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TC 9.11 Clean Spaces Technical Committee Meeting Agenda – Phoenix

Meeting Date: **Monday, June 23rd, 2025**
 Meeting Location: **Sheraton Phoenix Downtown (Phoenix B, Level 3) with Hybrid option**
 Meeting time: **2:15-5:00 pm MDT Main Technical Committee**

Hybrid Meeting: If you are interested in attending the meeting remotely, please send Vincent Sakraida an email and your name will be added to the Teams Meeting invitation.

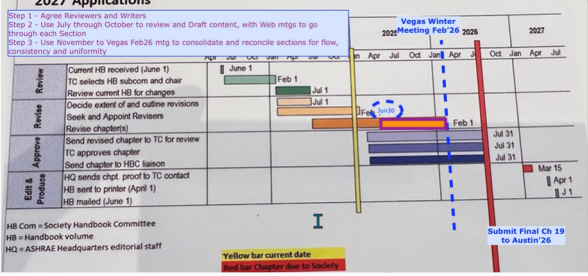
The ASHRAE Code of Ethics is to be adhered to by those doing ASHRAE business whether or not they are an ASHRAE member.

“Commitment to the ASHRAE Code of Ethics – In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests. (See full Code of Ethics: [https://www.ashrae.org/about-ashrae/ashrae code-of-ethics.](https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics))”.

Item No.	Item	By	Time (minutes)
1.0	Introduction of attendees	V.Sakraida	2
1.1	Roll call of voting Members (as shown on current ASHRAE Roster)	P.Naughton	2
	Vincent Sakraida 6/30/2027 Roland Charneux 6/30/2026 Phil Naughton 6/30/2027 Conor Murray 6/30/2027 Kurt Monteiro 6/30/2028 Wei Sun 6/30/2028		
1.2	Confirmation of Quorum 6 of 6 present Present: VS, PN, KM, WS, RC, CM	P.Naughton	1
1.3	Confirmation of Agenda	V.Sakraida	1
2.0	Review of previous meeting minutes	V.Sakraida	4
2.1	Vote on previous minutes, PN motion to approve. WS 2 nd .	V.Sakraida	2
3.0	Section Report	V.Sakraida	10
	Report from the Chair Breakfast and TAC Section Head 9		

	<p>Society overview: Presentation CEBD GAC updated: You can sign update for GAC updates bi-monthly There is an opportunity to sign up to be an SME on the GAC website. MTG Generative AI presentation People don't know the organization of ASHRAE 16 Regions of ASHRAE ASHRAE is Global Review ASHRAE Strategic Plan and see the updates that have been made. New TC9.13 for Space The activity forms that are being filled out by TAC are going to be automated.</p> <p>Congratulations to Phil Naughton for receiving the High Tower award. Kevin Moldune will be new Section 9 head.</p>					
4.0	Membership (starting July 1, 2025 through June 30, 2029) Elverson (Mitch) Swann Kishor Khankari Nikolas Nikolopoulos			V.Sakraida	4	
4.1	Status Changes (Move Up/Down)					
4.2	Voting Roster-review Jojo Castro JC is going to be the new web master Sina Yousef has withdrawn. Wei Sun, Mitch and Kishor K, Nikolas Nikolopoulos will roll on July 1 st 2025 Adam Howard Nevel Jason					
4.3	New TC9.11 Member Introduction Introductions			V.Sakraida		
	Getu Hailu Muhammad Saeed Michael Nigro Adam Donovan Christopher Tanakaya MacKenzie Cottle Samir Hernandez Ryan Edwards Vema Munagala Jason Atkisson Tim Loughran Gary Shamshoian Antonia Tritou					
4.4	TC9.11 Officers					
	<u>Name</u>	<u>Role</u>	<u>Voting</u>	<u>Name</u>	<u>Role</u>	<u>Voting</u>
	Vince Sakraida	Chair	Yes	Jojo Castro	Webmaster	No
	Phil Naughton	Vice Chair	Yes			
	Kurt Monteiro	Secretary	Yes			
	Phil Naughton	Research Chair	Yes			
	Wei Sun	Design Guide Chair	Yes			
	Conor Murray	Handbook Chair	Yes			

	Roland Charneux Program Chair	Yes	
5.0	Sub-Committee Reports (See attachment at end of Agenda for details)		
5.1	Research	P. Naughton	10
	<p>Virtual Subcommittee Meeting They did not meet No RTRARs There is a discussion about creating an RTAR related to the Supply Air Calculations Phil Naughton explained RTAR with a presentation</p>		
5.2	Programs	R. Charneux	10
	<p>Virtual Subcommittee Meeting Deadlines See Attached Programs Reports</p> <p>Planning programs for Las Vegas (January 31 - February 4, 2026)</p> <p>1- Seminar: <i>Introduction to Cleanroom Demand Control Ventilation</i> Chair: Phil Naughton, Speakers: I Wei Sun, Development of Cleanroom Demand Flow Control Modeling to Achieve Ultra-Fast Recovery Time with Case Kishor Khankari, DCV is not a correction for poor design Vince Sakraida, Control of contaminant in cleanrooms</p> <p>2- Seminar: <i>Designing a cleanroom without a table</i>. Chair: David Rausch/Phil if needed. Speakers: Kishor Khankari(Airflow distribution), Conor Murray(Emission and emission control), Yusuf Bhetasi (Back to the table) Vincent Saqkraida (approach for different type of CR as for Electronic, Bio, EV Batteries...).</p> <p>3- Debate: Do we need ACR Tables in cleanroom design. Chair: David Rausch, Participants: Kishor Khankari, Phil Naughton, Conor Murray, Yusuf Bhetasi</p> <p>4- Workshop: <i>Bye Bye ACR Tables !</i>, Hello, Best practices for Cleanroom design. Chair: Kurt Monteiro, Participants: Kishor Khankari, Phil Naughton, Conor Murray. Yusuf Bhetasi</p> <p>5- Seminar: <i>Commissioning and operation of Cleanrooms</i></p> <p>6- Seminar, Lifecycle cost analysis: Chair: Yusuf Bhetasi, Speakers: Yusuf Bhetasi, Wei Sun, Kishor Khankari, Vince Sakraida</p> <p>7- Embedded carbon in Cleanroom material, the European experience Chair: Conor Murray, Speakers:</p> <p>8- "Applications of ISO part 4 and 16 in cleanroom design". Wei Sun</p> <p>9- Forum: <i>Does Laminar diffusers creates laminar flow</i></p> <p>10- Seminar; Demand based ventilation part 2 11- Seminar: Moving away from ACR part 2 12- Seminar: Emissions from people and gowning. 13- Short course 14- Decarbonation of cleanrooms 15- OR Room emissions, impacts of physical movement</p> <p>The return location and return size, and supply location impacts air changes. Even a regular seminar with different speakers providing their perspective on what drives clean spaces. There might be task force to have a discussion.</p>		
5.3	Handbook Chapter	C. Murray.	10
	There is a discussion of the timeline of the new handbook.		

	<p>Murray is looking for authors and reviewers. The deadline is Annual Meeting Authors.</p> <p>PN noted is the plan seems to include a complete rewrite / organization. CM has suggested that revisions are necessary based on ISO standards revisions.</p> <p>VS noted that he agreed that an overhaul is required, however he shares the concern that it will be tough to meet the July 31st 2026. There was a signup sheet sent around.</p> 		
5.4	<p>Journal</p> <p>Vincent Sakraida wants to wait until the supply air Calculation is defined by the handbook /.design guide etc, then have an article for the Journal.</p> <p>Vincent Sakraida noted writing an article takes a fair amount of research and writing effort. He is willing to assist anyone willing to write an article.</p>	V. Sakraida	2
5.5	<p>Web page:</p> <p>We have a new webmaster and there is no report. The new webmaster has to be added to the roster</p>	Jojo Castro	2
5.6	<p>Energy Efficiency/Decarbonization</p> <p>No updates from the sub-committee.</p>	Chris Kirchner/Nikolas Nikolopoulos	10
5.7	<p>MTG ACR</p> <p>Meeting was held a month ago.</p> <p>The research project on ACH has been approved, bids and received. They will be deciding who they award to on Wednesday morning at the conference.</p> <p>The final vote will be held at RAC.</p>	P. Naughton	2
5.8	<p>Cleanroom Design Guide</p> <p>WS presented the progress made on the Design Guide, with the table of contents, timeline, lead authors, and reviewers. WS was looking for feedback on the contact and volunteers for authors.</p> <p>Nikolas N noted an interest in developing Certifications for Cleanrooms.</p>	W.Sun	5
5.9	<p>Cleanroom ACR Calculation Task Force</p> <p>There was a meeting on 2025-06-22. There will be a chapter in the design guide and an RTAR will be developed, and then eventually a guideline.</p> <p>There are manufacturers who have software that assist in calculations.</p>	V.Sakraida	5
6.0	<p>Liaison reports:</p>		
6.1	<p>YEA</p>	Nikolas Nikolopoulos	2

	Cleanroom National Conference in Greece in Oct 2025 will cover fundamentals on Day 1 and advanced topics on Day 2.		
6.2	ISO 14644 There is a council meeting of the plenary ICCCS for ISO in November	V.Sakraida	2
6.3	IEST/ISO: IEST has started working on an update that will be removing the ACH tables.	Wei Sun	2
6.5	ISPE: NH is member of the ISPE and has published an HVAC good practice guide. There will be a HVAC article in the Pharmaceutical Engineering magazine.	Nick Haycocks	2
6.6	CDC/NIOSH: To be removed		4
6.7	TC1.6 (Terminology) ASHRAE tries to makes sure ISO definitions should be aligned with ASHRAE definitions. There will be an effort to use ISO definitions and identify any changes that need to be made to ISO documentation.	P.Naughton	2
6.8	TC9.6 (healthcare) The most relevant update is the same as the MTG ACH update.	K.Monteiro	2
6.11	TC9.10 (Laboratory Systems) They are revising the laboratory design guide. There have been some questions that came out of the chemical contamination across enthalpy recovery wheels RP-1780 and if this is an issue with sensible wheels. There is an RTAR to do follow-up testing. There is an ARTAR to determine what is the chemicals that are released from lab equipment.	Charneux	2
6.12	TC 7.1 (Integrated Building Design) It is morphing Integrated Project Delivery. They are doing a literature search on how well the different methods of project delivery meet client expectations. There will be an RTAR.	M. Swann	2
6.14	TC7.2 (HVAC&R Construction & Design Build Technologies)	M. Swann	2
6.15	NEBB NEBB has provided feedback and it will be published.	V. Sakraida	2
7.0	Old Business	V.Sakraida	10
8.0	New Business There might be a might “commissioning for semiconductor facilities” guidelines that will be published by ASHRAE if there is enough interest. Phil Naughton is working on it. IST has a standard 1246 for testing particle emissions for cleans rooms in a controlled environmental chamber. There is another IST standard for garment	V.Sakraida / Floor	10

	particle emissions. There is ISO tables for generations for furniture. This is a good resource to obtaining particle emissions for clean spaces.		
9.0	Future Meetings		2
9.1	2026 ASHRAE Winter Conference – Las Vegas, NV January 31 st to February 4, 2026		
	Virtual Subcommittee meetings Research Energy Efficiency		