

Orange Spiel



Juicy News from ASHRAE's Orange Empire Chapter



MEETING INFORMATION

TUESDAY, OCTOBER 23, 2018

THE PHOENIX CLUB

1340 S. Sanderson Avenue
Anaheim, CA 92806

[CLICK HERE FOR DIRECTIONS](#)

Social 6:30 - 7:00 p.m.
Dinner 7:00 - 9:00 p.m.

**PLEASE E-MAIL (PREFERRED),
OR CALL WITH YOUR
RESERVATIONS TO:**

Ryan Sibley c/o TK1SC
rsibley@tk1sc.com
Direct: 949.751.5923
Office: 949.751.5800

PRICE SCHEDULE

ASHRAE OE Member \$45.00
Non-Member \$50.00
Student \$10.00
Member Day of Event \$50.00
Non-Member Day of Event \$55.00

[CLICK HERE TO REGISTER ONLINE](#)

**IF CANCELLATION IS NOT
RECEIVED YOU WILL BE BILLED
FOR THE SESSION**

[SEE PAGE 5 FOR FAX ORDER FORM](#)

DINNER PROGRAM

*"Seismic Code Updates for Bracing
of Distribution Systems (Duct, Mech
Pipe, and Plumbing Pipe)"* by Brent
Mullen, PE

NO TECHNICAL SESSION

Orange Spiel Editor

Robert Hagstrom, P.E., LEED AP
c/o Southern California Edison
6090-B N. Irwindale Avenue
Irwindale, CA 91702
Phone 626.633.3432
PAX 43432 | Cell 626.609.9791
Robert.Hagstrom@sce.com

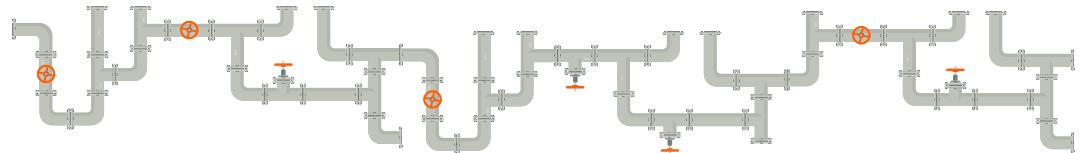


OCTOBER MEETING NOTICE JOINT MEETING WITH ASPE

TUESDAY, OCTOBER 23, 2018

DINNER PROGRAM

SEISMIC CODE UPDATES FOR BRACING OF DISTRIBUTION SYSTEMS (DUCT, MECH PIPE, AND PLUMBING PIPE)



GREG'S BLOG

Last month we kicked off the 2018-2019 season at a new venue and the turnout was outstanding. Thank you to all who made it out, especially the three students in attendance.

Also, thank you to the Chapter Chairs, BOG and Officers for making it happen. I'm looking forward to our continued success at the Phoenix club.

Last week we hosted our annual golf tournament at Coyote Hills and the turnout was a huge success. We sold out for the fourth year in a row and it appears the trend will continue next year. Don't forget to register early next year as it was sold out over a month in advance.

The golf event has been our main fund raiser for the last few years and is the reason the chapter has been able to meet its ASHRAE RP Fund goal for the last three years. Thank you to all of our sponsors.

I also want to thank our Golf Chair, Jeff Hanzel, and the rest of the volunteers for all their hard work organizing the event.

"Brace" yourself for this month's meeting. It's going to be a joint meeting with ASPE and will go over seismic bracing requirements. If you couldn't make it out last month, hopefully you can check out the new venue this month.

Looking forward, we have a couple of cool things planned for November. For all YEA members, there will be a ping pong social event at Southland's Garden Grove office on 11/7. Also, Travis English from Kaiser will be speaking and doing a tech session at our 11/13 meeting.

Lastly, a reminder to all of our student members that the deadline for society scholarships is 11/15. Society is providing 35 scholarships so please submit your application online through the Society website. Until next month, stay comfortable...

Greg Glover





SELECTING AND FEEDING COOLING AND HEATING COILS

by COLMAC COIL

(edited and condensed by CFH)

INTRODUCTION

Coil selections can intimidate the novice, but understanding the terminology used helps clear the fog. Headers, feeds, rows, fins and passes are important coil selection parameters to a long coil life. These characteristics describe the makeup of cooling and heating coils for HVAC systems.

Headers are collector pipes that connect the coil's tubes. Serpentine coils (single feed) do not require a header. Header features can include drains, vents, different system fitting types (threaded, soldered, flanged), different materials, (Copper, Steel, Tobin bronze to steel).

The number of feeds is the number of tubes leaving the supply header going into the coil. Likewise, it is the number of tubes that come out of the coil going into the return header.

The number of times the water travels across the face (length) of the coil and back is referred to as "passes".

The number of feeds times the number of passes must equal the total number of tubes in the entire coil face. The only time this would not be true is if the chosen coil size does not evenly match

the rows and passes you choose, thus forcing tubes to be dropped.

Dropping tubes is not desirable because it wastes material resources and does nothing for heat transfer. Sometimes due to the physical size of the coil, or due to the number of tubes high and rows deep, no common integer exists for symmetrical feeds, so the odd tubes are dropped. For example, a one-row coil with same-end connections and 13-tubes high will have one serpentine feed with 12 passes across the face, with one tube dropped. The final tube can be used if it is acceptable to leave the opposite side of the coil as the inlet. Careful coil face sizing can eliminate this problem and maximize the coil efficacy in return.

When water coils are subject to freezing conditions, they must be drainable to allow for shutdown without freeze damage.

CARE AND FEEDING OF COILS

There are various methods of feeding coils to maintain water velocities within a practical

range. Ideal velocity is 3 feet per second. Lower velocities reduce heat exchange effectiveness. Higher velocities increase water pressure-drop (pumping power) and if high enough, can cause erosion of the tubes and return bends.

A one row "serpentine" coil has a single serpentine circuit. A one-row coil with ten tubes in the face would have ten passes. A two-row coil with 20 tubes has 20 passes with a single serpentine feed or two parallel feeds of 10 tubes for each serpentine circuit.

"Full fed" coils feed each tube in the first row. A six-row full feed coil will have 6 passes per feed.

"Half fed" coils feed every other tube in the first row. A six-row coil will have 12 passes per feed.

"Double fed" coils feed tubes in two parallel rows. A six-row coil will have 3 staggered passes per feed with two supply headers.

Make sure that water enters the coil at the bottom of the supply header and leaves the coil at the top of the return header to naturally sweep air out of the coil. Otherwise air will be trapped in (See **COILS** page 3)

COILS

(continued from page 2)

the upper circuits with no way to get out, considerably reducing the coil performance. Of course, the coil must be designed with counterflow (water to air) for proper operation and full coil capacity. Do not make the mistake of turning a cooling coil around from left hand to right hand should an air unit be shipped incorrectly to the job. The coil must be replaced to maintain counterflow and air sweeping features intact.

Full feed coils will yield about 10°-12°F temperature rise or drop at 3 feet per second fluid velocity. Half fed coils will exhibit approximately half the total flow rate and approximately twice the temperature rise or drop.

Fins provide most of the heat transfer surface between air and water. Fin material, shape and spacing affects coil heat transfer capacity. The spacing parameter is fins per inch (FPI). Closer spacing increases heat transfer at the expense of air pressure drop (increased fan power). Common fin material is aluminum or copper swaged onto copper tubes.

Coil fins make good filters. Wet cooling coils will accelerate trapping of dirt. ASHRAE 62.1 recommends limiting the coil pressure drop to 0.75" water column (WC) at 500 feet per minute maximum air velocity. The air pressure drop criteria is an indicator of how tightly packed the fins are. The closer the fin spacing, the more difficult it will be to clean the coils. A recent project compared pressure drops for various fin spacing and they were 0.75" PD for 8 row 6 FPI, 1" for 8 row 9 FPI and 1.25" for

8 row 12 FPI at 500 feet per minute air velocity.

Today's best practice for selecting cooling and heating coil is to provide the highest practical water temperature rise. Higher heating water temperature differentials allow the use of high efficiency condensing type heating equipment. Higher returning chilled water temperatures improves chiller plant operation and is an absolute necessity for chilled water storage. For both heated and chilled water systems, the increased temperature difference will reduce water flow rates along with pipe sizes (and installation cost), pump size and pumping power. Reduced pump size and power required reduces mechanical, electrical and structural installation costs.

When selecting coils for cooling with thermal energy storage, the optimal tradeoff of air pressure drop versus higher water side delta T is an 8 row, 10 fin per inch coil face with half of the tubes fed having a temperature rise of approximately 20°F. Coils selected in this manner can double the thermal energy storage tank capacity after regeneration at night. Remember, at loads lighter than 100%, the water temperature rise increases as the flow reduces, which is a nice side-benefit with variable flow system designs.

Cooling coil efficiency is important for chilled water duty because of the latent load vs the sensible load cooling requirement. To do latent cooling, the coil surface must uniformly operate at a temperature at or below the desired dewpoint. Maintaining dewpoint operation as the water

flow rate changes through the coil is important when delivering conditioned air to indoor spaces.

Selecting chilled water coils for a little above the 3 feet per second tube velocity will promote efficient turndown; keeping the coil performance high. This rule applies regardless of the number of tubes fed. To minimize water flow pumping and maximize the temperature differential, entertain coil selections based on half-feeds and a 20°F delta T rise at the coil, with or without thermal energy storage. Depending on the finned length of the coil section, increasing tube diameters from 1/2" to 5/8" diameter can minimize the pressure drop due to fluid velocity.

Selecting heating coils with double feeds (2 tubes fed) and parallel circuits will yield more heat transfer from a smaller coil. In this case the delta T will be around 5°F at a tube fluid velocity of 3 feet per second. Of course, these coils do sensible heating only, and the efficiency of heat transfer at other than full coil loading is less of a consideration when using variable flow for capacity control. Normally a 2 row 8 or 10 fin per inch reheat coil with 1/2" tubes will yield a 20°-25°F air side rise with 3 FPS fluid velocity, depending on the heating water supply temperature. One row reheat coils selected the same way will deliver about 10°-12°F air side rise under the same fluid velocity condition. Ensure the lower differential air temperature offered by the one-row coil can adequately offset the new code standard minimum ventilation airflow rate with 55°F air on the coil.

(See COILS page 5)

ASHRAE Orange Empire Chapter

EARLY BIRD

SPECIAL

MONEY SAVING TIP!

BUY THE SEASON PASS!



Who isn't trying to save a buck these days? But, act quickly to reap the full benefits!

Are you always forgetting to make your meeting reservation? Do you hate standing in long check-in lines? Are you planning to attend at least 7 meetings this coming year?

Make this year THE YEAR that you finally make your life simpler with an Orange Empire Season Pass!

Your Board of Governors have once again authorized the offering of a Season Pass for the 2018-2019 Season! There is only one catch. To Maximize the Savings, the Season Pass must be purchased before the 31st of October, 2018 (no credit for September meeting cost if purchased in October). You can even do it online!

The price is only **\$360.00**, which includes all of our regular meetings at the Phoenix Club (\$45-\$50 each) as well as all of our special meetings throughout the year. This includes the December Holiday Meeting, our joint meetings with ASPE, San Diego Chapter and Los Angeles Chapter, as well as the Installation Dinner in May!

The cost of the latter four events is always higher than our regular meetings. That's all nine meetings included with one season pass!

To get a Season Pass, simply indicate your intentions with your advanced reservations online or at check-in for the September 25th meeting. We accept PayPal or credit card...done... paid up for the ENTIRE YEAR!

Assuming you plan to attend all nine meetings, the Season Pass cost averages to less than **\$40 per meeting!**

Thereafter, just register in advance online stating your meal choice and that you will "pay at the door". Then, let Brian Sybesma know at the door that you've arrived the night of the meeting to receive your meal ticket.

But wait! There's more! If you have an aversion to long term commitments, your pass is *even transferable* to a friend or colleague for an evening that you miss!

Beyond supporting your Chapter, convenience alone should tempt you to consider a season pass. So, why not take the step now to eliminate one uncertainty from your life... Buying a Season Pass locks in a genuine bargain! **Steve Rawski** 🍊

[TO ORDER A SEASON PASS, PLEASE CLICK HERE](#)

CHAPTER OFFICERS

President Greg Glover
 President-Elect..... David Lawson
 Vice President..... Ben Chesser
 Treasurer..... Brian Sybesma
 Secretary Mary Johnson

BOARD OF GOVERNORS

Jeff Conrad Craig F. Hofferber
 Eric Decker Stephen J. Rawski, P.E.
 Ken Golovko Matthew Waller, P.E.

CRC DELEGATE **CRC ALTERNATE**
 Greg Glover David Lawson

**ASHRAE
 ORANGE EMPIRE CHAPTER**

**2018-2019
 PARTIAL ROSTER**

SPIEL DEADLINE
The November deadline
for articles or ads is
FRIDAY,
NOVEMBER 2, 2018

COMMITTEES AND CHAIRPERSONS

Attendance.....TBD
 Electronic Communications.....Ryan Sibley
 Government Affairs.....Chris Farrington
 Golf Tournament.....Jeff Hanzel
 Historian.....Chris Mellen
 K-12 STEM.....Greg Glover
 Membership Promotion.....Jeff Hanzel
 Newsletter Editor.....Robert Hagstrom
 Programs.....TBD
 Refrigeration.....Jeff Conrad/ Ben Chesser
 Research Promotion.....John Sawyer
 Student Activities.....Eric Decker
 Table Top Displays.....TBD
 Technology Transfer.....Ben Chesser/David Lawson
 Webmaster.....Ryan Sibley
 Women in ASHRAE.....Mary Johnson
 YEA.....Jack Walsh/Kevin Smith

COILS

(continued from page 3)

RULES OF THUMB

The number of tubes high (T) times the number of rows deep (R) must equal the number of feeds (F) times the number of passes (P):

$T \times R = F \times P$


- For connections on same coil end, number of passes is even
- For connections on opposite coil end, number of passes is odd
- Full tubes fed = Same number of passes as the

- number of rows
- Half tubes fed = 2 times the number of passes as the number of rows
- Quarter tubes fed = 4 times the number of passes as the number of rows

Or:

- 1/4 fed passes must be in circuits of 4 tubes high by X rows deep
- 1/3 fed passes must be in circuits of 3 tubes high by X rows deep
- 1/2 fed passes must be in circuits of 2 tubes high by X rows deep

Remember to select the

coil face dimensions based on integral row/feeds to avoid dropping tubes. – END – 

HAVE YOU PAID YOUR MEMBERSHIP DUES?

We appreciate members paying their chapter dues at the same time they renew their Society membership.

If you haven't paid your dues yet, please be sure to stop by the reception desk at the next Chapter meeting and we can accept your dues directly. *Thank you!*

PLEASE RSVP FOR THE OCTOBER 23 MEETING

by Thursday, October 18, 2018 at noon, Cancellations by Monday, October 22, 2018 at noon
(non-cancellations will be billed)

Ryan Sibley c/o TK1SC

Direct: 949.751.5923 • Office: 949.751.5800 • E-mail: rsibley@tk1sc.com

ASHRAE OE MEMBER: \$45.00 | NON-MEMBER: \$50.00

MEMBER Day of Event: \$50.00 | NON-MEMBER Day of Event: \$55.00 | STUDENT: \$10.00

Name(s): _____



Company: _____
 Telephone: _____
 E-mail: _____

To be removed from our e-mail list, please notify Ryan Sibley at 949.751.5923 or email rsibley@tk1sc.com or Steve Rawski at e-mail srawski@semprautilities.com

PLEASE DO NOT CONTACT THE RESERVATION LINE TO REMOVE YOUR FAX NUMBER FROM OUR LIST

ORANGE EMPIRE CHAPTER

WINTER/SPRING 2018/19 SCHEDULE

MEETING LOCATION:

THE PHOENIX CLUB

1340 S. Sanderson Ave.
Anaheim, CA 92806

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SEPTEMBER 25, 2018

Tech: (Condensed) Centrifugal Pump Series

Dinner: U.S. Department of Energy Pump Conservation Standards

Theme: Energy Night

Place: Phoenix Club, Anaheim

OCTOBER 23, 2018

Dinner: Seismic Code Updates for Bracing of Distribution Systems (Duct, Mech Pipe, and Plumbing Pipe)

Theme: Joint Meeting with ASPE

Place: Phoenix Club, Anaheim

NOVEMBER 13, 2018

Tech: Commissioning using Acceptance Criteria Part 2 (follow-up from last year)

Dinner: Ventilation Reform; Healthcare Ventilation Rates

Theme: Research Night

Place: Phoenix Club, Anaheim

DECEMBER 12, 2018

Dinner: TBD

Theme: Joint Meeting with So. California Chapter – YEA Night

Place: TBD

JANUARY 15, 2019

Dinner: Current and Future Chiller Refrigerants

Theme: Joint Meeting with ASHRAE Tri-County Chapter – Refrigeration Night

Place: Phoenix Club, Anaheim

FEBRUARY 26, 2019

Tech: Expansion Tank Sizing

Dinner: Hydronic Piping with PEX

Theme: Membership Promotion Night

Place: Phoenix Club, Anaheim

MARCH 19, 2019

Dinner: Designing Buildings and Systems for Occupant Comfort

Theme: Joint Meeting with San Diego Chapter

Place: El Adobe, San Juan Capistrano

APRIL 23, 2019

Tech: Designing for Design Build, Reducing Design Time and Contractor Costs

Dinner: Soft Skills and Keys to Success...from One Person's Perspective to Another

Theme: Student Night

Place: Phoenix Club, Anaheim

MAY 21, 2019

Dinner: 2019-2020 Installation Night Dinner

Theme: Officer and Board Installation

Place: TBD



Orange Spiel



www.orangeempirearise.weebly.com

MEETING SUMMARY

**TUESDAY,
OCTOBER 23, 2018**

DINNER PROGRAM

“Seismic Code Updates for Bracing of Distribution Systems (Duct, Mech Pipe, and Plumbing Pipe)”
by Brent Mullen, PE

NO TECHNICAL SESSION

Orange Empire ASHRAE
2312 Park Avenue, #407
Tustin, CA 92782