



ASHRAE Technical Committee 1.4

**ASHRAE TC1.4 Control Theory and Application
Meeting Minutes
Seattle Meeting
July 1, 2014**

These minutes were approved at the Chicago Winter
Meeting 1/27/2015.



ASHRAE Technical Committee 1.4

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

(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO.: 1.4

TC/TG/TRG TITLE: Control Theory and Applications

DATE OF MEETING: July 1, 2014

LOCATION: Seattle, WA

DISTRIBUTION:

ALL MEMBERS OF TC

ALL COMMITTEE LIAISONS



ASHRAE Technical Committee 1.4

TC/TG/TRG Activity Feedback Form

Please provide feedback on your TC/TG/TRG activities and return this form by Tuesday night 9:00 pm to your Section Head by email or drop off a printed copy in the Section Head's mailbox folder outside the ASHRAE. Include activities performed since the last TC meeting (e.g. any letter ballots, submissions to RAC, award

PLEASE DO NOT LEAVE NUMERIC CELLS EMPTY. ENTER 0 IN CELLS IF THERE IS NO COUNT.

TC#	1.04		Committee Name:		Control Theory & Applications					
			Chair:		Kimberly Barker					
Meeting was Held (City)			Seattle		(Day)	Tuesday	(Date)	7/1/2014		
Membership				Quorum Established (Yes/No)						
				Number Present		Remote Participants		Total on Committee Roster		
Voting Members (excluding Non-Quorum Members)				8		0		12		
Non-Quorum Members				0		0		0		
Corresponding Members				12		0		60		
Provisional Members				1		0		5		
Visitors/Guests				8		0		n/a		
All members/guests who are ALSO YEA members				6		0		5		
Handbook Responsibilities				Standards Responsibilities						
Total Number of Chapters				2		Total Number of Standards		1		
# Chapters voted out this meeting				1		# Standards recommended		0		
Special Publications (last six months)				0		Title:				
Program Activities (For This Meeting)										
Total # of Forums			Total # of Seminars			Total # of Paper Sessions			Other Presentations	
Submitted*	Sponsor	Co-sponsor	Submitted*	Sponsor	Co-Sponsor	Submitted*	Sponsor	Co-Sponsor	Research Results	Other Papers**
0	0	0	5	3	0	3	2	0	0	0
Current Research Activities (active)						TC Management				
# of new/revised RTARs submitted						Minutes completed on time?				
0						Yes				
# of other active RTARs						Agenda distributed on time?				
0						Yes				
# of Work Statements submitted						Did Chair attend training?				
1						Yes				
# of other active Work Statements						Did Vice Chair attend?				
0						Yes				
# of active TRPs						Did Program Chair attend training?				
0						Yes				
# of active RPs						Did Handbook Chair attend training?				
4						Yes				
Problems getting RTAR/WS approved						Did Research Chair attend breakfast?				
No						Yes				
Other Technical Activities						Award Nominations (last six months)				
# FAQs updated this meeting						# of Distinguished Service Nominations				
0						0				
# New members added to roster						# of Exceptional Service Nominations				
3						0				
						# of Other Nominations: Hightower, Research, Fellow, etc				
						0				
						Specify Award:				
Any Concerns or requests for the Technical Activities Committee? (Please type in Space Below)										
SEMINAR 23: Controls										
SEMINAR 42: Performance Monitoring: Get the Energy Savings You Were Promised										
TECHNICAL PAPER SESSION 10: Control Theories: Tested										
CONFERENCE PAPER SESSION 3: Simulation Model Development for Building Control and Operation										
WORKSHOP 12: You've Got it Under Control: Understanding Sequences of Operation										

* For submitted sessions, include only sessions which your TC initiated and submitted FOR this meeting.

** Papers from TC in sessions not sponsored by TC

Meeting Minutes

TC 1.4 Control Theory and Application

<http://tc14.ashraetcs.org/>

Tuesday, July 1, 2014 1:00 – 3:30 pm

Sheraton Seattle

Seattle, WA

TC1.4 Control Theory & Application (40)	Tuesday 1:00-3:30p	Room 609 (6, WSCC)
TC 1.4 RP 1587 PMS (8)	Sunday 10:00-11:00	Eagle Boardroom (1, Sheraton)
TC 1.4 Control Components and Applications	Sunday 3:00-4:00p	Room 613 (6, WSCC)
TC 1.4 YEA	Sunday 4:00-4:30p	Room 613 (6, WSCC)
TC 1.4 Education	Sunday 4:30-5:30p	Room 613 (6, WSCC)
TC 1.4 Program	Sunday 5:30-7:00p	Room 613 (6, WSCC)
TC 1.4 RP-1455 PMS (8)	Monday 9:00-10:00a	Sheraton, Diamond A, 1 st floor.
TC 1.4 Research	Monday 2:15-4:15p	Virginia (4-Union St. Tower, Sheraton)
TC 1.4 Handbook	Monday 4:15-6:30p	Virginia (4-Union St. Tower, Sheraton)
TC 1.4 Executive	Tuesday 7:00-8:00a	Boren (4-Union St. Tower, Sheraton)
<i>Conference Paper Session 3: Simulation</i>		
<i>Model Development for Building Control and Operation,</i>	Sunday 11:00-12:30p	Room 612 (6, WSCC)
<i>Seminar 29: Controls</i>	Tuesday 9:45-11:45a	Room 607 (6, WSCC)
<i>Seminar 42: Performance Monitoring: Get the Energy Savings You Were Promised</i>	Wednesday 8:00-9:30a	Room 607 (6, WSCC)
<i>Technical Paper Session 10: Control Theories: Tested</i>	Wednesday 11:00-12:30a	Room 603 (6, WSCC)
<i>Workshop 12: You've Got it Under Control: Understanding Sequences of Operation</i>	Wednesday 11:00-12:30a	Room 606 (6, WSCC)

1) Call to Order

1:05 pm, Reviewed TC1.4 Scope, ASHAE Code of Ethics, Applying for Technical Committee Membership.

8 of 12 voting members present (initially), quorum established.

2) Introduce Members, Guests, and Liaisons

3) Present scope of TC 1.4

4) Approve agenda

Agenda reviewed, Chariti Young moved to accept agenda, Jeff Stein seconded motion, Vote: 7-0-0, CNV, motion passed

5) Approve minutes from previous meeting

Gaylen Atkinson moved to accept New York Winter Meeting minutes, Jin Wen seconded motion. Chariti Young pointed out her name was misspelled on Handbook subcommittee meeting minutes. New York Winter Meeting minutes were approved as corrected, Vote: 7-0-0 CNV, motion passed

6) Announcements

- a) Section Meeting announcements
- b) TAC
- c) RAC

Now RTAR's are either approved with comments or rejected. No other options available.

5 of 9 RTAR's approved at this meeting

Work Statement criteria included in the MOP is recommended and should be edited appropriately for each project.

Work Statements can be submitted without RTAR, consultant RAC liaison prior to WS submittal is recommended.

Research Promotion set record approx. \$2.4M

Art Giesler will be TC1.4 next year

- d) YEA

TC1.4 sponsored Workshop 12 targets YEA members

7) OLD BUSINESS

A) PROJECT COMMITTEE AND ONGOING RESEARCH REPORTS

- i) SSPC 135 (BACnet) –

Working on TAGS and OBJECTS, specifically VAV Terminal Units

- ii) SGPC 13 (Specifying DDC Systems) – Chariti Young
Meets Saturday 9:00a-1:30pm, Conference Room, Lower Level (S)

Guideline 13 is out for advisory public review until 7/12/14

Committee is conducting monthly teleconferences

Committee anticipates issuing guideline for public review before January 2015 Winter meeting.

- iii) GPC 36 (High Performance Sequences of Operation for HVAC Systems) – Mark Hydeman

First meeting was well attended.

Committee anticipates formal approval from SPLS sometime in July.

Would like the RP1455 Task 2 and Task 3 deliverables released ASAP to utilize them as a starting point for GPC 36.

- iv) RP-1455 (Advanced Control Sequences for HVAC Systems) - Michael Pouchak

3 of 4 tasks complete

PMSC voted to release Task 1 & 2 results to TC1.4

Mike Pouchak moved for no cost extension to January 28, 2015

Vote: 8-0-0 CNV. Motion passed.

RP1455 moved that TC1.4 approve releasing the results of RP1455 Tasks 1, 2, 3, and 4 to other ASHRAE committees prior to RP1455 final report approval. Charles Coward seconded the motion. Vote 7-0-1, motion passed.

- v) RP-1597 (Stochastic Control Optimization of Mixed-Mode Buildings) – Kim Barker
RP1597 is complete. PMSC has approved final report.
Kim Barker moved that TC1.4 accept recommendation from PMSC to approve RP1597 final report. Vote 8-0-0, CNV, Motion passed.
- vi) RP-1633 (Data & Interfaces for Adv. Building Maintenance & Operation) – Reinhardt Seidl
RP1633 received disappointing responses to dashboard surveys.
Currently writing final report.
Expect to complete final report by end of August 2014.
No extension anticipated.
- vii) 1587-TRP (Control Loop Performance Assessment) – Steve Taylor
Task 1 expected to be complete by end of July 2014.
- a) SUB-COMMITTEE REPORTS
 - i) Executive – Kim Barker
Reviewed roster changes: Chad Moore chair, Garry Cole vice-chair
 - ii) Control Components and Applications – Barry Bridges
Discussed TC7.5 Seminar, An Application and Successful Story of AFDD
Discussed controls for irrigation and their integration into Building Automation Systems
See CCA subcommittee meeting minutes attached
 - iii) Program – Frank Shadpour
Tied TC1.4 record for number of programs at a single meeting, five.
Nine programs will be proposed for Chicago 2015 Winter Meeting.
Conference papers due July 7, 2014
Discussed possible programs: Dashboards, IT/BAS Security, GPC 36 and RP1455.
See Program subcommittee meeting minutes attached
 - iv) Education – Marcelo Acosta
Working with ASHRAE to create a Controls Resource website
Possibly create a public controls Wiki.
Discussed the development of University controls curriculum.

See Education subcommittee meeting minutes attached

- v) YEA – Joseph Kilcoyne

TC awareness to YEA members is poor. YEA Coordinators are focused on getting YEA members active in TCs.

YEA requested help to raise awareness of TCs at the chapter level.

See YEA subcommittee meeting minutes attached

- vi) Handbook – Dave Kahn

Application Chapter has been submitted

Fundamentals Chapter due July 5, 2015.

Dave Kahn asked for TC1.4 members review the chapter and provide feedback for the Handbook subcommittee.

See Handbook subcommittee meeting minutes attached

- vii) Research – Steve Taylor

Steve Taylor will be submitting two Work Statements in near future

- 1. Best in Class control sequences for Heating and Chilled Water Plants**
- 2. Testing of R1455 control sequences**

Once Work Statements are complete they will be circulated to TC1.4 members for voting via email ballot.

See Research subcommittee meeting minutes attached

- viii) Standards – Steve Taylor

ASHRAE Standard 90.1 - DDC now required for certain HVAC systems and applications

ASHRAE Standard 62.1 – Committee is discussing certain spaces be allowed to have zero ventilation airflow requirements.

- ix) Webmaster – Chad Moore

TC1.4 website is up-to-date

- b) Committee Liaison Reports

- i) TC 1.5 (Computer Applications) – Mike Pouchak
- ii) TG 2 HVAC Security – Kim Barker
- iii) TC 5.6 (Control of Fire & Smoke) -
- iv) TC 6.1 (Hydronic Systems) – Dave Kahn

TC6.1 would like TC1.4's help in reviewing control valve section of their ASHRAE Handbook chapters.

- v) TC 6.7 (Solar Energy Utilization) – Gaylen Atkinson

- vi) TC 7.3 (Operations & Maintenance Management)
- vii) TC 7.5 (Smart Building Systems) –John House
- viii) TC 7.6 (Systems Energy Utilization)
- ix) TC 7.9 (Building Commissioning) – David Bornside
- x) TC 9.10 (Laboratory Systems) – Jim Coogan

Working on Lab Design Guide

- xi) TC 9.11 (Clean Rooms) – Jim Coogan

Working on position paper and design guide

- xii) SSPC 62.1 (Ventilation and Acceptable IAQ) – Len Damiano

Section 8 revised to address inconsistencies

- xiii) SSPC 90.1 (Energy Efficient Design of New Buildings) – Steve Taylor
- xiv) TC 1.6 (Terminology) – David Bornside
- xv) SGPC 0.2 & 1.2 (The Commissioning Process) – David Bornside

Guideline 0.2 is currently out for public review

Guideline 1.2 is anticipated to be out for public review prior to January 2015 Winter meeting

- xvi) SPC134 (Graphic symbols for HVAC systems) – David Bornside

Committee needs volunteers for the review and development of controls graphic symbols

- xvii) US TAG to ISO/TC 205 (Building Environmental Design)
- xviii) SPC 189 Design of High Performance Building – Bogi Setty
- xix) MTG.EAS – Energy-Efficient Air Handling Systems for Non-Residential Building: –Len Damiano.

Not much happening with this committee

c) Society Committees

- i)

2) New business

a) Roster updates:

i) Voting Members Rolling off after Seattle:

(1) Kim Barker(Chair), Larry Fisher, Chariti Young, Charles Coward, Phil Haves, Nemat Lotfi and Jin Wen,

ii) TC Leadership rolling on after Seattle: Chad Moore (Chair), Garry Cole (Vice Chair)

(1) Voting Members Rolling on after Seattle: Jim Coogan, Mike Pouchak, Marcelo Acosta

(2) New corresponding members rolling on after Seattle: Ryan Tanner, Joseph Kilcoyne, Ron Bernstein, Yan Chen, Carol Quing Li

3) Upcoming Deadlines

a) For Chicago: January 24-28, 2015 at Palmer House Hilton.

i) June 2 – August 11 Program Proposals Accepted online

ii) July 7, 2014 Conference Papers due

iii) **Chicago Conference Tracks**

- Systems and Equipment
- Fundamentals and Applications
- Industrial Facilities
- Large Buildings: Mission Critical Facilities and Applications
- Energy Efficiency
- Life Safety
- Design of Energy and Water efficient Systems
- Hospital Design and Codes

b) For Atlanta June 27 – July 1, 2015

i) Sept 22, 2014 – Conference Paper abstracts and complete Technical Papers due.

ii) January 5, 2015 – Conference Papers due

iii) **Atlanta Conference Tracks**

- Systems and Equipment
- Fundamentals and Applications
- Research Summit
- Refrigeration
- Building Operation, Maintenance and Optimization/Commissioning
- Indoor Air Quality
- Modeling throughout the Building Life Cycle
- High Performance Buildings
- Moving Advanced Energy Design Guidance to the Mainstream

4) Adjourn, 3: 20 p

Technical Committee 1.4, Control Theory and Application

TC 1.4 is concerned with control theory, systems, and components (excluding refrigerant flow controls), for heating, ventilating, air conditioning and refrigeration uses.

ASHRAE Code Of Ethics

(Approved by ASHRAE Board of Directors January 30, 2013)

As members of ASHRAE or participants in ASHRAE committees, we pledge to act with honesty, fairness, courtesy, competence, integrity and respect for others in our conduct.

- A. Efforts of the Society, its members, and its bodies shall be directed at all times to enhancing the public health, safety and welfare.
- B. Members and organized bodies of the Society shall be good stewards of the world's resources including energy, natural, human and financial resources.
- C. Our products and services shall be offered only in areas where our competence and expertise can satisfy the public need.
- D. We shall act with care and competence in all activities, using and developing up-to-date knowledge and skills.
- E. We shall avoid real or perceived conflicts of interest whenever possible, and disclose them to affected parties when they do exist.
- F. The confidentiality of business affairs, proprietary information, intellectual property, procedures, and restricted Society discussions and materials shall be respected.
- G. Each member is expected and encouraged to be committed to the code of ethics of his or her own professional or trade association in their nation and area of work.
- H. Activities crossing national and cultural boundaries shall respect the ethical codes of the seat of the principal activity.

Applying for Membership on a Technical Committee

ASHRAE welcomes new members to its technical committees.

To be considered for technical committee membership, you must:

Notify ASHRAE staff at TCStaff@ashrae.net of your interest in a particular TC, TG, TRG, or MTG.

You will immediately be assigned as a Provisional Corresponding Member.

The acceptance of provisional corresponding membership implies participation in committee activities through correspondence or in-person involvement.

Provisional corresponding members serve 2 year terms.

Although provisional corresponding members are not voting members, at the end of your term and based on participation in the committee, you may be considered for future voting membership.

Notification of acceptance to a TC is emailed upon your appointment.



ASHRAE Technical Committee 1.4

Attachment 1 – Attendance

PLEASE SIGN AND RETURN TO CHAIR			Sun			Mon		Tues	
Name	Position	Company	Components and Applications	YEA/Education	Programs	Research	Handbook	Executive Breakfast	Main Committee
Voting Members									
Kim Barker	Chair	Siemens Bldg Technologies Inc	X	X	X	X	X	X	X
Chad Moore	vice-Chair	Terry Trane	X	X	X	X	X	X	X
Gaylen Atkinson	Member	Atkinson Electronics Inc	X	X	X	X			X
Chuck Coward	MTG.EAS, Alternate	Waddell Engineering	X		X	X			X
Larry Fisher	Member	ECT Building Automation							
Garry Cole	Member	Belimo Americas	X	X	X	X	X	X	X
Philip Haves	Member	LBNL				X			X
Kristopher Kinney	Member	Quantaum Energy Services & Technologies							
Nemat Lotfi	Member	Eaton Corporation							
Jin Wen	Member	Drexel University				X			X
Jeffrey Stein	Member	Taylor Engineering LLC			X	X			X
Chariti Young	Member	Automated Logic Corp	X	X	X	X	X		X
Non-Voting Officers									
Barry Bridges	Chair, Control Comp	Sebesta Blomberg & Associates	X	X		X	X	X	X
Dave Kahn	Chair, Handbook		X	X	X		X	X	X
Len Damiano	MTG.EAS, Liaison	Ebtron Inc							X
Frank Shadpour	Chair, Programs	SC Engineers, Inc.	X	X	X			X	X
Steve Taylor	Chair, Research	Taylor Engineering				X			X
Corresponding Members									
Angela Lewis	CM	Facility Engineering Associates	X	X	X				
Al Garza	CM	TekSys Dynamics							
Anthony Lee	CM	Trane							
Boggarm Setty	CM	Setty & Associates Ltd							
Brett Eubanks	CM	Taylor Engineering							
Carol Lomonoco	CM	Johnson Controls Inc							X
Christopher Frank Benson	CM	University of Utah	X	X	X	X	X		X
Christopher Miller	CM	P2S Engineers Inc.							
Curtis Klaasen	CM	Energy Systems Engineering							
Darryl DeAngelis	CM	Belimo Americas							
David Bornside	CM	Siemens Building Technologies Inc	X						X
David Branson	CM	Compliance Services Group, Inc.							
Damiam Ljungquist	CM	JDL Energy Services							
David Underwood	CM	CERL							
Dennis Stanke	CM	The Trane Company							
Don Bailey	CM	TLC							
Donald Hardin	CM	Enviromatic Systems							
George Naim	CM	Trane							
Gregor Henze	CM	Univ of Colorado							
Gregory Dobbs	CM	Penn State Univ							
James Gartner	CM	Four Seasons Environmental Inc							
Jeffrey Stein	CM	Taylor Engineering LLC							
Jeremy Tsai	CM	ARUP							
Jim Coogan	CM	Siemens Building Technology			X	X			X
Jim Tello	CM	San Diego Gas & Electric							
John House	CM	Johnson Controls Inc							
John Kettler	CM	Kettler Control Consultants							
John Zhou	CM	The Trane Company							
Kevin Kerr	CM	Automated Logic NY/NJ							
Larry Felker	CM	Belimo Americas							

PLEASE SIGN AND RETURN TO CHAIR			Sun			Mon		Tues	
Name	Position	Company	Components and Applications	YEA/Education	Programs	Research	Handbook	Executive Breakfast	Main Committee
Corresponding Members									
Lindell Davidson	CM	Professional Design Quality							
Mashuri Warren	CM	A S I Controls							
Marcelo Acosta	CM	Armstrong		X	X	X	X	X	X
Mark Hydeman	CM	Taylor Engineering							X
Michael Monahan	CM	Burns & McDowell							
H Michael Newman	CM	Cornell University							
Michael Pouchak	CM	Honeywell International	X	X	X	X			X
Michael Schell	CM	AirTest Technologies							
Michael Wetter	CM	Lawrence Berkeley Lab				X			
Mike Gibson	CM	Echelon Corporation							
Nicholas Gayeski	CM	KGS Buildings							
Ofer Pittel	CM	Pittel Engineering							
Pankaj Kalore	CM	Siemens Building Technologies Inc							
P Reid Hart	CM	PNNL							
Paul Pinkston	CM	Prime Air Products							
Paul Wacker	CM	Honeywell							
Peter Armstrong	CM	Battelle/Pacific Northwest Nat'l Lab							
Richard Franseen	CM	Honeywell Inc							
Robert Coleman	CM	Trane Company							
Robert Old	CM	Siemens Building Technologies Inc							
Sean Graham	CM	DLB Associates							
Shui Yuan	CM	United Technologies Research							
Sharon Dinges	CM	The Trane Company							
Steven Bushby	CM	NIST							
Steven McCloskey	CM	Siemens Building Technologies Inc							
Verle Williams	CM	Utility Services Unlimited Inc							
Dr. Wangda Zuo	CM	University of Miami							
William Pienta	CM	Siemens Building Tech							
Xiaohui (Joe) Zhou	CM	Iowa Energy Center ERS DMACC				X			X
Xinlei Wang	CM	University of Illinois							
Zachary Obert	CM	Wisconsin Energy							
Provisional Members									
Christine Carol Maurer	Prov. CM								X
James Nietfeld	Prov. CM	Alabama Controls							
Jarod McMains	Prov. CM	Burns & McDonnell							
Shane Mason	Prov. CM								
Guests									
Art Giesler	RLI	Permavent							X
Ryan Tanner		C.U. Boulder	X	X	X	X	X		
Breesa Collyer		PG&E							X
Joseph Kilcoyne	CM	SC Engineers	X	X	X			X	X
Ron Bernstein		RBCG	X	X	X				
Yan Chen		Penn State	X			X			
Zheng O'Neil		Univ. of Alabama				X			X
Jia Chang Huang		PG&E							X
Michael Bobber		City University of NY	X	X					
Will Maak		Cyclone Energy Group	X	X	X				
Bill Simpson		Harrison Energy Partners		X					
Mark Owen		ASHRAE Staff		X					
Joslyn Ratcliff		ASHRAE Staff		X					
David Soltis		ASHRAE Staff		X					
Danny Taasevigen		PNNL				X			
Sam Jasinski		Navigant				X			
Hwakong Cheng		Taylor Engineering				X			
Amanda Pertzborn		NIST				X			
Agami Reddy		Arizona State University				X			
Reinhard Seidl		Taylor Engineering				X			

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Name	Position	Company	Components and Applications	YEA/Education	Programs	Research	Handbook	Executive Breakfast	Main Committee
Steve McCloskey		Siemens				X			
Liping Wang		University of Wyoming							X
Aaron Smith		M&R Engineering							X
Mark Hydeman		Taylor Engineering							X
River Hume		American Mechanical Inc.							X
Farhad Omar		NIST							X
Brent Eubanks		Taylor Engineering							X



ASHRAE Technical Committee 1.4

Attachment 2 – Agenda



Agenda

TC 1.4 Control Theory and Application

<http://tc14.ashraetcs.org/>

Tuesday, July 1, 2014 1:00 – 3:30 pm

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<i>Seminar 42: Performance Monitoring: Get the</i>	Wednesday 8:00-9:30a	Room 607 (6, WSCC)
<i>Energy Savings You Were Promised Technical</i>		
<i>Paper Session 10: Control Theories: Tested</i>	Wednesday 11:00-12:30a	Room 603 (6, WSCC)
<i>Workshop 12: You've Got it Under Control:</i>		
<i>Understanding Sequences of Operation</i>	Wednesday 11:00-12:30a	Room 606 (6, WSCC)

1) Call to Order

2) Introduce Members, Guests, and Liaisons

3) Present scope of TC 1.4

4) Approve agenda

5) Approve minutes from previous meeting

6) Announcements

- a) Section Meeting announcements
- b) TAC
- c) YEA

7) OLD BUSINESS

A) PROJECT COMMITTEE AND ONGOING RESEARCH REPORTS



ASHRAE

American Society of Heating, Refrigerating and Air-Conditioning Engineers

Inc.

1791 Tullie Circle, NE • Atlanta, Georgia 30329-2305 W404-636-8400 • Fax 404-321-5478

- i) SSPC 135 (BACnet) –
- ii) SGPC 13 (Specifying DDC Systems) – Chariti Young
Meets Saturday 9:00a-1:30pm, Conference Room, Lower Level(S)
- iii) GPC 36 (High Performance Sequences of Operation for HVAC Systems) –
Mark Hydeman
- iv) RP-1455 (Advanced Control Sequences for HVAC Systems) -Michael
Pouchak
- v) RP-1597 (Stochastic Control Optimization of Mixed-Mode Buildings) – Kim
Barker
- vi) RP-1633 (Data & Interfaces for Adv. Building Maintenance & Operation) –
Reinhard Seidl
- vii) 1587-TRP (Control Loop Performance Assessment) – Steve Taylor
- a) SUB-COMMITTEE REPORTS
 - i) Executive – Kim Barker
 - ii) Control Components and Applications – Barry Bridges
 - iii) Program – Frank Shadpour
 - iv) Education – Marcelo Acosta
 - v) YEA – Joseph Kilcoyne
 - vi) Handbook – Dave Kahn
 - vii) Research – Steve Taylor
 - viii) Standards – Steve Taylor
 - ix) Webmaster – Chad Moore
- b) Committee Liaison Reports
 - i) TC 1.5 (Computer Applications) – Mike Pouchak
 - ii) TG 2 HVAC Security – Kim Barker
 - iii) TC 5.6 (Control of Fire & Smoke) -
 - iv) TC 6.1 (Hydronic Systems) – Dave Kahn
 - v) TC 6.7 (Solar Energy Utilization) – Gaylen Atkinson
 - vi) TC 7.3 (Operations & Maintenance Management)
 - vii) TC 7.5 (Smart Building Systems) –John House
 - viii) TC 7.6 (Systems Energy Utilization)
 - ix) TC 7.9 (Building Commissioning) – David Bornside
 - x) TC 9.10 (Laboratory Systems) – Jim Coogan



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- xi) TC 9.11 (Clean Rooms) – Jim Coogan
 - xii) SSPC 62.1 (Ventilation and Acceptable IAQ) – Len Damiano
 - xiii) SSPC 90.1 (Energy Efficient Design of New Buildings) – Steve Taylor
 - xiv) SSPC 166 (Terminology) – David Bornside
 - xv) SGPC 0.2 & 1.2 (The Commissioning Process) – David Bornside
 - xvi) SPC134 (Graphic symbols for HVAC systems) – David Bornside
 - xvii) US TAG to ISO/TC 205 (Building Environmental Design)
 - xviii) SPC 189 Design of High Performance Building – Bogi Setty
 - xix) MTG.EAS – Energy-Efficient Air Handling Systems for Non-Residential Building: –Len Damiano.
- c) Society Committees
- i)

2) New business

a) Roster updates:

- i) Voting Members Rolling off after Seattle:
 - (1) Kim Barker(Chair), Larry Fisher, Chariti Young, Charles Coward, Phil Haves, Nemat Lotfi and Jin Wen,
- ii) TC Leadership rolling on after Seattle: Chad Moore (Chair), Gary Cole (Vice Chair)
 - (1) Voting Members Rolling on after Seattle: Jim Coogan, Mike Pouchak, Marcelo Acosta
 - (2) New corresponding members rolling on after Seattle: Ryan Tanner, Joseph Kilcoyne, Ron Bernstein, Yan Chen, Carol Quing Li

3) Upcoming Deadlines

- a) For Chicago: January 24-28, 2015 at Palmer House Hilton.
 - i) June 2 – August 11 Program Proposals Accepted online
 - ii) July 7, 2014 Conference Papers due
 - iii) **Chicago Conference Tracks**
 - Systems and Equipment
 - Fundamentals and Applications
 - Industrial Facilities
 - Large Buildings: Mission Critical Facilities and Applications
 - Energy Efficiency



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- Life Safety
 - Design of Energy and Water efficient Systems
 - Hospital Design and Codes
- b) For Atlanta June 27 – July 1, 2015
- i) Sept 22, 2014 – Conference Paper abstracts and complete Technical Papers due.
 - ii) January 5, 2015 – Conference Papers due
 - iii) **Atlanta Conference Tracks**
 - Systems and Equipment
 - Fundamentals and Applications
 - Research Summit
 - Refrigeration
 - Building Operation, Maintenance and Optimization/Commissioning
 - Indoor Air Quality
 - Modeling throughout the Building Life Cycle
 - High Performance Buildings
 - Moving Advanced Energy Design Guidance to the Mainstream
- 4) Adjourn



ASHRAE Technical Committee 1.4

Attachment 3 – SSPC135 Report



ASHRAE Technical Committee 1.4

Attachment 4 – SGPC13 Meeting Minutes



ASHRAE Technical Committee 1.4

Attachment 5 – TC 1.4 Executive Subcommittee Minutes



ASHRAE Technical Committee 1.4

Attachment 6 – Handbook Subcommittee Minutes

MINUTES

TC 1.4 Handbook Subcommittee

June 30, 2014 / 4:15 – 6:15

Seattle Sheraton Virginia (4-Union St Tower)

1. CALL TO ORDER

2. REPORT FROM APPLICATIONS HANDBOOK LIAISON

- 2.1. Bass Abushakara (Fundamentals Liaison Liaison)
- 2.2. Bass did not make the meeting but from discussion with him at the Handbook training, the deadline for submission is July 5, 2015. TC 1.4 will Vote at the Atlanta meeting to approve the chapter for publication.

3. OLD BUSINESS

- 3.1. The Applications Chapter was successfully submitted. Thank you to everyone who contributed.

4. NEW BUSINESS

- 4.1. Dave K will contact Robert Walker from TC 6.1 to get their current draft of the valve chapter to distribute to anyone interested for review and comment.
- 4.2. The chapter was split up by section, assigning each section to a Captain who will review, and edit, recruiting subject matter experts where required. Dave K will ask Steve Taylor to perform an overall review early in the update process. The chapter is split up as follows:
 - a. Introduction, Terminology, and Types of Control Action - **Barry Bridges**.
 - b. Classification by Energy Source, Control Components, Valves, Dampers, Pneumatic Pilot Positioners - **Gary Cole**.
 - c. Sensors and Transmitters, Temperature Sensors, Humidity Sensors, Pressure Transmitters, Flow Rate Sensors, IAQ Sensors, Lighting Level Sensors, Power Sensing, Controllers, up to but not including Other Auxiliary Control Devices - **Chad Moore**
 - d. Other Auxiliary Control Devices to up to but not including page 7.14 Communication Network Devices for BAS – **Marcelo Acosta**.
 - e. Communication Network Devices for BAS up to but not including Commissioning - **Charity Young & Kim Barker**.
 - f. Commissioning to the end - **Chris Benson**
 - g. Overall Review Steve Taylor, Ryan Tanner, Dave Kahn, Marcelo Acosta, Kim Barker
- 4.3. The captains' will have their section edits complete by November 15, 2014. The overall reviews should also be complete at the same time. Dave K will send email reminders.
- 4.4. If possible there should be at least one design example and one sustainable example. Include information from recent research projects.
- 4.5. If there is interest and content we can put graphics, spreadsheets, videos on the online handbook.
- 4.6. Marcelo's comments from the previous update version were distributed for review/incorporation by the Captains.

5. NEXT MEETING AND SCHEDULE

- 5.1. **January 25, 2015 Winter meeting** Chicago

6. Adjourn

Adjourn at 5:07

TC 1.4 Handbook Subcommittee Attendance List

Present	Name	
X	Chariti Young	
X	Dave Kahn	
X	Kim Barker	
X	Chad Moore	
X	Ryan Tanner	
X	Gary Cole	
X	Marcelo Acosta	
X	Barry Bridges	
X	Chris Benson	
Liaisons		
	Chris Ahne	Applications Handbook Liaison
	Bob Walker	Liaison from TC 6.1 Valves
	Bass Abushakara	Fundamentals handbook Liaison



ASHRAE Technical Committee 1.4

Attachment 7 Control Components and Applications Subcommittee Minutes

ASHRAE TC 1.4 Control Theory and Application

Sub-committee: Control Components and Applications

Meeting MINUTES: Sunday 29 June 2014

Meeting: 1500-1630, Sub Committee Chair Barry Bridges

SCOPE Includes: Components (Sensors, Actuators, Controllers, OWS), Networks, Control Applications Loops, Building management reporting

Components and Control Application “brainstorming session” lets TC 1.4 members and guests talk openly about issues and hot topics without being subjected to budgets or due dates.

Attendance: Verbal around the table and attendance list circulated.

Introductions Around the Room: Those in attendance verbally and written on the attendance form provided Name, Business affiliation.

Microsoft Campus: Fault Detection and Diagnostic Large Practical Application: organized by TC7.5: This was an open committee presentation by MS Facility Director, Darrell Smith. Automated-FDD is applied at MS to a 15M SF campus of 145 structures. This facility has a \$60 Million energy bill, and a BAS point count of 2M objects. This system includes the control and operation of lights, HVAC, monitoring of energy metering, communications, fire, security, elevators and others. The data is stripped out of the BAS trunk line with 0.5 Billion data values stored each day ready for analysis within seconds of the measurement being made at the controller. The speed of data is limited at some older (25 years in service) controllers with internal bandwidth limits.

The data is harvested from 40 or so different control system companies. Communication protocol was shifted from a wild west of many different proprietary systems to BACnet in 2000. They have successfully exported the system showing it is scalable to small buildings and low energy per SF

The MS Campus AFDD is based on 225 fault rules with an initial benefit that reduced energy use about 13% and has an ongoing benefit of \$2M a year savings through discovery of new faults and degradation of control or human intervention. The Analytics software and display graphics are built by a third party with the rules created by MS.

Encapsulation of data to be relevant then translation to be useful is the philosophy. There were surprisingly large savings on implementation, with FDD identifying savings in energy management more than expected. There is also benefits realized in the analysis of system performance to estimate the cost/risk-of-complaint that a fault represents (value of correction) used to prioritize correction. The data is weighted for importance depending on what the data represents (the bosses office is more important than the facility managers office).

Types of reports:

- Analyze data to optimize operations

- Ongoing Cx Auto-reporting represents a 3 to 5% savings above what had been the practice of a 5 year manual RE-Cx

- Ongoing commissioning showed a higher percent of saved energy in LEED bldgs.

- Scale and persistence;

- Ongoing Cx for ops (M&O cannot leave a fan in hand anymore

- Customizable to specific systems and process

With the AFDD the Facility engineering staff are no longer analysts of data// instead they are able to focus on even better engineering solutions to improve performance. Alarm Limits adjust with risk and value assessment to prioritize faults into a day's work for staff. About half of identified faults are resolved in 60 seconds as they are control/software issues.

Link together what is constructed to be the best design with what are the learned needs of the building as it is now used by a knowledgeable operator creates an ever changing current facility requirement, CFR. This changes risk assessment, value of faults and priorities for repair. The building is a living facility not a one time static end of construction

Advanced dashboard presentation of a running operational status showing values framed with fundamentals of control improves recognition and reaction. Getting an alarm is not useful without a context of what else is going on. Understanding the control system under behind the fault is more important than just an alarm. Audit trail reports who did what, when, and link a fault creating mistaken action costs. In one foreign location the maintenance staff were used to running all HVAC systems in hand. When this was changed to automatic as designed and then kept that way because of FDD there was an immediate benefit. With FDD in place any change made to return back to hand is a cost report for correction and a subject for operator training.

IRRIGATION

To get the most out of each system Control should consider all building subsystem not just those that impact energy, one important example is the integration of irrigation in to BAS. John Fordemwalt approached the TC CCA group to help identify interest in that inclusion. As an indication of the minimum control it is important to know when and how much to water. At present surveys indicate that 58% of domestic water goes to landscapes and half of that is wasted, that means over 25% of all treated water is wasted. The Google campus wants to integrate irrigation data into the BAS system. This is possible through a gateway to BACnet for data monitoring and master control.

Sensors in the soil control irrigation per moisture content in addition to air and soil temperature. Spray heads discharge water faster than soil can let it soak in so control needs to pulse short on cycles then off long enough to soak in. A schedule could also be modified by real time pricing as the value of water changes as when water use if legislatively restricted.

Typically, an irrigation system does not get commissioned. Irrigation becomes more complex with water treatment and pumping required for used of rainwater and gray water. Gray water has its own requirements that includes non-potable pipe to be purple. Irrigation heads using gray water also must be colored. A further complexity would be involved if BAS were to control and monitor separation between gray water and black water.

Control and irrigation industries need direction to develop integration and encourage more interest in the control of water. Because of long control wire runs proprietary protocol is used for communication. TC 1.4 and SPC 189 water conservation are likely candidates.

Finding places where control touches most visibly with water use and knowing how many gallons were reduced would encourage better recognition and moderation. Some complexities for control to resolve include a supervisory control like no irrigation during fire operation. Also recognition that unexpected water use should be a 24/7 alarm to BAS. Some new control strategies would include integration with the security system exterior motion detectors to activate water sprinkling to discourage loiterers. At present there is little money to customize landscapes and landscapers don't do irrigation. Like fire sprinklers, irrigation is its own specialty.



ASHRAE Technical Committee 1.4

Attachment 8 – TC 1.4 Research Subcommittee Minutes

TC 1.4 Control Theory and Applications

Research Subcommittee (RSC) Activities

Seattle – June 30, 2014

RSC Meeting Minutes:

1. Announcements

- a) Stats
 - 63 active RPs totaling \$10.8 million.
 - Funding and WSs in balance at the moment.
 - Since last June, 16 projects completed, 20 new ones approved (19 under contract), 12 TRPs out for bid, 4 TRPs bids received
 - At RAC meeting, 5 RTARs accepted, 4 rejected with comments
 - 2 URPs received and under review
- b) New RAP starting to develop 2015-2020 Research Plan.
- c) Reminder: An RTAR is not required – may go direct to Work Statements. If we want to do that, first review with RAC liaison to verify that subject will be approved.
- d) Reminder: New RTARs must use new pdf form. It includes wording limits to keep the RTAR short. Many RTARs have included too much info – more like a WS. Also, prior knowledge of subject (background) must include references not just author opinions.
- e) Reminder:
 - RTARs should be reviewed by liaison prior to submission to RAC. TC 1.4 Research Liaison is Art Giesler RL1@ashrae.net.
 - Proposal Evaluation Criteria & Weighting Factors must be thoroughly edited specific for the project. The example in the template is just that. Note that “student involvement” in the template is not a stipulated priority, just an example.
- f) New RSC chair?
 - **Joe Zhou and Kim Barker** have offered to take over RSC chair for Taylor following TC 1.4 main meeting. Chad to make final selection as incoming TC chair.

2. Active Project Status:

Name	Project	PMS	Status
RP 1455	Advanced Control Sequences for HVAC Systems - Phase I Air Dist and Terminal Systems	Pouchak-chair, Underwood, Bridges, Ljungquist	Final report issued to PMS for review. PMS wanted more time reviewing graphical programming and evidence of completion of final task. TC 1.4 voted to a no-cost extension to Jan. 28, 2015.
RP 1587	Closed Loop Control – Performance Measurement and Evaluation	Steve Taylor-chair Bill Pienta David Shipley Phil Haves	Project awarded to University of Alabama, Zheng O'Neill. PMS met Tuesday for kickoff meeting. Task 1 deliverable will be issued before end of July for PMS review. Task 2 due end of September.
URP 159	Stochastic Control Optimization of Mixed-Mode Buildings	Kim Barker-chair; Michael Wetter, Chariti Young	Final report issued to PMS for review. Voted by e-mail to approve. TC approved recommendation of PMS to accept the final report 7/1/2014. Complete.
URP 163	Data and Interfaces for Advanced Building Maintenance and Operation	Reinhard Seidl-chair Jim Kelsey, Kristin Heinemeier, Chariti Young	Final report incomplete due to poor response from building engineers on dashboards. Will complete final report in August. No need for another extension.

3. Pending Research Project Status:

Status	Project	Champion	Remarks
RTAR 1661 TC 4.7 w/1.4 Co-Sponsor	Development of Modelica Models for Evaluation of Supervisory Control Strategies in ASHRAE Handbook	Michael Wetter Phil Haves	RTAR conditionally accepted by RAC. RTAR edited and resubmitted to RAC for approval. WS to follow perhaps by January. .
RTAR - 1697 cospensor- with TC7.5	Reduce Simultaneous Heating and Cooling in Commercial Buildings	Zheng O'Neill	TC asked to work on WS with TC 7.5. Taylor reviewed and provided comments; recommend not pursuing. To be withdrawn.

Status	Project	Champion	Remarks
RTAR 1711	Optimized Sequences for Chilled and Hot Water Plants	Steve Taylor Marcelo Acosta Heejin Cho	Conditional approval received from RAC. Recommend deleting CW plant research and focus on sequences like Part I. Taylor to develop WS with help from Hydeman, Acosta, and Cho. Due no later than August 15, 2015.
RTAR 1661 cosponsor with TC4.7	Development and Validation of Dynamic Models for the Evaluation of Chilled-Water System Control Strategies in the ASHRAE Handbook	Wangda Zuo Michael Wetter	Possible conflict with 1711 resolved by deleting sequence development
Possible Merge	Optimized Supply Air Temperature and Pressure Reset Strategies	Joe Zhou Ran Liu Steve Taylor	Ran Liu developed RTAR for RSC review. To be merged with next RTAR.
Possible	Optimized Supply Air Temperature Reset Strategies	Steve Taylor Joe Zhou Jim Coogan	Taylor developed RTAR for RSC review. On hold until California CIEE project with Taylor Engineering scope is developed and completed.
Possible Delete	Demand Controlled Ventilation for Parking Garages	Needs champion	No progress. DCV now allowed for exhaust in Standard 62. California Title 24 has just added CO requirement for garages >10000 cfm.
Possible	Effectiveness of Night Setback and Optimum Start	Li Song Heejin Cho Peter Armstrong Barry Bridges	Analyze energy impact of different levels of setback vs. shut-off. RTAR needed.
Possible cosponsor with TC1.5	HVAC System Thermal Control and Energy Performance using Work & Data Exchange Processes	Michael Pouchak	Improved control via data exchange from work related systems to EMCS. TC voted at 1/29/13 meeting to cosponsor. Submitted by TC 1.5 to liaison – returned with comments. Pouchak resubmitted. Pouchak to be TC 1.4 rep on PMS.
Possible	Field Validation of RP1455 Sequences	Mark Hydeman Joe Zhou Michael Wetter	Field testing to show that RP1455 sequences “work”. Will develop WS for Aug 15 so that Iowa State test facility can be used in their current fiscal year.
Possible	Open Generic Language for Control Systems – Phase I Proof of Concept	Michael Wetter Phil Haves Joe Zhou	Open language that can be used not only for DDC applications but also for modeling
Possible	Selecting Control Valves	Steve Taylor	On hold. RP must wait until 1587 is done – need loop “goodness” factor first. TC 6.1 would have to be cosponsor.
Possible	Reset of space setpoints seasonally or using online daily forecast	Kim Barker Gwelen Paliaga	Determine if comfort and efficiency are improved by using seasonal space temperature setpoint reset or using next-day forecast obtained via internet. Also using forecast for pre-cooling strategies. Could start with simulation followed by real-building studies. No progress.
Possible	Object Oriented HVAC Control	Brent Eubanks Kim Barker	Rules connecting system components to use for hierarchal alarms and more.
Possible Delete	Integrating occupant comfort preferences with organizational needs and building spatial – temporal thermal performance	Ryan Tanner Gregor Henze Gail Brager	Comfortable and productive people in effective organizations save money.
Possible Delete	Empirical Performance Comparison of Active Chilled Beam with DOAS vs. VAV with Reheat System	Joe Zhou	Taylor and Jeff Stein to review. Possible cosponsor vote next meeting.
Possible	Waterside economizer control optimization	Jeff Stein Steve Taylor Mark Hydeman	Issues like when it is not worth keeping CT fans at full power, when to re-enable economizer based on estimates of approach temperatures.
Possible	Controlling HVAC using effective temperature (ET)	Joe Zhou	Does using ET instead of drybulb temperature reduce energy efficiency? Simulation followed by field test. Joe to see if grad student can develop this.
Possible	Coordinating control of hybrid radiant and air systems for maximum efficiency	Jin Wen	Applies primarily to hybrid systems but also could apply to DOAS with respect to supply air temperature control.
Possible Delete	Optimizing TES control with weather forecasts or model predictive control	Marcelo Acosta	
Possible	Advanced alarm strategies	Brent Eubanks	Extend what RP-1455 did with hierarchal alarms to reduce nuisance alarms, ensure critical alarms are not ignored.

Status	Project	Champion	Remarks
Possible	Develop conventional sequences from MPC optimized sequences	Phil Haves	Near-optimum sequences developed from model predictive controls that are too cumbersome to work in realtime control systems.

4. Research RTARs and WS Deadlines:
 - a) August 15 for fall meeting
 - b) December 15 for January meeting
5. Adjourn 4:14pm
6. In Attendance: See main TC attendance table.



ASHRAE Technical Committee 1.4

Attachment 9 – TC 1.4 Education Subcommittee Minutes



ASHRAE Technical Committee 1.4

Attachment 10 – TC 1.4 Program Subcommittee Minutes



TC 1.4 – PROGRAM SUBCOMMITTEE ASHRAE SUMMER MEETING, SEATTLE JUNE, 2014

The subject meeting was held on Sunday, June 29, 2014 starting at 5:30 PM following the Components and Control Applications Subcommittee meeting. The attendees remained. The sign-in sheet is attached.

Programs Presented in Seattle:

Jun 28-Jul 2, 2014

1. *Conference Paper Session 3*
Simulation Model Development for Building
Sunday, 11:00 AM-12:30 PM, Room: 612
Chair: Jin Wen
2. *Seminar 29*
Controls
Tuesday 9:45 AM–10:45 AM, Room: 607
Chair: Reinhard Radermacher
3. *Seminar 42*
Performance Monitoring: Get the Energy Savings You Were Promised
Wednesday, 8:00 AM-9:30 AM, Room: 607
Chair: Marcelo Acosta
4. *Technical Paper Session 10*
Control Theories: Tested
Wednesday, 11:00 AM-12:30 PM, Room: 603
Chair: Frank Shadpour
5. *WORKSHOP 12*
You've Got it Under Control: Understanding Sequences of Operation
Wednesday, 11:00 AM-12:30 PM, Room: 606
Chair: Angela Lewis



Anticipated Programs for Seattle That Did Not Take Place:

1. *Conference Paper: Chaired by Joseph Kilcoyne*
Controlling a Minimum Impact Data Center
2. *Seminar: Chaired by Jamie Lee*
Control Sequences within an Energy Simulation Program - Are controls being applied properly in simulation programs?
3. *Seminar: Chaired by Larry Fisher*
BAS Fundamentals for Success: Connecting the Dots

Programs Proposed for Chicago Winter Meeting

Jan 24-Jan 28, 2015

1. *Seminar: Chaired by Ron Bernstein*
What's new with guideline 13? Specifying integration for a building automation system.
2. *Seminar: Chaired by Chariti Young*
Energy and Water Efficient Systems – Impossible without Controls
3. *Conference Paper: Chaired by Joseph Kilcoyne*
Controlling a Minimum Impact Data Center
4. *Conference Paper: Chaired by Jim Coogen*
Representing Building System Hierarchies with Corresponding BAS Data Structures
5. *Seminar: Chaired by Jamie Lee*
Control Sequences within an Energy Simulation Program - Are controls being applied properly in simulation programs?
6. *Seminar: Chaired by Frank Shadpour*
Hospitals and Control Systems
7. *Seminar: Chaired by Larry Fisher*
BAS Fundamentals for Success: Connecting the Dots
8. *Seminar: Chaired by Marcelo Acosta*
Processing Large Data in Campus Environments (Marcelo to forward title)
9. TC 1.4 Advanced Internal Seminar: 2-3pm on Sunday (Possibly on YouTube)
 - a. Wireless Technology
 - b. Topics: Dashboards
 - c. Ongoing Commissioning
 - d. Open



Programs Proposed for Atlanta Summer Meeting

Jun 24-Jul 1, 2015

1. *Workshop: Chaired by Chariti Young*
Integration for successful operation: Show me what I need to know
2. *Seminar: Chaired by Barry Bridges*
ASHRAE's RP 1455: Best of Class Control Sequences for Air Systems

Program "Pipeline" for Future Meetings:

1. *Seminar: "Valves and Actuators: Are they Smart Mechanical Devices or Control Components?"* Garry Cole
2. *Seminar: "Wireless DDC Technology – Real Applications".* Frank Shadpour
3. *Seminar: "Be Alarmed at what your BAS is not Telling You: Is no news really good news?"* Chaired by Kimberly Barker
4. *Seminar: "Control Specification Fundamentals, How to Get What You Really Want"* Larry Fisher.
5. *Web-Services. XML, SOAP: How Do I Get Non-Traditional BAS Information and Use It for My Building Automation.*
6. *Controls, Fuel cells, Cogeneration and Micro-cogeneration*
7. *Control of Geothermal HVAC Systems*
8. *Data Analytics from BAS systems; what interesting information can be derived from HVAC data? Link to research program*



2015 Chicago Winter Meeting

January 24 - 28, 2015

Chicago Programs Tracks:

- **Track 1:** Systems and Equipment
- **Track 2:** Fundamentals and Applications
- **Track 3:** Industrial Facilities
- **Track 4:** Large Buildings: Mission Critical Facilities and Applications
- **Track 5:** Energy Efficiency
- **Track 6:** Life Safety
- **Track 7:** Design of Energy and Water efficient Systems
- **Track 8:** Hospital Design and Codes

Deadlines:

- | | |
|-------------|--|
| ▪ 7/7/2014 | Conference Papers due (If abstracts were accepted) |
| ▪ 8/11/2014 | Program Proposals Accepted online |
| ▪ 8/23/2014 | Conference Paper Abstracts for Atlanta |
| ▪ 1/9/2015 | Conference Papers for Atlanta |

▪ 2015 Atlanta Summer Meeting

- June 28 – July 28, 2015

Atlanta Preliminary Program Tracks

1. Systems and Equipment
2. Fundamentals and Applications
3. Research Summit
4. Refrigeration
5. Building Operation, Maintenance and Optimization/Commissioning
6. Indoor Air Quality
7. Modeling throughout the Building Life Cycle
8. High Performance Buildings
9. Moving Advanced Energy Design Guidance to the Mainstream



Presentations and Guidelines:

1. *Conference Paper vs. Technical Paper:* Conference paper is limited to eight (8) pages, the timeline is shorter and the review process less rigorous than the technical papers currently presented in the Technical Paper Sessions.
2. *Seminar and Forum Submissions:* For Seminar submissions, they should include six (6) Learning Objectives and ten (10) Questions and Answers for the session.
3. *Seminar Program Submission:* 60 minutes (1-2 speakers) or 90 minutes (3-4 speakers).

Upcoming Meetings:

Seattle	Jun 28-Jul 2, 2014
Chicago	Jan 24-28, 2015
Atlanta	Jun 27-Jul 1, 2015
Orlando	Jan 23-27, 2016
St. Louis	Jun 25-Jun 29, 2016

Note:

- *Conference Paper vs. Technical Paper:* Conference paper is limited to eight (8) pages, the timeline is shorter and the review process less rigorous than the technical papers currently presented in the Technical Paper Sessions.
- *Seminar and Forum Submissions:* For Seminar submissions, they should include six (6) Learning Objectives and ten (10) Questions and Answers for the session.
- *Seminar Program Submission:* 60 minutes (1-2 speakers) or 90 minutes (3-4 speakers).

These minutes stated herein were approved by TC1.4 program subcommittee on Sunday, June 29, 2014

Submitted by: Frank Shadpour, PE
TC1.4 Program Subcommittee Chair
frank@scengineers.net



ASHRAE Technical Committee 1.4

Attachment 11 – TC 1.4 YEA Subcommittee Minutes



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TC 1.4 Control Theory and Applications YEA Subcommittee Meeting Summary

Seattle – June 28, 2014

- 1) Young Engineers in ASHRAE (YEA) attendance included two Yea Regional Coordinators (YRC's) and several YEA members
- 2) Discussion Topics
 - a) General awareness of YEA community to TC activities:
 - i) Currently, awareness is very poor and is a topic at YEA meetings as well
 - ii) YEA requested help at the chapter level to raise awareness. Action item to coordinate potential TC 1.4 member presentations at the Chapter level.
 - iii) Information regarding provisional / corresponding membership process was requested.
 - b) YEA representation at Society Conventions and Technical Committee meetings
 - i) YEA members cannot fund convention attendance themselves.
 - ii) Technical committee participation is a potential justification for employer sponsorship.
 - c) What do YEA members want from TC-1.4 members?
 - i) Training regarding how to write proper control sequences of operation.
 - ii) Online or chapter training resources were requested; samples include ASHRAE elearning Introduction to DDC Controls for HVAC Course, Khan University, Honeywell Grey Manual.
 - d) YEA Survey to further determine YEA needs
 - i) Will be distributed to TC1.4 for comment before distribution to YEA listserve.