

**TC 7.5 Smart Buildings Systems
Research Activities and Plan,
Dallas Meeting in January 28, 2007**

Current Research Projects

Technology Development Subcommittee

1275-RP “Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers – Phase II” (Phil Haves – PMSC Chair)

Completed. PMS recommended approval by TC with edits.

Testing and Evaluation

1274-RP “Field Performance Assessment of Package Equipment to Quantify the Benefits of Proper Service” (Todd Rossi – PMSC Chair)

1312-RP, “Tools for Evaluating FDD Methods for AHUs” – WS-1312. Contractor Selection in Denver. (Phil Haves, PMSC Chair)

2006 – 2007 Research Plan

Proposed Priority	Old Priority	Project	Contributors	Status
1	1	Fault Detection and Diagnostics for Centrifugal Chillers – Phase 3: Real-Time Implementation	WS Contributors Srinivas Katipamula. RTAR Contributors: Srinivas Katipamula, John House, Todd Rossi, Jim Braun, Natascha Castro	Draft WS developed. Final draft is pending submission of 1275-RP report. TC 8.2 approved for co-sponsorship at the Quebec City meeting. TC 8.2 provided comments on what type of chillers we need to tested. WS will be revised and submitted later.
3	2	FDD for Supermarket Refrigeration	RTAR Contributors Daniel Choinere and John House	Approved in Denver. Discussed in Quebec City. Revised work statement to be drafted for Dallas. TC 10.7 is assisting and will co-sponsor. Rolls off the RAC list in August 2007. Need to narrow the scope a bit. John House will provide another draft in Long Beach meeting.
4	3	Development of metrics to evaluate benefits of sensor networks in buildings (new title)	RTAR Contributors Jin Wen and Agami Reddy. Revised by Bill Healy	Approved by full TC in Denver with minor revisions. Received comments from RAC and will be revised

				accordingly. Vote at TC meeting to be resubmitted.
5	4	“What If” Emulation Tool for Training and Strategizing on Building Operations	Steve Blanc	Received comments. Need to define a clear application, education, FDD? Steve will revise the document.
9	5	Status and benefits of demand response program for residential buildings	Jin Wen, Srinivas, Bill, Palieuta,	More work
8	6	Locate and identify IEEE 802.15.4 RF sources	Bob Old	Need justification and value to ASHRAE. Need a clear HVAC application.
11	7	Demand response optimization protocol and integrated training	Rich Hackner	More work
6	8	Whole-Building FDD	Les Norford	On hold. Les is still interested in pursuing the idea.
7	9	Conceptual Design of a Self-Configuring HVAC Control System	Michael Kintner-Meyer	Revised draft WS discussed in Denver. Revisions planned. Tabled indefinitely. The RTAR has rolled off the RAC list.

Co-Sponsorship

	Real-Time Optimal Control in a Distributed Environment	Jim Braun, George Kelly, Maria Corsi	RTAR submitted by TC 7.4, TC 7.5 is co-sponsor. RTAR has been approved. No Progress to report.
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TC	Topic #	Title	Status	Action Required
7.4	1390-RTAR 2	SHORT-TERM CURTAILMENT OF HVAC LOADS IN BUILDINGS	RTAR accepted at Tech Weekend 2005. No WS	On current plan as approved RTAR. TC knows they need to submit WS before 8/15/07 or it expires from plan. Believe they will have WS by then. Still reviving WS
7.4	2005-26 (old RTAR #)	REAL-TIME OPTIMAL CONTROL IN A DISTRIBUTED ENVIRONMENT	Was once on the Impl Plan as a "prioritized" project, but rolled off before TC could reach consensus on a WS	Topic has been dropped from plan. Still working on WS. TC plans to re-submit an RTAR.
7.4	1194-RP/A 3	DYNAMIC MODELING OF CHILLED WATER COOLING COILS	Final report approved but need tech paper from PI to close out	PMS met. Paper at long beach PMS Chair (Brandemuehl) says two papers already submitted to ASHRAE Research Journal.
7.4	1252-RP/A	INTERACTIONS BETWEEN DYNAMIC ELECTRICAL RATES AND THERMAL ENERGY STORAGE CONTROL	At Quebec the PMS recommended acceptance of final report. No quorum so full TC could not act.	PMS met. Rec to accept final report tomorrow. TC plans an email ballot to rec that ASHRAE accept final report.
7.4	1313-RP/A 4	EVALUATION OF BUILDING THERMAL MASS SAVINGS (PREVIOUSLY DEMONSTRATION OF BUILDING THERMAL MASS SAVINGS)	TC did a formal motion. They want clarification of whether a PMS chair can work directly with MORTS to request an extension without bringing it to the TC for a formal vote. They have no problem with this PMS chair but some others perhaps would be best not to have this authority.	PMS met. Ongoing RPMORTS says there has been a no cost extension to Mar 07 but need a new end date. TC says Mar 07 is the new estimated end date. As a procedural issue, TC wants feed back on whether PMS chair has authority to directly request an extension without making that rec to full TC for a vote.
7.4	1340-RP 1	INTELLIGENT CONTROL OF COMBINED HEAT AND POWER SYSTEMS	Contract recently finalized and work started. PI met with PMS for first time in Quebec.	PMS to meet here. None
7.4	1440-RTAR	OCCUPANCY DETECTION FOR ENHANCED BUILDING OPERATIONS AND SECURITY	RTAR returned at Tech Weekend.	Narrowing scope. Still working to revise RTAR
7.5	1429-RTAR 5	FAULT DETECTION AND DIAGNOSTIC METHODS FOR SUPERMARKETS	RTAR accepted at Tech Weekend 2005. No WS. TC 10.7 voted to co-sponsor ay Quebec and help with WS.	On current plan as approved RTAR. John House authored WS. Should be received for Long Beach TC knows they need to submit WS before 8/15/07 or it expires from plan. They expect to have a WS to vote forward in Dallas.
7.5	1274-RP/A	FIELD PERFORMANCE ASSESSMENT OF PACKAGE EQUIPMENT TO QUANTIFY THE BENEFITS OF PROPER SERVICE AND DETERMINE THE LONG TERM NEED FOR MONITORING, FDD AND CONTINUOUS COMMISSIONING TECHNOLOGY	A no cost extension has already been granted. PMS approved high level data collection protocol on assumption ADM was competent. Protocol spec'd what was to be collected. Then ADM collected the data on 148 of 375 rooftop units, but over 1-2 hr instead of simultaneously, so data may be useless. Also when ADM goes to a sampled rooftop but the unit is DOA, they move on to another without documenting that the sampled unit was DOA. May not be adequately documenting sample implementation. TC has renegotiated protocol with ADM, but only 4 rooftops addressed since. The ADM principal Taghi Alereza only shows at meetings when there is a crisis (Chicago), and the other spokesmen Dan Mort does not appear to have	No new news. Hope to be finished by Jan 2008. They were halted, told to change protocol, and they agreed to do it. TC requests ASHRAE make no further payments without PMS approval. TC wants to at least make sure the last 227 sampled RTUs are characterized properly. The TC will revisit the sample size calcs using observed variation from the good data as it rolls in, to determine whether the 227 sample is large enough to yield statistically significant results. If not, and assuming ADM does perform competently on the last 227 (and post-service characterizations on sub-sample of 75), the TC may, in the future, recommend ASHRAE provide additional funding to fulfill sample size needs based on actual variation observed in the good data. TC wants feed back on how RAC would view such a suggestion.

			hands on PI control of project. TC believes ASHRAE has paid ADM about \$80k of \$139k budget already, and wants no further payments until they approve them. ADM must prove to PMS they can do it right. ADM claims they have used all the \$\$ but are committed to do the rest of sample.	
7.5	1275-RP/A	EVALUATION AND ASSESSMENT OF FAULT DETECTION AND DIAGNOSTIC METHODS FOR CENTRIFUGAL CHILLERS- PHASE II	A no cost extension has already been granted.	TC voted to approve the final report at Quebec. PMS chair to fill out close out form. Not sure if done
7.5	1312-RP/A	TOOLS FOR EVALUATING FAULT DETECTION AND DIAGNOSTIC METHODS FOR AIR HANDLING UNITS	Project just started before Chicago.	PMS met. Meet tomorrow, ongoing Slightly behind but PI and TC are optimistic they will catch up.
7.5	2005-25 RTAR	FAULT DETECTION AND DIAGNOSTICS FOR CENTRIFUGAL CHILLERS - PHASE 3: REAL-TIME IMPLEMENTATION	In the past this project had an RTAR on the Impl Plan and an approved WS. However it could not begin until 1275-RP was completed, and so it rotated off the plan while waiting.	Topic has been dropped from the plan. Will submit final WS next month. TC8.2 co-sponsoring. Now that 1275-RP is completed, the TC is refining the WS based on what was learned. TC 8.2 voted to co-sponsor and is helping to refine the WS. TC plans an email ballot and will submit a WS by 8/15/07.
7.5	2004-23 RTAR	DESIGN AND DEMONSTRATION OF A SELF-CONFIGURATION FOR AN HVAC CONTROL SYSTEM	Tabled indefinitely. It is dead. Could not reach consensus on a WS.	RTAR was returned. Dead. None.
7.5	1430-RTAR	DEVELOPMENT OF METRICS TO EVALUATE BENEFITS OF SENSOR NETWORKS IN BUILDINGS	This RTAR was returned with comments 11/4/05 (Daniel).	RTAR was returned. Still working on revised RTAR. TC is still re-working RTAR. Author was not in Quebec. TC plans an email ballot and re-submission by 12/15.