AMERICAN SOCIETY OF HEATING, REFRIGERATING AND

AIR-CONDITIONING ENGINEERS, INC.

1791 Tullie Circle, NE Atlanta, GA 30329 404-636-8400

TC/TG/TRG MINUTES COVER SHEET

(Minutes of all meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO. TC 7.5 **DATE: June 28, 2011**

TC/TG/TRG TITLE: Smart Building Systems

DATE OF MEETING: June 28, 2011 **LOCATION: Montreal, QC**

Members Present	Appt	Members Absent	Appt	E-Officio Members and Additional Attendance
Carol Lomonaco, Chair, (V)	2008	Peng Xu (V)	2008	Alex Tessier
William Healy, Secretary (NV)	2008	Natascha Milesi Ferretti (V)	2008	Allen Weidman
Michael Brambley, Handbook Subc., (NV)	2008	Richard Hackner (V)	2007	Ammi Amarnath
Xiaohui Zhou, Program Subc. (V)	2009	Haorong Li (V)	2007	Andrew Windham
Mike Galler, Webmaster (NV)	2011	Reinhard Seidl (V)	2008	Andre Athienitis
Moncef Krarti (V)	2008	Keith Temple, (V)	2009	Aziz Laouadi
Peter Armstrong (V)	2008	David Shipley (V)	2008	Dan Veronica
Zheng O'Neill (V)	2010	Vernon Smith (V)	2007	Darryl DeAngelis
		Jan Hensen, Member Non-Quorum (V)	2008	Farhad Omar

Members Present	Appt	Members Absent	Appt	E-Officio Members and Additional Attendance
		Shengwei Wang, Member Non-Quorum (V)	2008	Jay Enck
				Iain Macdonald
				Jean Molina
				Jon Douglas
				Josh Wall
Corresponding Members Present		**Corresponding Members Absent**		Kristin Heinemeier
Agami Reddy	2006	Osman Ahmed, (CM)	2006	Lixing Gu
Carlos Haiad	2004	Narendra Amarnani, (CM)	2004	Nick Gayeski
Chariti Young	2002	Don Bailey, (CM)	2008	Ran Liu
Dave Branson	2001	Fred Bauman, (CM)	2009	Rhys Goldstein
David Bornside	2004	Steven Blanc, (CM)	2008	Ryan Turner
David Yuill (PCM)	2010	Michael Bobker, (CM)	2008	Sekhar Kondepudi
Jerine Ahmed	2007	Michael Brandemuehl	2007	Sala Killicote
Meli Stylianou	2007	James Braun	2007	Tania Ullah
Philip Haves	2005	Barry Bridges, (CM)	2002	Tea Zakula
Robert Sonderegger (PCM)	2010	Martha Brook, (CM)	2006	Vance Payne
Sharon Dinges	2006	James Butler, (CM)	2002	David Holmberg
Srinivas Katipamula	2005	Brian Coffey, (CM)	2009	
		Robert Coleman, (CM)	2008	
		Maria Corsi, (CM)	2003	
		Charles Culp (CM)	2000	
		Arthur Dexter, (CM)	2005	
		Kirk Drees, (CM)	2008	
		Piotr Domanski, (CM)	2005	
		Mohsen Farzad, (CM)	2005	
		Clifford Federspiel, (CM)	2006	
		James Gartner, (CM)	2007	
		John House, (CM)	2008	
		Ahmad Husaunndee, (CM)	2006	
		Mark Johnson, (CM)	2004	
		Ashok Kadakia, (CM)	2006	
		David Kahn, (CM)	1996	

Members Present	Appt	Members Absent	Appt	E-Officio Members and Additional Attendance
		George Kelly, (CM)	2001	
		Michael Kintner-Meyer,	2007	
		Curtis Klaassen, (CM)	2008	
		Jan Kreider, (CM)	2008	
		James Kummer, (CM)	2008	
		Jean Lebrun, (CM)	2008	
		Scott LeClair, (CM)	2008	
		Kuei-Peng Lee, (CM)	2008	
		Mingsheng Liu, (CM)	2003	
		Darrell Massie, (CM)	2003	
		John Mitchell, (CM)	2000	
		Ron Nelson, (CM)	1998	
		Richard Ng, (CM)	2008	
		Leslie Norford, (CM)	2006	
		Robert Old (CM)	2010	
		Hung Manh Pham, (CM)	2001	
		William Pienta, (CM)	2006	
		Kinga Porst, (CM)	2002	
		Michael Pouchak, (CM)	2003	
		Andrew Price, (CM)	2003	
		Barry Reardon, (CM)	1999	
		Glenn Remington, (CM)	2002	
		Jeffrey Schein, (CM)	2007	
		Russell Secor, (CM)	2008	
		John Seem, (CM)	2003	
		Peter Simmonds, (CM)	2008	
		Pornsak Songkakul, (CM)	2002	
		Gene Strehelow, (CM)	2006	
		Arun Vohra, (CM)	2006	
		Paul Wacker, (CM)	2008	
		Thomas Webster, (CM)	2009	
		Jin Wen, (CM)	2010	
		Jonathan West, (CM)	2008	
		James Winston, (CM)	1996	
		Jonathan Wright, (CM)	2008	
		Hui Li, (CM)	2010	
		Ram Narayanamurthy, (CM)	2010	
		Stephen Treado, (CM)	2010	
		Marijn Braadbaart, (PCM)	2010	
		Shui Yuan, (PCM)	2009	
		Li Zhang, (CM)	2010	

(V) = voting member

(CM) = corresponding member

(PCM) = provisional corresponding member

DISTRIBUTION:

ALL MEMBERS AND CORRESPONDING MEMBERS OF TC/TG/TRG,

TAC CHAIR: Charles Culp

TAC SECTION HEAD: Drury Crawley

ALL COMMITTEE LIAISONS AS SHOWN ON TC/TG/TRG ROSTERS:

Research: George Jackins

CTT: Chad Moore

Prof. Dev.: John Nix

Standards: Adam Hinge

Special Publications: William Fleming

Staff Liaison (Stds): Stephanie Reiniche

Staff Liaison (Research/Tech Services): Michael Vaughn

ASHRAE TC Activities Sheet

DATE: June 28, 2011

TC NO. TC 7.5 TC TITLE: Smart Building Systems

CHAIR: Carol Lomonaco VICE CHAIR: Natascha Milesi Ferretti

TC Meeting Schedule

Location, past 12 mo.	Date	Location, planned next 12 mo.	Date
Las Vegas, NV	2/1/11	Chicago, IL	1/24/12
Montreal, QC	06/28/11	San Antonio, TX	6/26/12

TC Subcommittees

Subcommittee	**Chair**
Secretary	W. Healy
Building Operations Dynamics	S. Blanc
Fault Detection and Diagnostics	H. Li
Smart Grid	R. Hackner
Wireless Applications	W. Healy
Research	N. Milesi Ferretti
Program	X. Zhou
Handbook	M. Brambley

Active Research Projects for TC 7.5

1486-RP: Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers—Phase III (Srinivas Katipamula (acting), PMS Chair, FDD)

1312-RP: Tools for Evaluating FDD Methods for AHUs (Phil Haves, PMS Chair, FDD)

1390-RP: : Short-Term Curtailment of HVAC Loads in Buildings (John House, PMS Chair, BOD)

TC 7.5 Research Plan

Project	RTAR Contributors	Status
1615-RTAR FDD Methods for Supermarkets	Zheng O'Neill	-RTAR voted on at Louisville TC 7.5 main meeting the vote was 9-0-1-CNV. Re-submit to RTAC at the Orlando meeting.
Real-Time Optimal Control in a Distributed Environment.	Josh Wall	-Review and approve in Orlando and vote in Orlando 2010 meeting. -Submit RTAR and WS simultaneously to RAC.
1543-RTAR Demand Response Optimization Protocol and Integrated Training	Rich Hackner	-Approved by RAC with one or two comments. -Must write WS -pending
Reduce Simultaneous Heating and Cooling in Commercial Buildings	Zheng O'Neill	-Voted in Louisville by TC 7.5 with 9-0-0-CNV on June 23, 2009. -This is a FDD RTAR. -Re-submit to RAC at Orlando 2010 meeting.
Status and benefits of demand response program for residential Buildings	Jin Wen, Srinivas, Bill, Palieuta,	More work needed to be done.\ Status Orlando 2010 meeting?
Whole-Building FDD	Les Norford Haorong?	Discussed again in Orlando 2010. Hui Li will review old RTAR and revise it. No date given for new RTAR.

ASHRAE TC 7.5, Smart Building Systems

2011 Annual Meeting

Montreal, QC

MINUTES

Location: **Hilton Montreal Bonaventure, Mansfield Room**
Date: **Tuesday, June 28, 2011**

Time: **3:30 - 6:00 p.m.**

Meeting called to order at 3:30 pm by Chair Carol Lomonaco.

1. Roll Call and Introductions. Review VMs, CMs, and PCMs.

Everyone in room introduced himself/herself.

5 voting members present: Peter Armstrong, Moncef Krarti, Zheng O'Neill, Carol Lomonaco, Xiaohui Zhou

8 voting members absent: Richard Hackner, Haorong Li, Natascha Milesi Ferretti, Reinhard Seidl, Vernon Smith, Stuart Waterbury, Peng Xu, David Shipley

2 Members Non-Quorum Absent: Jan Hensen, Shengwei Wang

Quorum is not achieved.

2. TC 7.5 Scope

Chair read scope of Technical Committee.

3. Research Subcommittee Report (Carol Lomonaco for Natascha (Castro) Milesi Ferretti)

TC is finishing up three active research projects (RP's 1312, 1390, 1486). No research projects are close to being approved; there appear to be two RTAR's currently being pushed through the process and a number of other ideas in the parking lot.

TC is co-sponsoring RTAR 1502 on VAC system setpoint temperature reset; lead TC is 1.4.

Re: RP 1274: paperwork has been turned in and the TC is done with that project.

Srinivas Katipamula reported on RP 1486. Detailed report is attached to these minutes. Final report was submitted in April of this year. The PMS has reviewed it and provided comments. The contractor submitted a draft final version on Monday of this week. The PMS has minor comments, but they feel that the project is complete. The PMS recommends that the committee approve acceptance of report pending minor changes from PI.

Phil Haves reported on RP 1312, Tools for Evaluating FDD tools for AHU's. The project started about 4 years ago, and the contractor is Drexel University. The PMS met by phone last week to review the latest round of edits on final report. The issues have been addressed satisfactorily. The PMS suggests that the committee approve the final report subject to minor edits. Two papers have been published with ASHRAE.

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Motion to accept report on RP 1312 with minor changes
-- Moved by Moncef Krarti
-- Seconded by Joe Zhou
-- VOTE: 5-0-0 chair voting. {NO QUORUM}
In email ballot completed following meeting on August 25, 2011:
VOTE: APPROVED 6-0-0-CV {Three non-responsive voters}

****

Srinivas Katipamula reported on RP 1390. Detailed report is attached to these minutes. Contractor submitted a revised final report in March. The PMS provided comments and a conference call was held on June 20. A few minor editorial changes were suggested and the report has been resubmitted. PMS recommends TC accept the report with minor changes.

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Motion to accept report on RP 1390 with minor changes
-- Moved by Peter Armstrong
-- Seconded by Moncef Krarti
-- VOTE: 5-0-0 chair voting. {NO QUORUM}
In email ballot completed following meeting on August 25, 2011:
VOTE: APPROVED 6-0-0-CV {Three non-responsive voters}

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Motion to accept report on RP 1486 with minor changes
-- Moved by Joe Zhou
-- Seconded by Moncef Krarti
-- VOTE: 5-0-0 chair voting. {NO QUORUM}
In email ballot completed following meeting on August 25, 2011:
VOTE: APPROVED 6-0-0-CV {Three non-responsive voters}

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From RP 1390, one transactions paper has been submitted; another paper has been submitted to a non-ASHRAE conference. There was discussion about attempting to organize a technical session around this paper.

4. Report from Fault Detection and Diagnostics Subcommittee

Report presented by Joe Zhou, who acted as chair during these meetings for Haorong Li. Full report of subcommittee meeting is presented at end of these minutes.

An idea was brought up from TC 7.9 about expectations for a community of buildings. Kristin Heinemeier will develop a draft RTAR for the next meeting.

5. Report from Smart Grid Subcommittee

Report presented by David Holmberg, who acted as chair during these meetings for Rich Hackner. Full report of subcommittee meeting is presented at the end of these minutes. Additional discussion is noted here:

Robert Sonderegger presented an RTAR that was initially developed in TC 4.7 for consideration for co-sponsorship by TC 7.5: "Data-driven Building Models for Smart Meters" The idea is to apply existing data-driven models (inverse models) to make real-time baselines for use by the utility industry.

Question: Is the utility pushing these efforts.

Answer: Not directly, but there are opportunities for utilities to get better information.

Question: Can these models be used from a regulatory perspective?

Answer: Chicken and egg situation. Need to take to the Public Utility Commissions to show them that it is possible.

6. Report from Wireless Applications Subcommittee

Report presented by Subcommittee Chair Bill Healy. Full report of subcommittee is presented at the end of these minutes. Additional discussion is noted here:

Regarding potential RTAR on interference effects on wireless systems in buildings, the Smart Grid Interoperability Panel's Home-to-Grid Working Group is looking into electromagnetic interference issues.

7. Report on Building Operations Dynamics Subcommittee

Report presented by Carol Lomonaco, who acted as chair during these meetings for Steve Blanc. Meeting notes are presented at end of these minutes. Additional discussion is noted here.

A discussion ensued about an RTAR that proposed to develop Modelica models of building components to model short and long term models that other programs might use. Peter Armstrong indicated that the missing current capability is to model predictive control. Part of current RTAR is to implement test cases for the TC 7.5 Handbook Chapter on Building Operation Dynamics. An opinion was stated that the work statement should focus on control schemes for which we don't have any expertise. Second comment was that TC 4.7 is not the best home for this work; TC 7.5 should be principal sponsor. Joe Zhou indicated that there are

questions about how simulation will be done. Moncef responded to the sponsorship being primarily in TC 4.7: the focus is on modeling HVAC systems so it seems to fit in TC 4.7.

8. Announcements from Chair

Chair Carol Lomonaco presented:

Multi disciplinary taskgroups (MTG's). Three new ones: MTG for Building Information Modeling, MTG for energy targets, MTG for Energy Efficiency of General Air Cleaning Devices. Meetings are normally by telephone. Some uncertainty regarding the number of MTG's. Supposed to last about 3 years. One volunteer to assist with the MTG on BIM; Sekhar Kondepudi volunteered to be the alternate.

Websites need to be updated.

We have never had a Hightower award – outstanding technical leadership on a TC over the past year, excluding research and standards. Email Carol with any ideas.

Thank you letters are available for employers.

Chicago Meeting: Theme High Performance Buildings

9. Liaison Reports

Chariti Young reported on happenings from TC 1.4. There is an integrated controls track planned for the San Antonio conference. The TC wants to minimize handbook overlap with the proposed new chapter from TC 7.5. Chariti will work with Mike Brambley on this issue.

Joe Zhou reported on happenings from TC 1.5. They seek co-sponsorship on a seminar on Optimizing HVAC system efficiency using data driven approaches.

10. Program

Report presented by Program Chair Joe Zhou.

The TC submitted 4 seminar programs for this meeting, 3 were approved. One on Smart Grid, Wireless, building energy information in a smart grid world (cosponsored). All were very well attended. One was not accepted, Successful field stories for FDD topic that was chaired by Carol. Will be resubmitted to Chicago meeting.

Program chair meeting. He was not able to participate this time. There are still six learning objectives and 10 questions and answers needed for seminars and forums. Emphasize decision for conference papers based on abstracts.

Speaker evaluations. Program evaluation will be scored based on 1-5. Need to achieve 3 or the program will have a negative impact for the next submission. CEC still tracks speakers. Chair should be confident that the speaker will do a good job in presenting. NOTE: later discussion refuted the idea of a program evaluation affecting future submittals by the TC.

Programs for Chicago. Theme is High Performance Buildings, Integrated Design, Energy Modeling, and Specialized Applications.

Seminars and Forums Deadline is Aug. 12. Conference papers are due Aug. 19 if abstract is submitted earlier. There are 10 tracks for the Chicago meeting.

Program Ideas:

"Successful field stories for FDD" will be resubmitted. Carol will lead the efforts.

Lixing Gu has submitted a technical paper from recently completed research project. LBNL has a similar study. Q: Can we mix conference papers and technical papers? It appears that a seminar cannot be mixed with a paper.

Agami Reddy recommended a seminar on Tools and Technologies that need to be in place for a design for net zero to be operating as such. Could be residential, small commercial, large. Etc. 1 speaker suggested. Can we identify FSEC as another. Members of TC 7.3 may have an interest. Mike Brambley can provide names to chair. Three potential speakers have been identified. Agami will be the chair.

Cosponsorship: Optimized HVAC with data mining approaches from TC 1.5. Chair uses her prerogative for TC 7.5 to cosponsor this program.

Seminars for wireless:

Residential Applications – Carlos Haiad will lead and aim for Chicago.

Locating wireless devices in buildings. Carol will be the chair and aim for Chicago.

Wireless Sensing for Retrocommissioning: Mike Brambley will be the chair for this seminar and will aim for San Antonio meeting.

Residential Energy Monitoring Systems: Bill Healy will be the chair for this seminar which will be proposed for San Antonio. Speakers: Sekhar Kondepudi, Tania Ullah, and a person recommended by Carlos Haiad.

Suggestion. Joe would like to get information before the main committee meeting. Submit input to Joe by 7 pm on Monday night.

Request: Mike Brambley requested reviewers for a conference paper session for CEC Chicago meeting, one of the papers is related to TC 7.5.

CEC liaison, Sarah Maston, discussed the idea of pulling out a track and making a mini-conference. As discussed, there will be a track for San Antonio on integrated controls.

Question: Do we get feedback on why things are rejected? Answer: A couple have come through as a thinly designed commercial. With papers, usually no problem unless it is commercial. Usually 25-30% of papers do not come in. They are trying to find a method to give feedback. They have scores. She will get points rated for Montreal meeting back to Carol and will ask about how the grading occurs.

A potential good program would be one where there is discussion on two sides of a particular topic. That idea could be submitted as a seminar.

Sarah indicated that the programs are not rated. Further discussion was had on the rating of presenters.

HVAC&R Equipment and Fundamentals will be constant themes going forward (among the approximately 10 themes for each conference).

11. Handbook

Discussion led by Handbook chair Mike Brambley.

2011 Applications Handbook is out. TC 7.5 has contributions to two chapters and a full chapter, Ch. 41 Supervisory Control Strategies and Optimization. There is a section in Operations and Maintenance Management (on FDD) and a section on wireless applications in the Computer Applications Chapter (Ch. 39).

An outline of proposed Smart Building Systems chapter was submitted and was approved by a unanimous vote of the Handbook Committee. Carol is to be commended for representing the TC at the handbook meeting.

Mike will coordinate the drafting of a handbook chapter by the end of May 2012, to be distributed before June 2012 meeting. Bring comments on the draft in June 2012.

Discussions took place on what to do with content in existing chapters. We will continue to maintain Chapter. 41. For 7.3 chapter, keep an introduction in that chapter, but we can put more details in to the new chapter. Computer Applications contribution: Because of its length, we need to reassess what will be kept and what will be removed. Bill Healy will work with TC 1.5 to develop a plan. Good intro to wireless that fits into their chapter, more substantive pieces will be moved in the SBS chapter.

12. Website

Website needs to be updated. Carol will take action to examine website to re-do greeting.

13. New Business

Kristin Heinemeier discussed a proposed standard committee to be formed on Methods of Test for FDD. An email vote will be held to approve the formation of the committee.

A suggestion was had to change the name of the title to commercial air-cooled packaged units in place of unitary systems.

There was some debate as to whether the TC was approving the entire document presented or just the Title, Purpose, and Scope.

Vance Payne expressed interest in becoming a voting member of committee. Call for membership will come after approval of the formation of the committee.

An email ballot will be conducted following meeting:

Title: Laboratory Method of Test of Fault Detection and Diagnostics Applied to Commercial Air-Cooled Packaged Systems

Purpose : This standard provides a method to define an FDD tool's function. This standard also provides a method of laboratory test for the performance of Fault Detection and Diagnostic (FDD) tools on commercial air-cooled packaged equipment.

Scope:

2.1 This standard applies to commercial air-cooled packaged air conditioning systems.

2.2 The test is a physical laboratory test on a particular combination of diagnostic tool for each model of a unitary system.

2.3 This standard applies to any on-board, after-market or hand-held hardware and/or software functionality that detects and/or diagnoses problems that lead to degraded performance such as, energy efficiency, capacity, increased maintenance costs or shortened equipment life.

Followup: The ASHRAE Standards Committee voted 22-0-0 to approve the Title, Purpose, and Scope of the proposed standard "Laboratory Method of Test of Fault Detection and Diagnostics Applied to Commercial Air-Cooled Packaged Systems" at their meeting on June 29, 2011.

Meeting adjourned at 6:15 pm.

ASHRAE TC 7.5 Smart Building Systems

2011 Annual Meeting Agenda

Montreal

Date: **Tuesday, June 28, 2011**

Time: **3:30 - 6:00 p.m.**

1. Roll Call and Introductions. Review VMs, CMs, and PCMs.

3. TC 7.5 Scope

4. Approval of Las Vegas Winter 2011 Meeting Minutes
   -Louisville Minutes and Orlando Minutes

5. Announcements:
   -MTGs

6. Liaison Reports

7. Fault Detection and Diagnosis Subcommittee (Joe Xhou for Haorong Li)

8. Wireless Applications Subcommittee (Bill Healy)

9. Smart Grid Subcommittee (Dave Holmberg for Rich Hackner)

10. Buildings Operations Dynamics Subcommittee (Carol Lomonaco for Steve Blanc)

11. Research (Carol Lomonaco for Natascha (Castro) Milesi Ferretti)

    - Report on 1274-RP "Field Performance Assessment of Package Equipment to Quantify the Benefits of Proper Service" (Todd Rossi – PMSC Chair)
    - Report on 1312-RP "Tools for Evaluating Fault Detection and Diagnostic Methods for Air-Handling Units" (Phil Haves – PMSC Chair)
    - Report on 1486-RP "Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers---Phase III" (Srinivas Katipamula – PMS Chair)

- Report on 1390-RP “Short-term Curtailment of HVAC Loads in Buildings” (John House – PMS Chair)
- **New Research**

12. Program (Xiaohui Zhou (Joe))
    Smart Grid Program Ideas after Smart Grid Subcommitte Meeting

13. Handbook (Mike Brambley)

14. Web Page (Mike Galler)
    Web Page comments.

15. Old Business
Laboratory Method of Test of Fault Detection and Diagnostics Applied to Commercial Air-Cooled Packaged Systems proposed ASHRAE Standard.

16. New Business
    - Other New Business

Do we (TC 7.5) have special requests from our group for consideration by the Technical Activities Committee?

17. Adjournment

TC 7.5 Fault Detection and Diagnosis Subcommittee Meeting Minutes

2011 Summer Meeting, Montreal, Quebec, Canada

Sunday, June 26, 2011

3:00pm-3:45pm

(Hilton) Mont Royal (L)

2 min	Call to Order: -Meeting started at 3:00pm	Xiaohui (Joe) Zhou for Subcommittee Chair Haorong Li
	Introduction and Circulate Sign In Sheet - see sign in sheet	
8 min	Status Update on Current Research Projects	
	1274 RP, Field Performance Assessment of Packaged Equipment to Quantify the Benefits of Proper Service -Mike Brambley report: view paper work one more time. Ask RAC for paperwork (form?). TC 7.9 and TC 7.3?	PMCS Chair: Todd Rossi
	1312 RP, Tools for Evaluation FDD for AHUs -Sirinavas report: met via conference call. Final report need revised but will be able to submit to vote on Tuesday main meeting. Two papers accepted.	PMCS Chair: Phil Haves
	1486 RP, "Short Term Curtailment of HVAC -Sirinavas report: Final report revised. Will make recommendation to vote.	PMSC Chair, John House, PMS Chair
	1390 RP, "Fault Detection and Diagnostics for Centrifugal Chillers - Phase III: Online Implementation -Sirinavas report: Done with final report in April, need minor revision, but will be able to submit to vote on	PMSC Chair, Srinivas Katipamula

	Tuesday main meeting.	
10 min	Update/Discussion of RTARs/Work Statement	
	1) Simultaneous Heating and Cooling -Zheng: No change. Will continue working on it.	Zheng O'Neill
	2) FDD Methods for Supermarket - #1615 -Zheng: RTAT approved. Need to submit WS.	Zheng O'Neill
	3) FDD for Geothermal Heat Pumps -Veronica: No update. Liu is not present (need to follow up with him). Keep it on the list.	Daniel Veronica / Xiaobin Liu
	4) Whole Building FDD -Pang is not present. Need follow up.	Xiufeng Pang
	5) Low-cost FDD Tools for Residential Systems -Li and Jon not present. Need follow up.	Haorong Li / Jon
	6) Standard methods for testing FDD -Proposal "Laboratory Test Method of Performance of FDD on Commercial Package Unit …"	Phil Haves
8 min	New Research Ideas -From TC 7.9 Building Commissioning research idea: "Methods of Modeling Energy Savings "EnergyPro" to model refrigerant low charge in Retro Commissioning" Need data to validate faults. May have a RTAR in the next meeting. Looking for co-sponsorship. -Recommend summarize FDD methods by equipment.	
7 min	Programs -4 programs submitted for Montreal meeting, 3 were scheduled. Unfortunately, the FDD related seminar is not scheduled. -Carol will resubmit the "Successful Field Stories for FDD". Zhou recommends communication with track chair to find out how to improve.	Xiaohui (Joe) Zhou
5 min	Standard or Guideline for FDD	Kristin Heinemeier

5 min	Relevant Handbook Chapters	Mike Brambly
	The End	

The FDD Subcommitee of TC 7.5: Smart Building Systems aims at exploring and developing technologies to help detecting and diagnosing common faults existing in building HVAC systems. The scope of this subcommittee includes (a) identifying and sponsoring research projects to develop new FDD technologies, evaluate existing FDD technologies; provide recommendations to building operators and practical engineers; and develop supporting tools for researchers in FDD areas; and b) organizing programs to disseminate research findings and advancements in FDD areas among ASHRAE members.

Wireless Applications Subcommittee
ASHRAE TC 7.5, Smart Building Systems
2011 Annual Meeting
Montreal, QC

Date: Sunday, June 26, 2011

Meeting called to order by chair Bill Healy at 3:45 p.

Read scope of subcommittee:

Scope:

The Wireless Applications Subcommitee of TC 7.5: Smart Building Systems explores the use of wireless communications technology for enabling smart building systems. The aim of this subcommittee is (a) to sponsor research to understand the performance, benefits, and drawbacks of wireless communications in buildings and to enhance the impact of wireless technology in building operations, and (b) to organize programs that inform ASHRAE members of advances in wireless technology and that provide those members with experiences and guidelines in using wireless technology for building applications.

Program

Discussion of Program Ideas:

Seminar on use of wireless in residential applications. Carlos Haiad will lead and can find 3 speakers. This program will be proposed for Chicago.

Seminar on Location Guidelines for Wireless Systems. Carol Lomonaco will lead. Bob Old previously indicated that he could find a speaker . Sekhar Kondepudi indicated that he could speak or find someone who could speak.

Discussion about an idea from a session presented in Montreal, how wireless sensors are used to monitor window and door openings and tie the information back to mixed-mode ventilation systems. No further information on the topic was discussed.

Seminar idea on the use of wireless as part of residential energy monitoring systems. Bill Healy will lead this effort. Potential Speakers include Tania Ullah, Sekhar Kondepudi; Carlos Haiad can identify a potential speaker. This seminar idea will be held until the San Antonio 2012 meeting.

Seminar idea on the use of wireless as part of retro-commissioning of commercial buildings. Mike Brambley will lead this effort and has ideas for speakers from two companies.

Handbook

Wireless Applications section appears in the 2011 Handbook of HVAC Applications, Chapter 40 "Computer Applications."

Research:

Bill Healy led discussion of RTAR on standard for wireless testing. The RTAR was not available for review. The idea of this RTAR is to develop standard Methods of Test that could help in estimating performance of wireless systems in buildings. The work would then lead to a standard or guideline sponsored by TC 7.5.

Discussion: Battery life is of great interest.

What is the correct organization to do such a standard? There was opinion stated that ASHRAE has a role in setting the requirements of the application for such sensors.

Could the TC move directly to a standard effort?

Are there other things besides battery life that is of interest?

Utilities could be a prime user of such a standard. Carlos Haiad agreed to help specify the necessary pieces of such a standard.

John Ruiz mentioned some work done in IEEE (E2030?), which provides a guideline for architectural characteristics for security, communications, and semantics between devices. An ASHRAE effort could complement that standard.

Bill agreed to look into potential standards efforts in more detail. Carlos Haiad, Mike Brambley, and John Ruiz agreed to review any such documents produced.

Discussion of RTAR idea on characterization of interference patterns in buildings for use in assessing wireless systems. Ram Narayanamurthy agreed to help Bill Healy in developing this RTAR.

Meeting adjourned at 4:30.

SMARTGrid Subcommittee Report –David Holmberg for Rich Hackner

ASHRAE Montreal TC7.5 SG-WG

Sunday, June 26, 2011

David Holmberg Acting Chair (for Rich Hackner)

1. Seminar ideas:
    a. Good to have some SG focused sessions in upcoming meetings. Important to keep updating membership on what is happening and what they should be doing.
    b. Might be good to have a discussion around "building energy efficiency" vs. "buildings supporting grid energy efficiency" which are different and both important, but not sure ASHRAE has any idea about the second that is key to SG.
    c. 201P proposal for Chicago:

Abstract:

OASIS Energy Interoperation is the new NIST national smart grid interoperability effort approved standard for demand response (DR) communications including integration of customer owned distributed energy resources. The standard includes demand response as well as energy market interactions. The DR parts of the standard were based on OpenADR technology, and the DR event part of Energy Interoperation now serves as OpenADR 2.0, with testing and certification provided for by the OpenADR Alliance. This seminar will review the contents and status of Energy Interoperation implementation.

1. Energy Interoperation, what it is and can do for you.
2. OpenADR 2.0 and the OpenADR Alliance
3. How the standard is being used today.

2. Research review:
    a. Existing:
        i. Update on Jin Wen's in-progress RTAR "Benefits of Residential DR".
        ii. What is the status on Jin and Marie-Andree talking together (new RTAR)?
        iii. John House overview of and pointers to the final report for his work. Is there any relevant follow on work?
        iv. Any proposals for a SmartGrid or ZeroNet Building-based RTAR?
        v. Any ideas on how TC7.5 might better support utility research needs?
        vi. Do we have a research agenda/plan?

Meeting schedule and seminars in Montreal

Sunday, June 26, 2011, 8:00 AM-9:30 AM
Seminar 3 (Intermediate)
Challenges in Connecting Commercial and Retail Buildings to the Smart Grid
Track: Net Zero Buildings
Room: Mont Royal
Sponsor: 07.05 Smart Building Systems
Chair: Meli Stylianou, CanmetENERGY, Varennes, QC, Canada

Sunday, June 26, 2011, 11:00 AM-12:30 PM
Seminar 14 (Basic)
Using Building Energy Information in a Smart Grid World
Track: Net Zero Buildings
Room: Mont Royal
Sponsor: 07.05 Smart Building Systems, SPC201P
Chair: John I. Ruiz, Johnson Controls Inc., Milwaukee, WI

Wednesday, June 29, 2011, 9:45 AM-10:45 AM
Seminar 57 (Intermediate)
Helping Smart Grid Make the Grade with Energy Storage
Track: HVAC Systems and Equipment
Room: Outremont
Sponsor: 06.09 Thermal Storage, 07.05 Smart Building Systems
Chair: Geoffrey C. Bares, Associate Member, CB&I, Plainfield,, IL

TC 7.5 Smart Building Systems (16/24)
Tuesday 3:30-6:00p (H) Mansfield (L)
Sponsoring: Seminar 3: Challenges in Connecting Commercial and Retail Buildings to the Smart Grid, Seminar 7: Emerging Wireless Technologies for HVAC Applications and Seminar 14: Using Building Energy Information in a Smart Grid World
TC 7.5 Fault Detection &Diagnosis (40)
Sunday 3:00-3:45 p (H) Mont Royal (L)
TC 7.5 Wireless Applications (40)
Sunday 3:45-4:30p (H) Mont Royal (L)
TC 7.5 Smart Grid
Sunday 4:30-5:15p (H) Mont Royal (L)
TC 7.5 Handbook
Sunday 5:15-6:00p (H) Mont Royal (L)
TC 7.5 1390-RP
Monday 3:00-4:00p (F) Bersimis (C)
TC 7.5 Buildings Operations Dynamics
Monday 4:00-5:30p (F) Bersimis (C)

ASHRAE TC 7.5: Smart Building Systems

Building Operations Dynamics (BOD) Subcommittee Meeting Minutes

Montreal 2011 Summer Meeting

Monday, June 27, 2011, 4:00 – 5:30 p.m.

Location: (F) Bersimis (C Level)

The meeting was chaired by Carol Lomonaco. The chair, Steve Blanc, was unable to make the Montreal Summer meeting.

1. The meeting began at 4:00pm. A few paper copies of the agenda were distributed and passed around a thumb drive with the electronic file.

2. The wireless file server was not available for our meeting.

3. Scope of BOD was read.

4. Handbook content was discussed. It was noted that Chapter 41 Online cycle is different than the Hardcopy version.

5. We discussed 1390-RP's status. 1390-RP is done.

6. We then reviewed all the active RTARs. A few of the RTARs were put in the "Parking Lot". They are:
   a) 1440-RTAR Occupancy Detection through Wireless Sensing
   b) Develop and Determine Building Internal Mass Metrics for Office and Retail Buildings.
   c)Dynamic Models of Internal Thermal Mass
   d) Net-ZEB and the Impact on the Grid

e)Discussion on the Implications of NZEB

We also discussed the RTAR "Occupancy Detection for Enhanced Building Operations and Building Security" is dead.

Lastly, the RTAR "Influencing Occupant Comfort Perception for Influencing Indoor Environments" or "Conditioning People for More Dynamic Indoor Environments" [Author: Josh Wall] was discussed. There were emails being sent about this RTAR and how it is related to ASHRAE Std. 55.

7. There were new ideas from Josh Wall. Josh had sent an email to Steve Blanc. One of the ideas was related to TG 1's and a formal approach to optimization.

8. More Handbook discussion. Nick will be the lead. Moncef, Peter, and Meli volunteered to help.

9. Work Statements- Then we discussed re-submitting the WS 2005-26 "Real-Time Optimal Control in a Distributed Environment" by Josh Wall.

   Recommendations:

   a) Outline the RTAR in 2 or 3 phases
   b) Don't make it a literature search
   c) RAC had comments at Las Vegas
   d) Josh to work with Jon Wright & Stephen from Penn State.
   e) Srinivas had numerous other comments that he was willing to share

10. Adjourn ~ 5:30pm

ASHRAE TC 7.5: Smart Building Systems

Research Subcommittee Meeting Minutes

Montreal 2011 Summer Meeting

Monday, June 27, 2011, 5:30 – 6:30 p.m.

Location: (F) Bersimis (C Level)

The meeting was chaired by Carol Lomonaco. Natascha was unable to make the Montreal Summer meeting.

11. The meeting began at 5:30pm. A few paper copies of the agenda were distributed and passed around a thumb drive with the electronic file.
12. The wireless file server was not available for our meeting.

13. Announcements:
    -Need more RTARs/WSs to get through the process because our three research projects are near completion.

    -Asked to review and comment on the new RTAR for co-sponsorship for Modelica "Development of Modelica Models for the Evaluation of Supervisory Control Strategies in the ASHRAE Handbook"

    -More on Muli-disciplinary Task Groups (MTGs)

14. PMSC Reports on Research Projects

a) <u>1274-RP: Field Performance Assessment of Package Equipment to Quantify Benefits of Proper Service (Todd Rossi, PMS Chair).</u>
Carol reported that Mike Brambley will turn in the Disposition Form

to RAC.

b) 1486-RP: Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers—Phase III (Srinivas Katipamula, (acting) PMS Chair). Srinivas gave a brief report. Will need a vote at main TC 7.5 Main Meeting Tuesday, June 28, 2011 to accept the Final Report with minor changes.

c) 1312-RP: Tools for Evaluating FDD Methods for AHUs (Phil Haves, PMS Chair). Srinivas gave a brief report because Phil was not at our subcommittee meeting. Will need a vote at main TC 7.5 Main Meeting Tuesday, June 28, 2011 to accept the Final Report with minor changes.

d) 1390-RP: Short-term Curtailment of HVAC Loads in Buildings (John House, PMS Chair). Srinivas gave a brief report because John House was not at our subcommittee meeting. Will need a vote at main TC 7.5 Main Meeting Tuesday, June 28, 2011 to accept the Final Report with minor changes.

e) Tentative Research Projects (TRPs):
There are no Tentative Research Projects at this time.

15. Reports on RTARs

a) 1615-RTAR: FDD Methods for Supermarkets (Zheng O'Neill). Zheng will respond to RAC's comments.
b) Reduce Simultaneous Heating and Cooling in Commercial Buildings (Zheng O'Neill). No change in status. Zheng will remain the lead.
c) RTAR: Real-Time Optimal Control in a Distributed Environment (Josh Wall). Josh will re-write and re-focus the RTAR.
d) Conditioning People for More Dynamic Indoor Environments (Josh Wall). Josh will solicit help from TC 2.1.
e) 1543-RTAR: Demand Response Optimization Protocol and Integrated Training (Rich Hackner). [This RTAR will be parked in the parking lot of RTARs.]
f) 1440-RTAR: Occupancy Detection for Enhanced Building Operations and Security (Bill Healy). [This RTAR will be parked in the parking lot of RTARs.]
g) RTAR: Residential Demand Response (Jin Wen). [This RTAR will be parked in the parking lot of RTARs.]
h) 1511-RTAR: A Building Systems Emulation Tool for Building Operators (Steve Blanc). [This RTAR will be parked in the parking lot of RTARs.]
i) RTAR: Development of Guidelines for the Use of Wireless Technologies in Buildings (Bill Healy) [This RTAR will be parked in the parking lot of RTARs.]
j) Development of Cost Data for Wireless Sensors (Bill Healy). [This RTAR will be parked in the parking lot of RTARs.]
k) Dynamic Models of Internal Thermal Mass (Peng Xu)

16. Work Statements
Real-Time Optimal Control in a Distributed Environment (Josh Wall)

Josh will re-write it.

17. RTARs and WSs Co-Sponsored by TC 7.5
    a) RTAR VAV System Setpoint Reset
    b) 1502-RTAR User Interface Design for Advanced System Operation (TC1.4). This was closed out and URP-1633 has this.

18. Brief review of key actions underway by topical subcommittees
    a) Fault Detection and Diagnosis (Joe/Xiaohui Zhou for Haorong Li)
    b) Wireless Applications (Bill Healy)
    c) Building/Utility Interface (David Holmberg for Rich Hackner)
    d) Buildings Operations Dynamics (Carol Lomonaco for Steve Blanc)

19. TC 7.5 research new ideas, new topics
Kristin H. spoke of TC 7.9's Building Commissioning modeling.

20. New Business

Briefly went over the proposed ASHRAE Standard "Laboratory Method of Test of Fault Detection and Diagnostics Applied to Commercial Air-Cooled Packaged Systems.

21. Adjourn 6:25pm

TC 7.5 Program Report for Montreal, Canada, 2011 – Xiaohui (Joe) Zhou 06/28/2011

I. Three TC 7.5 Seminars Presented for Montreal Meeting:

We had four seminar programs submitted for Montreal.

Three accepted and presented.

- Sunday (6/26), 8:00am-9:30am, Challenge in Connecting Commercial and Retail Buildings to the Smart Grid. Chair: Meli Stylianou
- Sunday (6/26), 9:45am-10:45pm, Emerging Wireless Technologies for HVAC Applications. Co-sponsor: TC 1.5 Computer Applications. Chair: Xiaohui Zhou. 90~100 people attended. Well received.
- Sunday (6/26), 11:00am-12:30pm, Using Building Energy Information in a Smart Grid World. Chair: John Ruiz

One is not accepted.

- Successful Field Stories for FDD. Chair: Carol Lomonaco

II. Program Chair Training

I was not able to participate due to other meetings (SPC195).

6 Learning objectives and 10 Q&A must be presented for each seminar and forum sessions. Contact Track Chairs for assistance. Short bio of speakers will also be needed.

Conference paper sessions need only submit abstract. No learning objectives and Q&A needed. (Need confirmation).

Speaker- evaluation scores to be tracked. Need to achieve 3.5 for future opportunities. 3-strike-rule over any time period still applies.

III. Program notes for Chicago

2012 Winter Conference January 21 – 25, 2012 Chicago, IL. Address: *High Performance Buildings, Integrated Design, Energy Modeling and Specialized Applications*.

Seminar, Forum, Conference paper session submission: Deadline: August 12, 2011

Revised Conference paper due date: August 19, 2011

Programs (technical or conference papers, seminars and forums) are requested for:

Track 1: Energy Efficiency - New Technologies and Applications
Track 2: Integrated Design
Track 3: Specialized Applications - Healthcare, Laboratories and Data Center
Track 4: Energy Modeling Applications
Track 5 Installation, Operation & Maintenance of HVAC Systems
Track 6 High Performance Buildings
Track 7 HVAC & R Systems and Equipment
Track 8: Professional Skills
Track 9 HVAC & R Fundamentals and Applications
Track 10 Refrigeration

Programs can be submitted via ASHRAE website: http://www.ashrae.org/chicago

IV. Program notes for San Antonio

2012 Annual Conference June 23 – 27, 2012 San Antonio, TX.

Technical paper due for review: September 26, 2011

Conference abstract due: September 26, 2011

Integrated Controls: track chair Sarah Maston – indented to organize a small conference on this topic – different integrated control techniques, etc. Lessons learnt. Contact her for questions.

V. Program Ideas for Chicago:

Sub Committee	Type	Meeting Location	Chair (speakers)	Title	Status
FDD	Seminar	Chicago	Chair: Carol Lomonaco	Successful Field Stories for FDD	Resubmit
BOD	Conf. Paper	Chicago	Lixing Gu	Work from 1390: Shot Term Curtailment of HVAC Load	
BOD	Seminar	Chicago	Chair: Xiaohui Zhou	Optimize HVAC System Energy Using Data Mining Approach	Co-sponsor with TC 1.5. Will contact speakers
Smart Grid		Chicago			
Wireless		Chicago			

VI. List of Future and 'Dead' Program Ideas to be Kept for Future Reference

Sub Committee	Type	Meeting Location	Chair/Speakers	Title	Status
FDD	Seminar		Srinivas	FDD for Dummies	Proposed in Albuquerque, For future
FDD	Seminar		Mike Brambley	FDD tools available today	Proposed in Albuquerque, Solicit response from

					members. For future
WLS	Seminar		Carlos Haiad	Leveraging wireless in Net Zero Building Design	For future
WLS	Transactions		Bill Healy	Wireless Measurements Systems in Buildings (Reliability)	Need papers useful to buildings folks . (Rubenstein?), Healy, Dead
WLS	?		Bill Healy	Location Guidelines for installing Low Power Wireless Networks	Idea proposed in Chicago Need champion or Drop. Dead
WLS	Transactions		No Champion	Wireless Measurements Systems in Buildings (Reliability)	Need papers useful to buildings folks (Rubenstein?), Healy, Dead
SG	Conf Paper		No Champion	Beginners Guide to Smart Grid	New idea in Albuquerque, Dead
SG	Seminar		Carlos & Steve	Handling large amounts of real-time data	New idea in Chicago, need ideas and champion. Dead
SG	Seminar		Rich Hackner	Aggregators Panel	Pulled from Chicago, Short of speakers. Dead
SG	Seminar		Carlos Haiad	Look at local utility pricing/rates structure and compare to other areas	Engage locals. Dead
SG			Andreas Athienitis	Net Zero interaction with Grid	Rich Hackner? Dead
SG	Seminar		Carlos & Steve	Handling large amounts of real-time data	New idea in Chicago, need ideas and champion, Dead

TC 7.5 Handbook Subcommittee

Meeting Minutes. Sunday June 26, 2011

Montreal, QC

Meeting called to order at 5:15 pm by chair Mike Brambley.

Current status of chapters:

Three chapters in the 2011 HVAC Applications chapter have contributions from the TC.

Chapter 42 (formerly Chapter 41), Supervisory Control Strategies and Optimization. Led by TC 7.5, fully developed by the TC.

Chapter 39, Operation and Maintenance Management, led by TC 7.3. TC 7.5 has contributed a section on Fault Detection and Diagnostics.

Chapter 40, Computer Applications, led by TC 1.5. TC 7.5 contributed a section on Wireless Communication.

New chapter:

A proposal to develop a new handbook chapter on Smart Building Systems was brought to the Standards Committee. Development of that chapter was approved by the Committee at the Montreal meeting. Proposed outline of the new Handbook chapter is appended to the end of these minutes.

Timeline: The new chapter is to appear in the 2015 handbook. TC will need to get it done a year earlier. Questions were raised as to whether the TC can get a chapter in the electronic version prior to being published in the 2015 paper version. The TC will aim for a draft version that can be presented to the TC prior to the June 2012 ASHRAE meeting. Drafts for each major section are due in May 2012 to meet that deadline. For this deadline, the TC will not be concerned with smooth flow between sections; that task will arise following submission of the first drafts of the sections.

Leaders of each section:

Nick Gayesky will lead the part on Fault Detection and Diagnostics. Peter Armstrong will assist.

Bill Healy will lead the section on Sensing and Actuating. Sekhar Kondepudi will assist.

Rich Hackner will be tasked with finding a leader for the Smart Grid section. Carlos Haiad and David Holmberg will assist.

Mike Brambley will lead the section on Smart Technologies for Smart Buildings. Peter Armstrong and Meli Stylianou will assist.

Mike Brambley will lead the coordination of the entire chapter.

A suggestion was presented to incorporate the integration of IT systems with traditional building systems in the information.

Some suggestion that TC 1.4 may have an interest in having the material incorporated in their handbook chapter.

ACTION: Carol Lomonaco will identify a liaison to TC 1.4 regarding the handbook section.

Chapter 42: Carol Lomonaco requested that the TC identify a lead author for the next version of the chapter that will appear in the 2015 version of the Handbook.

Coordination with chapters in which our sections now appear

> Mike Brambley will coordinate with TC 7.3 on the FDD information. The initial idea is to keep a brief overview of FDD in their chapter and provide details in the new SBS chapter.
>
> Bill Healy will coordinate with TC 1.5 (Handbook chair Steve Rosen) regarding the section on Wireless Applications.

Review of Action Items:

Bill Healy will liaise with TC 1.5 to determine what stays in Computer Apps chapter

Mike Brambley will liaise with O&M chapter to figure out what stays in their chapter

Mike Brambley will contact each of the subcommittee leads to coordinate team to draft each of the section. Mike Brambley will take smart technologies for building sections.

Carol Lomonaco will identify a leader for re-examination of Chapter 41 in anticipation of inclusion in the 2015 Handbook.

Meeting adjourned at 6:00 pm

Addendum

TC 7.5
Proposed ASHRAE Handbook Chapter Outline
Smart Building Systems
Submitted to Handbook Committee, June 2011

I. Introduction
II. Smart Technologies for Building Systems
    a. Interconnectivity / interoperability
    b. Integrated controls, services, & facilities management
    c. Self-configuring systems
    d. Automated commissioning systems
    e. Automated fault detection and diagnostics – continuous commissioning
    f. Interactions with the smart grid
    g. Optimal control of dynamic operation (refer to ASHRAE Applications Handbook, Ch. 41)
    h. Self identification of static performance and dynamic response characteristics
    i. Advanced technology for end-use load measurements
    j. Whole building performance diagnostics
III. Sensing and Actuating Systems
    a. Types of sensors
        i. Typical sensors (refer to ASHRAE Fundamentals, Ch. 36 “Measurements and Instrumentation”)
        ii. Smart Sensors
            1. Evaluating when sensors go bad (self-correcting)
    b. Types of actuators
    c. Sensor and Actuator integration – Wireless Communications
        i. Wireless technologies
            1. RF data transfer
            2. System Design
            3. Standards
        ii. Application Areas
            1. Advantages of wireless
            2. Sample applications
        iii. Selection of wireless systems
            1. Challenges in implementing wireless
            2. Issues to Consider
            3. Use of Wireless Vendors

IV. Automated fault detection and diagnostics
    a. Fault frequency and costs
    b. Types of fault detection and diagnostic tools
    c. Automated fault detection and diagnostics methods
    d. Criteria for evaluating fault detection and diagnostic methods
    e. Using the results of automated fault detection and diagnosis
    f. Benefits of detecting and diagnosing equipment faults
V. Smart grid interactions
    a. Brief history of electric power grid and operational characteristics

b. Utility load profiles compared to typical building load profiles
c. Utility demand response strategies
d. Utility rate options and strategies
e. Modern smart grid strategy
    i. What is it?
    ii. Why is it necessary?
    iii. Objectives
    iv. How will it impact/affect buildings?
        1. Building design
        2. Building operation
        3. Building environmental impacts

Short-Term Curtailment of HVAC Loads in Buildings

Contractor: Florida Solar Energy Center

PI: Lixing Gu

PMS: Carlos Haiad, Steve Blanc, Srinivas Katipamula, John House (chair)

The objective of the project was to simulate a range of demand response strategies that could be implemented with relatively little notice (less than four hours) and to evaluate the impact of the strategies on demand and occupant comfort. The strategies considered included raising setpoints in zones as well as in the HVAC systems, lighting reductions and others. The strategies were evaluated in five climates on numerous building types (each having an HVAC system appropriate for the building type; thus, several HVAC systems will be considered) with both light and heavy construction, and for 8 different day types.

The contractor submitted an initial draft of the final report in early January. The PMS provided feedback and identified necessary revisions, some of which entailed additional simulation runs. A second draft of the final report was received in early March and the PMS again provided detailed comments to the PI. The most recent draft of the final report was received in late May. The PMS met with the PI on a conference call on May 20, 2011 and reviewed final revisions deemed necessary by the PMS. The PI expressed a willingness to make these revisions, with Steve Blanc and John House agreeing to provide a final review of a limited aspect of the revisions. John House has reviewed these final revisions and feels the concerns of the PMS have been addressed.

The PMS recommends acceptance of the final report by the full TC.

ASHRAE RP-1486 - Fault Detection and Diagnostics for Centrifugal Chillers - Phase III: Online Implementation

Montreal, June 28th, 2011

This is the last of the three phase project initiated several years ago. The contract was awarded to University of Nebraska-Lincoln in May 2008, with two subcontractors (Sensus MI and Purdue University). The PI for the work is Harong Li. PMS members are: Srinivas Katipamula, John House, Phil Haves, Riyaz Papar and Darryl Showalter.

Objective: The objective of this project is to evaluate the effectiveness of fault detection and diagnostic (FDD) methods for electrically driven centrifugal chillers and to produce a specification for an algorithm that could be incorporated within commercial products. The proposed project is the final phase of a three-phase project involving the development, evaluation and laboratory and field testing.

Major tasks: The major deliverables for the project included 1) lab/field test protocol, 2) lab test results, 3) field test results and final report.

Progress: The contractor evaluated two FDD methods in the lab (on one chiller) and in the field (6 chillers). The contractor submitted a draft of the final report in April, 2011. The PMS provided feedback and identified necessary revisions. A second draft of the final report was received on June 20th and the PMS again provided additional comments (minor) to the PI. The PMS met on June 26th, 2011 and concurred that the final deliverable is ready and acceptable after the PI makes the minor changes identified after the second review.

The PMS recommends acceptance of the final report by the full TC. The recommend motion – "Based on the PMS recommendation, I recommend that the RP-1486 final report be accepted after the minor changes are made to the draft final report."