

**ASHRAE TC 9.10 Laboratory Systems
Long Beach
Tuesday June 27th, 2017
Meeting Minutes**

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING
ENGINEERS, INC.
1791 TULLIE CIRCLE, N.E./ATLANTA, GA 30329
404-636-8400**

TC/TG/TRG MINUTES COVER SHEET

TC/TG/TRG NO	9.10	DATE	Jun 27 st , 2017
TC/TG/TRG TITLE	Laboratory Systems		
DATE OF MEETING	Jun 27th, 2017	LOCATION	Long Beach

Members Present	Term Expires	Members Absent	Term Expires	Ex-officio members and additional attendance
Kelley Cramm	2017	Carl Crow	2017	Roland Charneux
John Castelvechi	2017	Charles Coward	2018	Mary Foutz
Charles Henck	2017	Gaylon Richardson	2018	Patrick Carpenter
Mark Hydeman	2018	Pete Gardner	2019	K. Khankari
Jim Coogan	2018	David Raush	2019	B. Fullerton
Robert Weidner	2018	Adam Bare	2020	T. Smith
Carol Ann Donovan	2018			J. Neubauer
Henry Hays	2018			D. Hammond
Guy Perreault	2019			Kenneth W Kuntz
Nathan Ho	2019			Jason A Atkinson
Traci Hanegan	2020			G. Augustini
Wade Conlan	2020			V. Neuman
				Jacob Edmonson
				C Reinderds-Caron
				Martin Stangl
				B. Burley
				M. Adolph

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All Committee Liaisons As Shown On TC/TG/TRG Rosters:	
Standards liaison Manager of Research & Technical Services	
Research liaison	

Call to order 3:30

Traci Hanegan called the meeting to order. Quorum is met, 12 of 18 members are present. (11 at the time of roll call)

Introductions

All present introduced themselves and were invited to sign the attendance sheet.

Membership Update (Guy Perreault)

All interested in becoming a corresponding member should give their card to, Traci, Guy or Brad Cochran with their ASHRAE number or go directly online and enter their name to become provisional corresponding member.

Approval of previous minutes

Minutes from the Las Vegas meeting were emailed previously.
Minutes from the meeting were reviewed.
Mark Hydeman moves to approve the minutes. Kelley Cramm seconds
Minutes approved 11 for, 0 against, 0 Abstain)

Section Head Report (Traci Hanegan)

- If you are provisional corresponding member make sure to communicate with the chair to stay on the committee.
- Email alias will be made available
- Power Point available to create a group in outlook for the TC members
- Workshop reminders
- 15 TC's doing remote participation. This works very well
- If you do TC work and you are not registered you can get a badge
- Complementary registration are available for special guest for single sessions.
- Review the ASHRAE Code of ethics
- Option are available for web conferences

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- 2017-18 master calendar available for important ASHRAE dates

Program Subcommittee (Carol Donavan)

- See report in the attachments (see attached minutes)
- Wade Colan mentions that we can get transportation covered and free registration for non ASRHAE members or guest speakers.
- Co-sponsor the following three seminars :
 - Standard 195
- Approval of the proposed program : Vote 11-0-0

Research Subcommittee (Bob Weidner)

See attached subcommittee minutes.

RTAR for “**Characterizing the Performance of Entrained Flow Stacks** – Brad Cochran –presents Draft Co-sponsor from 5.1.

Vote for entrained flow of stack 12-0-0

Handbook Subcommittee (Lou Hartman)

Committee did not meet in Long Beach, no report

- N.B. Lou Hartman sent the proposed current draft prior to the Chicago meeting (sent in the email with the minutes) Publication is for summer 2018

Standards (Roland Charneux – filled in for Gaylon Richardson)

- See report in the attachments (see attached minutes)
- Boy Bohannon mentions that Nathan Ho is the contact to provide comments to 62.1 relative to minimum ventilation requirements relative to labs.
- They are working on a Guideline to ensure to be better than the minimum requirements.

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Lab Classification Subcommittee (Tom Smith filled in for Adam Bare)

- Tom presented the status of the present draft of the LSDL.
- The table of recommendations will be sent for review and comments for the TC to provide feedback.

Laboratory Energy Efficiency (Eric Ballachey)

- Eric asks for contributions for one pagers.

Standard 110 (Wade Colan)

- No face to face meeting planned for Chicago. Report will be presented to the main committee

Journal (Roland Charneux)

- No report

Laboratory Design Course (Brad Cochran filled in for John Varley)

- 25 attendees
 - Students
 - CE

. Liaison Reports

TC 1.4 Control Theory and Applications – (Jim Coogan reported)

- Guideline on sequence of operation
- Seminar on Airflow control performance
- Standard 195, Method of Test for Airflow Control performance – how to make people us it.

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TC 2.2 Plant and Animal Environment (Henry Hays)

- No report

TC 4.3 Ventilation Requirements and Infiltration (Brad Cochran)

- Work statement on Improved Exhaust to intake dilution calculations.

TC 5.1 Fan Design and Application

- Ken Kunts – GreenHeck - co sponsor the Air flow Entrainment RTAR
- Fan Efficiency metric

TC 5.3 Room Air Distribution (no reported)

- Standard 113 – testing to be done in a mock up or manufacturer's lab.

TC 5.8 Industrial Ventilation

- No report

TC 7.6 Building Energy Performance (Bruce Hunn reported)

- Building EQ is developing a course for students.
- Presently Laboratories are not covered by Energy Star
-

TC 7.7 Test and Balance (No report)

TC 7.9 Building Commissioning (John Castelvechi)

- New guideline coming up
- They are looking for a guideline for critical system presently mainly targeted for Data Centers but eventually could include labs.

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TC 9.2 Industrial Air Conditioning

- No report

TC 9.6 Healthcare Facilities (Traci Hanegan reported)

- A research project to evaluate rationale for each requirement in Standard 170 is underway. Traci is on the PMS. There are sections on lab ventilation in Standard 170 so we will track what the research project says about those requirements.
- More discussions in the 9.6 Infectious Diseases subcommittee about concerns with RH% below 40% (too dry). There could be some impacts on infection control that carry over into low RH% thresholds for biocontainment labs. Keep an eye on this.

TC 9.11 Clean Spaces (Wei Sun reported)

- The Clean Space Design Guide by the Chicago meeting
 - The document is about 500 pages
- MTG process to have a work statement on Energy efficiencies
- TCs are the members of MTG not individuals. Kishor is chair, Adam Bare and Roland Charneux are also involved.

SSPC 62.1 Ventilation for Acceptable Indoor Air Quality (Nathan Ho reported)

- Send in comments to Nathan Ho

SSPC 90.1 (Jason Atkinson reporting)

- Proposal for heat recovery and condenser water heat recovery for labs but they could not back it up so they removed it.
- Jason Atkinson applied to be the official liaison to 90.1
 - Involvement is required on the Mechanical Systems Sub-committee.

SMACNA (no report)

NFPA 45 (David Raush - absent)

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- No report

NSF (no report)

ISPE (no report)

AIHA Z9.5 (Jim Coogan reported)

- Moved since the last meeting... see std report.
- New chapters (in China) DOE has put a Smart Labs programs. I2SL is helping to manage the program. Flaws in the program and they are revising. All access to the training program and adjustments to categories of laboratories and bench marking. They are still waiting for DOE funding. They are working on lab improvements program. Freezers and lab equipment management program. Conference in October on Boston.
- Group called My Green Lab.

Old business (Roland Charneux)

- No old business

New business

- Design Guide 3rd ed.
- Being a smart guide, additions can easily be made on the electronic files of the DG.
- Honors and Awards special guest panned for the next meeting.
- Conference call for the ex-com prior to the next meeting
- 90.1 liaison TC input every Winter meetings
- Jim Wolf suggested to have a short document available for members to present ot government official
- Title 24 (Code for California)
 - AESC for Fume hoods is poised to make mandatory sash closers on every new hood installed.
 - Mandatory Fan metrics for exhaust fans (efficiencies on energy per CFM)
- Developing a new advanced course - Jim Coogan mentions an outline could be available in the next few months.

Main Meeting adjourn at 5:25.

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ASHRAE TC 9.10 Program Subcommittee
Long Beach, CA
Tuesday, 3:30 – 5:30
Program Updates
Carol Donovan, chair

CEC is implementing the 3 strike rule for Summer 2017 at Long Beach. If presentations, etc are uploaded after the deadline the speaker will automatically get a strike. 3 strikes and the speaker will not be allowed to speak for 2 years at ASHRAE.

Debate and Panel Discussion are new to Long Beach. Similar to a seminar or forum and will have the same timeline. No formal presentation or learning objectives are required. Hot topics or issues, can be 60 or 90 minutes.

Conference Program Chair: Ann Peratt

Email: ann.peratt@gmail.com

Long Beach Submissions

No.	Type	Title	Chair/Back-up	Abstract Submitted
1	Forum	Cx Experience with CA Title 24 VAV lab Exhaust	Victor Neuman	Sunday, 6-25 8:00 – 9:00 am
2	Seminar 2	Cx Complex Labs Co-sponsor TC 7.7 TAB	Wade Conlan	Sunday, 6-25 9:45-10:45
3	Seminar	Smart Labs – UCI / Labs21 / DOE	Gordon Sharp	Not accepted
4	Seminar, 2-3 speakers	Labs – Air Change Effectiveness (TC 5.3 – Std 129)	Tom Smith	Not submitted ?
5	Paper Session, 2-3 speakers	Test Procedures for Lab Controls Results from Manufacturers	Gaylon Richardson	Not accepted

Chicago – Winter 2018 TRACKS:

Chicago Deadlines

- 3/1/17 Conference Paper Abstracts due
- 7/2/17 Program Submission opens - Seminar, Forum, Debate, Panel
- 7/7/17 Conference Papers are due
- 8/1/17 Program abstracts due – Seminar, Forum, Debate, Panel
- 8/28/17 Program time slots are finalized

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- 9/6/17 Program notifications are sent acceptance/rejection
- 12/1/17 Presentations are open for uploading

Chicago Programs

No.	Type	Title	Chair/Back-up	Abstract Submitted
1	Seminar	Smart Labs – UCI / Labs21 / DOE	Gordon Sharp	Due 8/1
2	Seminar, 2-3 speakers	Labs – Air Change Effectiveness (TC 5.3 – Std 129)	Tom Smith	Due 8/1
3	Paper Session, 2-3 speakers	Test Procedures for Lab Controls Results from Manufacturers	Gaylon Richardson	Due 8/1
4	Seminar	Engineer’s Notebook: BAS Control of VAV Labs TC 9.01/4.03/9/10 – Co-sponsor	Steve Taylor	Due 8/1
5	Seminar, 2 speakers	Airflow Control Performance / Standard 195 Co-sponsor with TC 1.4		Due 8/1

Track 1: Systems and Equipment

Track Chair: Carrie Anne Crawford

Email: carriecrawford@eeace.com

Selection of equipment and systems is paramount to HVAC&R design. Papers and programs in this track will assist designers, engineers, and operators in the design, selection, and operation of HVAC&R systems and equipment.

• **Track 2: Fundamentals and Applications**

Track Chair: Kevin Marple

Email: kmarple@benzco.com

Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychrometrics, fluid and mass flow, IAQ, and building envelope. This track provides opportunities for papers and presentations of varying levels across a large topic base. Concepts, design elements and shared experiences for theoretical and applied concepts of HVAC&R design are included.

• **Track 3: Standards, Guidelines and Codes**

Track Chair: Corey Metzger

Email: corey.metzger@resourcece.com

ASHRAE is known for its standards and design guidelines – and they are constantly evolving with the intent on improving the built environment and its systems. Designers, Contractors, Architects and Owners must be able to keep up with the continuing changes in the current cycle but to also be prepared for the future changes. In addition, there is a large interaction of ASHRAE with the code authorities and government to incorporate these standards and guidelines. The series of sessions in this track highlight the changes to the standards and guidelines, their projected path and optimum design techniques to meet or exceed the standards.

• **Track 4: Earth, Wind & Fire**

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Track Chair: Ashish Rakheja

Email: ashish.rakheja@aeonconsultants.in

Designing for natural elements and other possible disasters often requires specific elements of building design and construction. From materials to stabilizing elements and simulations to specifications, these

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options must be incorporated. This track will deliver on modern strategies to address all of these conditions. Be prepared to be blown away by industry practices to prevent disastrous results.

Track 5: Transportation IAQ and Air Conditioning

Track Chair: Dimitris Charalambopoulos

Email: dimitris@ashrae.gr

Often considered boutique engineering, both enclosed vehicular facilities and transportation design, construction, operation, and maintenance needs to be elevated to equal status with other HVAC applications. These systems require the same design approach as other system designed but usually have special technical requirements that mandate close velocity capture/control, air quality control, etc. that can be overlooked but the more traditional building system design engineer. This track will seek case studies and trouble-shooting projects highlighting the opportunities and pitfalls associated with these unique applications.

• **Track 6: Tall Buildings**

Track Chair: Leticia Neves

Email: leneves@gmail.com

Chicago is home to one of the tallest buildings in the world. One that stood the tallest in the world for nearly 25 years. However, today, more and more tall buildings are being designed and constructed. This track will draw upon “larger than life” case studies, as well as large building HVAC systems that can be classified as “innovative and/or 21st century” that highlight the opportunities presented and achieved by the designer, builder, and operator for facility HVAC systems throughout the world.

• **Track 7: Modeling Throughout the Building Life Cycle**

Track Chair: Joseph Firrantello

Email: j.firrantello@gmail.com

Modeling was originally concerned primarily with building and system design specifications. The demands of energy efficient operation brought about the need for modeling of part-load operation for a variety of off-design conditions. The explosion of computational capacity and data collection capability is rapidly expanding the scope, complexity and practical applications of modeling both during design, but even more so for fault detection, diagnostics and operational optimization. Thirty years ago, people were dreaming of doing some of the things that Building Information Modeling is now bringing to reality. Presentations and papers are solicited related to all aspects of building modeling, with a particular interest in successful applications that have extended modeling into operational phases of the building life cycle.

• **Track 8: Heat Exchange Equipment**

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Track Chair: Vikrant Aute

Email: vikrant@umd.edu

Given the critical importance of energy efficiencies and reliability of HVAC systems, new heat and mass transfer HVAC & R equipment and advanced systems have been developed. Bringing non-traditional technologies to the actual field is not trivial task and how to design the equipment and characterize the performance of new HVAC &R technologies under real field type conditions are still open questions. The papers and programs in this track will inform designers, engineers, building energy simulation modelers, and energy consultants and practitioners in the use of non-traditional heat exchange equipment and advanced HVAC &R systems under real field type conditions. The track will focus on fundamentals and applied aspects, on current challenges and recent advancements for managing frost growth, water condensate, fouling, corrosion, and mitigation of mold growth and bacteria that are often encountered in heat exchange equipment when working under real field type conditions.

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• Track 9: Refrigerant Mini Track @ Expo*

Track Chair: Gary C. Debes

Email: gcdebes@verizon.net

*Section will determine topics, speakers, session types, etc.

Conference Program Chair: Michael Collarin

Email: Michael.Collarin@parsons.com

Future ASHRAE CONFERENCES

Year	Winter	Annual
2018	Jan 20-Jan 24 – Chicago, IL	Jun 23-27 – Houston, TX
2019	Jan 12-16 – Atlanta, GA	Jun 22-26 – Kansas City, MO

Houston Tracks

Track 1: HVAC&R Systems and Equipment

Track Chair: Frank Schambach

Email: frankschambach@mindspring.com

Selection of equipment and systems is paramount to HVAC&R design. Papers and programs in this track will assist designers, engineers, and operators in the design, selection, and operation of HVAC&R systems and equipment.

Track 2: Fundamentals and Applications

Track Chair: Dennis Alejandro

Email: denzjac@yahoo.com

Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychrometrics, fluid and mass flow. This track provides opportunities for papers and presentations of varying levels across a large topic base. Concepts, design

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elements and shared experiences for theoretical and applied concepts of HVAC&R design are included.

Track 3: District Energy and Cogeneration Plants

Track Chair: Kimberly Pierson

Email: kdpwildcat@gmail.com

As our world resources become more and more sparse there is an industry-wide movement toward efficiency and sustainability. One of the ways in which we can look to minimize our carbon footprint is to combine our resources. District energy systems and cogeneration plants do just that and are quite popular in some locales but have yet to gain traction in other developed cities. We will look at the advantages and limitations, do's and don'ts and best practices of utilizing this type of shared system.

Track 4: Safeguarding your HVAC&R System

Track Chair: Rich Rose

Email: richr@mticontrols.com

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From seismic events to power outages and human error, how secure is your HVAC&R System? Mechanical, plumbing, electrical, and control systems all work together to create our living buildings, so it is imperative that designers and operators take into account the reactivity and interaction of these systems in response to natural disasters, human interference and other catastrophic events. Topics in this track include considering your design layout and accessibility, backup systems, supports and bracing, and more.

Track 5: Residential - Modern Buildings in Hot and Humid Climates

Track Chair: Dimitris Charalambopoulos

Email: dimitris@ashrae.gr

Residential dwellings require designers to consider a different scope of building functions, occupant use, and comfort. With increasing utility rates and a movement toward net zero housing, the traditional residential design models are continuously diversifying and evolving. This track will discuss how we can integrate modern residential design and building practices into hot and/or humid climates with specific challenges ranging from indoor comfort to ventilation and mold.

Track 6: Professional Skills

Track Chair: Kevin Marple

Email: kmarple@benzco.com

This track is designed to provide professionals an opportunity to develop in the areas of presentation skills, leadership, teambuilding, understanding various business operations, interpersonal skills, etc. In short, the Professional Skills Track can cover all aspects of business outside of engineering/technical applications and lends itself to interactive session types such as workshops and forums.

Track 7: Research Summit

Track Chair: Melanie Derby

Email: derbym@ksu.edu

Active research, and the exchange of those research findings are critical to the development of our HVAC&R industry and environment. The sixth annual research summit invites researchers to share those results; and this year we announce an exciting collaboration with ASHRAE's archival research publication, *Science and Technology for the Built Environment* (STBE). Researchers are invited to present papers, seminars, forums or participate in panel discussions. Authors may also pursue an

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opportunity to further develop their submissions for later publication in STBE

Track 8: HVAC&R Control Freaks

Track Chair: Gary C. Debes

Email: gdebes@verizon.net

This track will focus on all things controls (note: please see track 9 "MiniTrack" as well). We invite you to join this exchange addressing one of the most dynamic areas in HVAC&R. Topics may range from design innovations spreading through our industry to the latest in building integration and observation, or even troubleshooting the most common issues occurring in building management systems.

DRAFT

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TC STANDARDS SUBCOMMITTEE MINUTES

TC9.10 – Laboratory Systems

June 25th, 2017

3:00 PM, Hyatt, Long Beach, California

In Attendance: 20 persons were present. Roland Charneux chairing in the absence of Gaylon.

Victor Neuman	Eric Ballachey	Victor Circola
Jim Coogan	Carol Donovan	Jason Atkisson
Ken Kuntz	Tom Smith	Tom Checksfield
Jake Edmonston	Jeff Gatlin	Mark Hydeman
John Garrett Neubauer	Bob Weidner	Reinhard Seidl
Duane Hammond	Greg Gross	Guy Perreault
Martin Stangl	Roland Charneux	

Standard 90.1

Nothing impacting Labs

ASHRAE 110

No report

Standard 62.1

No report

ASSE Z-9.5

Groups were formed to revise specific chapters in march.

Jim Coogan has the revised drafts from almost every committees.

Things that will be most likely to change:

-Taking out the number of 3000 fpm on fan exhaust and recommend to do an analysis.

Public review should come but no date determined

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I2SL

Contract with DOE to have a commitment to have a reduction in energy over a fixed period of time.
Smart Lab accelerator program.
Discussion to share the data base with the ASHRAE Building EQ data base
Smart Lab training program promoted through local chapters
Certification program if you go through the entire training
Train the trainer being developed to have consistency

European EN-14175

ASHRAE should look to harmonize standard 110 with European Fume Hood testing standard. Nothing done since the last meeting.

SEFA

National program for certifying FH to SEFA standard.
Development of a guide for protective capability of types of hoods
Updating the SEFA guide.
SEFA Site Link: <https://www.sefalabs.com/i4a/pages/index.cfm?pageid=1>

Draft Guideline Link: <https://www.sefalabs.com/files/public/SEFA-ECD-Selection-and-Management-Guide-DRAFT-4-24-17-ver3.pdf>

Lab Exhaust Standard 24

Victor Neuman suggests that ASHRAE should form its own SPC to develop a standard because the guidelines don't have the results actually.

New MTG developed to Establish Air Change Rates

The objective is to define a scientific approach on determining the ACR.

To develop uniform definitions of terms.

Should there be any research related to ACR ?

What are the contaminant sources.

Where does the present ACR (4, 6, 12..) come from?

AIHA

To develop a risk assessment for fume hoods which match up well with lab classification.

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LAB ENERGY EFFICIENCY SUB-COMMITTEE MEETING MINUTES

ASHRAE TC 9.10 – Laboratory Systems

ASHRAE Annual Conference – Long Beach, California

Long Beach Convention Center-Rm 201B – June 27th, 2017 - 2:30 pm to 3:00 pm

Sub-Committee Chair: Eric Ballachey 27 Attendees

Martin Stangl	Mary Foutz	Bredan Dingman
Ken Kuntz	Andy Howard	John Garrett Neubauer
Guy Perreault	Brendon J. Barley	Kishor Kinkari
Brad Cochran	Hwakong Cheng	Victor Neuman
Henry Hays	Jason Atkisson	Channing Everett
Bob Weidner	Kurt Monteiro	Greg Gross
Lance Brown	Duane Hammond	Reinhard Seidl
Carol Donovan	Gordon P. Sharp	Roland Charneux
Mark Hydeman	Tom Smith	Wade Conlan

- Review of mission statement from Las Vegas. *Adopted as is until further notice.*

The ASHRAE TC 9.10 Laboratory Energy Efficiency Subcommittee promotes existing energy efficient measures and provides guidance and resources on new and innovative methods of designing energy-efficient laboratories while maintaining safety. The subcommittee will be a forum for providing energy efficiency strategies for laboratories and liaise with other groups within and outside of ASHRAE regarding energy efficiency issues. These strategies will be delivered in the form of articles, short guidelines, design tools, or other.

- Lab Energy Efficiency Design Guidelines: Only one submission since Las Vegas (Thank you Ken K!). It isn't ready for publication but is generating some great discussion on what we actually know about exhaust fan contaminant concentrations from high plume versus dispersion-type fans. A sample guideline is attached to the minutes as an example of what we are trying to achieve. The aim is to include an energy savings /cost example and considerations to examine further (i.e. safety, maintainability, limitations). By their nature, these are simplified and generic and cannot address all aspects or design conditions. These are meant to encourage the design engineer to consider energy savings possibilities when approaching a lab design.

- The list of potential article authors who previously volunteered remains: Brad Cochran, Gordon Sharp, Guy Perreault, Ken Kuntz, Nathan Ho, Martin Stangl, and Roland Charneux. Always looking for other volunteers. My offer to format and find graphics remains in place. The current list of potential topics is below:

Enthalpy wheels vs DX Loops – Intermediate - Energy Recovery

Occupancy Sensors in Labs – Intermediate – Strategies

Laboratory Air Change Rates – Basic/Intermediate/Advanced – Strategies

Using Fume Hood Diversity – Basic – Strategies

Static Pressure Setpoint Reset – Intermediate - Controls

Exhaust fan type and selection for best efficiency – basic/intermediate –hardware

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- Fume hood retrofit (T. Smith)
- Decoupling heat loads and ventilation loads (N. Ho)
- Evaluation of plug loads
- Lower face velocity/pressure in air handlers (specific requirements for labs (N. Ho)
- VAV System sensitivity in large systems (T. Smith)
- Pressure set point reset (G. Perreault)
- Trim and response strategy
- Retro-commissioning specific to laboratories
- Open sash alarms and sash closers
- Combination sashes
- High efficiency mixed flow fans (N. Ho)
- Use the chilled water return to cool high load rooms with fan coils
- Higher delta T (R. Charneux)
- What would be the best typical lab (P. Carpenter)
- Liquid heat recovery desiccant
- A regular Go-To Meeting was not arranged since Las Vegas and the Sub-committee chair will endeavour to get communications flowing better between now and Chicago

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TC 9.10 Research Subcommittee – 6-25-17 Meeting in Long Beach - AGENDA

1. List of Attendees

Kelley Cramm	Jeff Gatlin	Eric Ballachey
Martin Stangl	Matthew Fried	Adam Fecteau
Ken Kuntz	Nick Ahopian	John Garrett Neubauer
Guy Perreault	Henry Hays	Marc Tardif
Bob Weidner	Tom Smith	Victor Neuman
Mark Hydeman	Victor Cincola	Greg Gross
Jason Atkinson	Duane Hammond	Reinhard Seidl
Carol Donovan	Tom Checksfield	Roland Charneux

2. Research Project RP 1573 (SF6 Replacement Gas) Status (Sunday 1-2:30PM):

a. Exposure Control Technologies – Tom Smith presented his first report on progress on RP1573.

A summary of the report is in the attached ASHRAE Status report

- i. Tom’s report was well received and it is clear that he is going a great job on this research project. Lot of good discussion. Glad to have him onboard. Literature research task is complete.
- ii. Task 2 - 110 Ejector Challenge and Task 3 – Tracer Gas delivery are underway.
- iii. One of the challenges going forward is getting access to the use of a thermal infrared camera (at low or no cost) to assist with the research.

b. Based on the above, his first invoice will be passed through for payment by ASHRAE

3. RTAR/Work Statement Status:

a. RTAR 1780 (Test Method to develop a Methodology to Evaluate Cross Contamination of Gaseous Contaminants within Total Energy Recovery Devices);

b. The RTAR was reviewed by RAC with the following comments/concerns:

- i. Is SF-6 a suitable gas for a moist environment?
- ii. Confirmation that our 3rd bidder is truly independent.
- iii. TC 5.5 (Air-to-air Energy Recovery) had significant concerns on the work statement and were considering not to be a co-sponsor; Issues included the methodology and the amount of physical testing.

c. Path Forward: Roland C. will be doing a re-write and TC5.5 has agreed to be involved with the re-write.

4. New RTARS to be pursued:

a. RTAR for “Characterizing the Performance of Entrained Flow Stacks”– Brad Cochran w/co-sponsor from TC 5.1. See attached RTAR; Greg Gross filled in for Brad.

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- i. We had good discussion; attendees asked that we forward the updated RTAR prior to TC Meeting
- ii. Vote to approve RTAR at TC9.10
- b. RTAR to “Survey of sources of contamination in existing labs”
 - i. Roland C. – Looking for RTAR Champion - On hold
- c. Future RTAR on Air Change Rates (Jim Coogan): New MTG committee encompassing several TC’s looking into the why’s and where’s of Air Change Rates
 - i. Defining air flow rates for various spaces.
 - ii. Discussion of literature research to understand how air changes were established and the scientific support of those rates.
- d. Future RTAR - Defining and characterization of air-change effectiveness in labs
 - i. On Hold at this point; IH Funding? Reworking Standard 113.
 - ii. Tom Smith is point person.
- e. Future RTAR - Duct conveyance velocity required to protect exhaust systems
 - i. What velocity does it take to remove contaminants from the exhaust ductwork?
 - ii. How much of a problem is this? Resonance time concerns?
 - iii. Is Industrial Ventilation’s methodology valid or dated?
 - iv. Potential Resources: Gerhard K., E. Jeff Burton