the only way to get more bidders is to reduce the scope. Mitch discussed the merits of keeping the scope. Reducing the scope can produce results that are not statistically viable to be used in the marketplace. Mitch suggested that there might be some support from industry for additional funding not sure how we would go about doing this. Some bidders also expressed concern that they were not heavily engaged in ASHRAE and that they were better off bidding other project. Splitting the WS in two could be done – start with review of existing research (ISPE perhaps). Is the issue cost or number of bidders – Roland thought it was number of bidders. Roland asked to table the conversation. If we re-bid, then there is no certainty that we will get any bidders. Vin suggested that we keep the scope, adjust the RFP and retest the market place to see if we can get bidders in another round. Mitch suggested that we should get some new eyes on the RFP. This needs to be reviewed procedurally with RAC – if one bidder was not acceptable, this should never have been forwarded for review. ASHRAE has wasted people's time and a year of calendar time. VJ asked to issue a formal complaint or objection to ASHRAE. Mitch Swann will review and will propose an action plan.

5.4.2.2 RP-1604 : 30% report done to date.

5.4.2.3 RP-1341 and RP-1344 : Transaction is submitted. Paper was presented here.

#### 5.5 PROGRAMS : P. GARDNER

5.5.1 San Antonio

5.5.1.1 Sunday morning seminar. Well attended. Good interest from 9.6 and 9.10.

5.5.1.2 Vin Gupta seminar was not accepted. He will resubmit.

5.5.1.3 Kishor – chilled beams did not get submitted.

5.5.2 Dallas

5.5.2.1 Sun – Transaction Paper – TRP-1344

5.5.2.2 Sharp – Seminar – Demand Control Ventilation in Clean Spaces

5.5.2.3 Sun – Seminar – Clean Room Design Guide Roll-out

5.5.2.4 Swann – Seminar – Design Build of Clean Rooms

5.5.2.5 Gupta – Forum – Energy and Contamination Control Issues in Clean Rooms

5.5.3 No meetings listed for Denver or NY

## Technical Committee 9.11: Clean Spaces

### 5.6 DESIGN GUIDE : WEI SUN

5.6.1 Wei reviewed the status of the Design Guide. Actually, 95% completed.

5.6.2 Editing process start.

### 6. Liaison Report

#### 6.1 NFPA – ROGER LAUTZ

No report related to TC-9.11.

#### 6.2 IEST/ISO – R. VIJAYAKUMAR

IEST/ISO – clean room filters procedure for measuring nano-particles.

6.2.1 ISO 16466 : Part 1 and 3 trying to get full TC to vote to confirm. Part 2 – not sure is there are enough votes to update. Part 4 – not enough votes to update. Part 12 (classification with nanoscale particles) – draft document available for review. Due mid-July. Part 13 (cleanliness of surfaces) – proposed. Philip Naughton reporting.

6.2.2 Working Group 12 Clean Room Design. 1999 1st, 2007, 2<sup>nd</sup>, 2012 3<sup>rd</sup> edition ready for approval.

#### 6.3 ISPE – PETER GARDNER

No report related to TC-9.11

#### 6.4 LBNL – BILL TSCHUDI

No report

#### 6.5 CDC/NIOSH – K. MEAD

No report

#### 6.6 TC-9.6 HEALTHCARE – ROGER LAUTZ

- Entusiasms for research projects
- Some joint research proposed
- Design guide in final review

#### 6.7 TC-9.10 LABORATORY SYSTEMS – P. GARDNER

- No report related to TC-9.11.

#### 6.8 TC-2.3 GASEOUS AIR CONTAMINANT REMOVAL – MATT MIDDLEBROOK

Two active studies : 1457-80% due in December 12 UV impacts on materials; 1557-40% complete on high concentrations of sorbents for accelerated results. Hope to present in Denver.

#### 6.9 TC-2.4 PARTICULATE AIR CONTAMINANTS REMOVAL – M. RENN

- Nothing to report

#### 6.10 EUROPEAN CLEANROOM ASSOCIATIONS – Z. PERISIC

- No report

#### 6.11 UNIVERSITY OF MINNESOTA – DAVID PUI/T. KUEHN

- No report

#### 6.12 NEBB – D. HILL

- Nothing to report

## Technical Committee 9.11: Clean Spaces

### 7. Old business

None

### 8. New business

8.1 Chairman gave thanks to committee for making his term easier.

8.1 Wei and Mitch offered thanks for the leadership. The committee all expressed their thanks.

### Adjournment:

Meeting adjourned unanimously at 4:25 pm

Proposed by Roger Lautz, seconded by Wei Sun.

### *Please review and discuss at Chicago meeting*

Respectfully Submitted,  
R Charneux  
TC-9.11 Chair