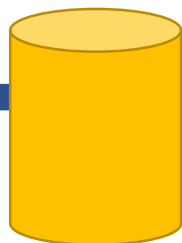


Designing and Controlling Multifamily and Commercial Hot Water Recirculation Systems for Efficiency and User Satisfaction

Session 4C

ACEEE Hot Water Forum

Nashville, TN



Purpose of the session

figure out how we can save energy in DHW delivery in multifamily and commercial buildings

Key Questions to Keep in Mind:

- What different control strategies for DHW recirc exist?
- What strategies “work” in multifamily and commercial buildings? and/or what factors influence how well a give strategy will “work”?
 - Do manual or occupancy-based demand controls work in MF/com? contexts?
- What is the “best” strategy for energy savings and comfort in different MF/com building applications?
 - Retrofit vs new construction?
- What strategies qualify as “demand recirculation control” for the purposes of the code?

DEMAND RECIRCULATION WATER SYSTEM. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe.

Background – Some facts

- The purpose of DHW systems in commercial and multifamily buildings is to provide hot water to the occupants quickly after they call for it
- Traditionally and typically done with recirculation loops
- Recirculating water 24/7 comes with a large energy penalty from pipe losses

Focus of the session

- Review the available options for efficient DHW delivery and control in new and existing systems
 - Focused on DHW recirculation and control options, retrofit/existing buildings
 - Additional strategies include: insulate pipes, behavioral strategies, new DHW system design
- Review background and recent research on domestic hot water recirculation controls in commercial and multifamily buildings (central systems)
 - Again, focused on control options

Process

- Will have two presentations to provide important background info, then moderated discussion

Presenters:



Nate Baker

CADEO GROUP

*Background and Recent Findings
on DHW Recirc Controls in
Commercial and Multifamily and
Commercial Buildings*



Gary Klein

GARY KLEIN
ASSOCIATES

*The Taxonomy of Hot
Water Circulation Systems*

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Seed questions

- See if I can get a white board and markers
- Seems like instead of treating MF/Com all as one we should separate into X and Y (based on Gary's ppt)
- Then for each:
 - What control strategies work?
 - Which work best?
 - What is the implication for code or utility programs?
 - What could best be done to reduce energy consumption from DHW loop losses in existing buildings, based on the information you've heard today?

Ideas

- For large loops
 - Have to keep loop hot
 - Aquastat
 - Insulate if possible (often not in retrofit)
 - Temperature modulation controls
- For small loops
 - Can use demand-based (or aquastat)
 - Yes insulate (often not possible in retrofit)
 - Boiler controls also a good idea
- Want to push towards smaller loops, or smaller looking loops in the future

Ideas

Size of loop	Volume of loop	Assumed Size of Bldg	EE Options	New Construction	Retrofit
Large	>XX gallons?	>5 stories?	Aquastat	X	X
			Insulate	X	
			Temp controls	X	X
Small	≤XX gallons?	≤5 stories?	Demand-control	X	X
			Aquastat	X	X
			Insulate	X	
			Temp controls	X	X