



Orange Spiel



Juicy News from ASHRAE's Orange Empire Chapter

MEETING INFORMATION

MAY 2020

THE MAY MEETING WAS CANCELLED

THE PHOENIX CLUB

1340 S. Sanderson Avenue
Anaheim, CA 92806

Social/Registration 5:30 – 7:00 p.m.
Dinner/Announcements 7:00 – 7:30 p.m.
Dinner Presentation 7:30 – 8:30 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

Member \$45
Non-Member \$50
Student \$10
Member Day of Event \$50
Non-Member Day of Event . . . \$55
Vendor Table Tops \$150

REGISTRATION WAS CANCELLED

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

THE MAY MEETING WAS CANCELLED

Due to the current Covid-19 Pandemic the last Chapter meeting of the 2019-2020 season was cancelled. We look forward to seeing you all again next season and wish you health and safety in these times.

The nominations for the ASHRAE Orange Empire 2020-2021 season are as follows:

Board of Governors:

Ken Golovko
Steve Rawski
Eric Decker
Greg Glover
David Lawson
Jeff Conrad

Officer Nominations:

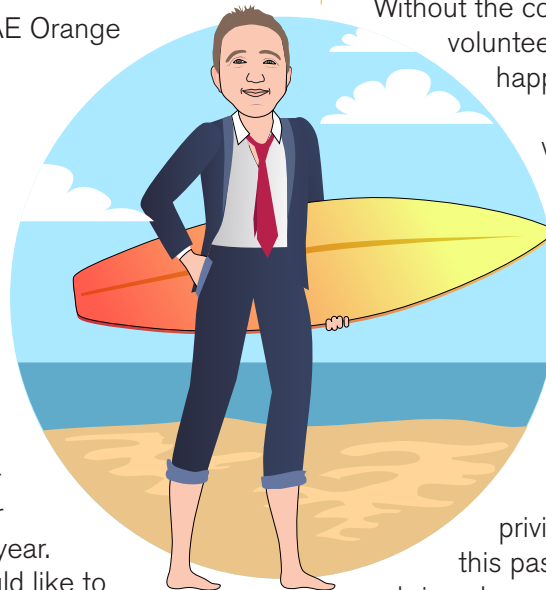
President – Ben Chesser
President Elect – Brian Sybesma
Vice President – Mary Johnson
Treasurer - Chris Farrington
Secretary – Anthony Zanotti

The installation of the Board and Officers has been recorded and the audio appears on the OE ASHRAE website in the following link:

<https://orangeempirearise.weebly.com/media.html>

DAVID'S BLOG

Hello ASHRAE Orange Empire, amazing how time flies! I'm saddened to say this is my last President's message. This was a great year for the Chapter and I'm very proud of what we achieved. I want to thank all of our members for their participation this year. Additionally, I would like to thank the board of governors, chapter officers and committee chairs



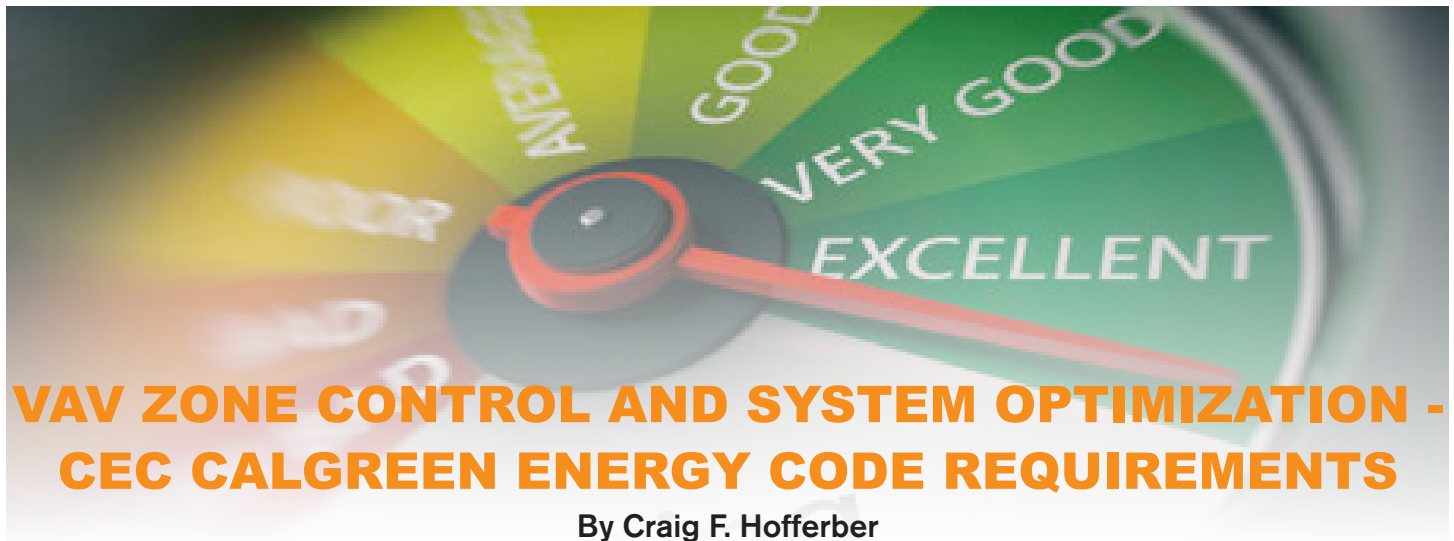
for all their hard work this season. Without the commitment from these volunteers, none of this could've happened.

We are still dealing with the pandemic of the corona virus. Keeping people healthy and slowing the spread of this virus is a high priority. The re-opening plan for our monthly meetings next year will be our top priority.

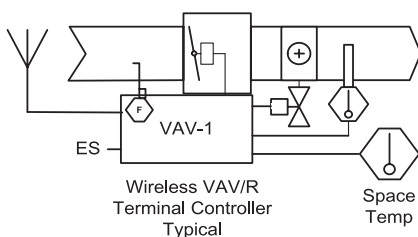
Thank you for the privilege of working together this past year. The future will bring change and challenges.

David Lawson 🍊





In Southern California, we are just leaving our heating season (what heating season?) where HVAC system zone airflows tend to run at minimum and the people suffering from cold floor syndrome bring out their little electric heaters to get warm. There are ways to circumvent the situations that can bring about better comfort control while eliminating the need for expensive to operate spot electric heating devices.



Managing energy through VAV zone information feedback to the air handling system controllers is one key to better comfort control and reduced energy demand at the same time, which is not well understood or applied in spite of the energy code mandates to do so. Each publishing of the California State Energy Code adds control features intended to reduce the

energy consumption of VAV systems; two of which are the subject of this discussion. The first one is static pressure reset and the second one is cooling/heating demand reset.

According to the CEC, programming each VAV zone to send reset commands to the air handling system controllers to just satisfy the worst-case zone resource need will reduce energy demand while improving or maintaining good comfort control. This means mandatory programming of the VAV zone controllers to provide reset variables to the AHU controllers and back to the major equipment controllers that can receive the reset commands from the network for optimizing supply air duct pressure and heating/cooling media temperatures.

The 2008 Energy Code prescribed mandatory dual-maximum airflow control of VAV terminals but introduced it in the 2005 guide. The 2005 Energy Code introduced duct static pressure and air temperature reset control as mandatory measures. None of these features appear to be enforced, which is

unfortunate because the potential for energy savings is quite good when properly executing and tuning these control strategies.

Digital VAV zone controllers must have at least three airflow settings. The cooling maximum airflow, heating maximum airflow and ventilation minimum airflow; each necessary to meet the intent of the Code and/or the operational needs of an energy efficient VAV air system. The CEC provides design flexibility by allowing for a range of airflow selections between specified limits. The ventilation minimum is ~20% of the cooling maximum airflow and the heating maximum airflow may be anything between ventilation minimum and 50% of cooling maximum airflow to promote adequate space air mixing when the zone is calling for heating. Design notes in the zone terminal schedules indicating the need to send the zone reset demand variables to the control network to optimize the system groups supplying cooling and heating media to the AHUs and VAV zones should be posted to remind the contractor (See **CODE REQUIRE** page 3)

CODE REQUIRE

(continued from page 2)

of this requirement.

The maximum heating airflow and the heating coil must be selected to satisfy the space-heating load with maximum leaving air temperature of 90°F. Supplying air above 90°F to occupied spaces (especially high ceiling areas) causes stratification and absence of heat down at the floor where people congregate. Cold floors will initiate the emergence of those portable electric heaters that ruin the energy efficiency of the VAV system and cause local circuit breakers to trip, making a mess of a productive workday.

When complying with ASHRAE 62.1 ventilation design criteria, the terminal supply temperature must be no more than 15°F above room temperature or 90°F for a 75°F room. Higher discharge temperatures require increased circulation rates. In office spaces, T24 ventilation rates are the more stringent, but for spaces such as classrooms, ASHRAE 62.1 requires higher ventilation rates than T24 does (something to consider when designing CHPS projects). Once the zone terminal controllers are configured to execute the proper airflow and temperature strategies and to output resource demand variables to the network, the AHU serving these zones can be optimized. For efficient system performance, the heating water temperature, supply air temperature and supply duct pressure setpoints can be reset based on zone requirements so that these values are never more than needed for the worst-case zone.

The heating water supply temperature is typically reset by the highest zone heating demand while cooling requests will reset the AHU supply air temperature by the highest zone cooling demand. These algorithms will continuously check for zone demands while the programmed time intervals allow the system to stabilize before the next setpoint change, typically 1 to 2 minutes.

While there are heating requests, the heating water supply temperature can be reset from 110°F up to 150°F as the worst-case heating demand goes from say, 60-100%. While there are cooling requests, the AHU supply air temperature will reset downward at a rate of 0.2°F every 2 minutes between limits of say, 52°F and 60°F as the worst-case cooling demand goes from 60-100%. Below 52°F is not efficient because it causes reduced kW/Ton due to higher compressor lift pressures while above 60°F is not efficient because the cooling coil cannot dehumidify, causing

clammy spaces when there is no DOAS system. If a DOAS system is in use, the upper reset bound can be expanded to 70°F or so because the latent heat in the ventilation air has already been removed by the DOAS.

AHU supply pressure reset uses the worst-case terminal airflow signal indicating the zone whose damper is 100% open. If no dampers are at 100%, then the duct pressure setpoint is slowly reset downward. Typical reset rates might be 0.1" WG pressure change per minute between limits of say 0.3" to 1.3" WC. The intent of this algorithm is to lower the supply duct pressure until at least one damper is nearly 100% open while delivering the required airflow to that zone.

With a dynamic reset algorithm, one must program checks and balances to alert the operators of rogue zones causing false calls that raise the system energy demands. These come from malfunctioning zone terminal *(See CODE REQUIRE page 4)*

Zone Terminal Tag	Inlet Diameter round inches	Terminal design max CFM capability	Terminal design min CFM capability	Design Cooling Max Airflow CFM	Design Heating Max Airflow CFM	Design Minimum Airflow CFM	Pressure drop " WC at design Clg CFM
VAV	8	650	80	590	245	118	0.25
VAVR	10	1056	120	960	480	192	0.25

Zone Terminal Tag	Inlet Diameter round inches	Reheat Coil Rows Serp. Ckt.	Design supply water temp. °F	Design capacity btuh	Entering air temp °F	Leaving air temp. °F	Coil air pressure drop "WC il @ design CLG max
VAV	8	N/A	N/A	N/A	N/A	N/A	N/A
VAVR	10	2	150	22,000	50	90	0.3

Zone Terminal Tag	Inlet Diameter round inches	Coil GPM	Control Valve w/ Pos FB	IP Control Device – Niagara	Disch. temp sensor	Space temp sensor	Power @ 24 VDC watts
VAV	8	N/A	N/A	N4.8	N/A	N/A	9
VAVR	10	11	PICV	N4.8	PRT-1000	PRT-1000	15

Notes: Terminal controls shall provide more static pressure, more cooling and more heating demand signals for energy optimization. 24 VDC source shall be provided at the AHU control panel serving the zones. Do not exceed the UL maximum current for Class 2 wiring circuits. Provide equal network segments and power drops. Maximum 15 IP controllers on a daisy-chain ring. Coordinate required IP switch ports and VLAN addressing with project IP network supplier or Owner's IP department.

CODE REQUIRE*(continued from page 3)*

controls, continuously overloaded spaces and/or terminal performance problems caused by changes in space loads.

Active value tables (*see table on previous page*) showing each zone with its reset

signals and normal operating parameters can be an effective tool to demonstrate the success or failure of dynamic control algorithms and keep them on track.

In conclusion, attention to proper engineering and control detailing can significantly improve

the efficiency and operational ease of VAV and VAV/R systems while meeting current Energy Codes and operating mandates leading to happy comfortable tenants without the need for those pesky little electric heaters!

-END- 



ASHRAE Virtual Conference:
92 Technical Sessions for \$99

This year's conference, originally planned for Austin, TX in June, will take place virtually

ATLANTA (May 12, 2020)

– ASHRAE is responding to these extraordinary times with extraordinary measures, including a four-day live virtual event at a significantly reduced registration fee. The 2020 ASHRAE Virtual Conference is structured to allow participants from all over the world to take advantage of the Society's strong technical content.

The virtual conference will include 90+ technical sessions, updates from Society leaders, and virtual networking events. Technical sessions will be available starting June 22, with conference activities and additional live sessions addressing the latest information relating to the COVID-19 pandemic taking place daily starting June 29 and continuing through July 2. Conference registration is now open at

ashrae.org/2020virtual.

During the weeks leading up to the conference, ASHRAE will also conduct online versions of the business and technical meetings that typically are held during its onsite annual conference.

"While we realize that there is no substitute for the special level of interaction that face-to-face conferences provide, we are excited to present this unique format for our members to interact, collaborate and learn," said 2019-20 ASHRAE President Darryl K. Boyce, P.Eng. "The unprecedented challenges of this year's pandemic have afforded us a great opportunity to further our reach and level of engagement in a meaningful way to professionals from across the globe."

The cost to attend the virtual conference is \$99 for ASHRAE members (\$329 for non-members, which includes an annual ASHRAE membership) and offers:

Twelve live technical sessions with live Q&A with presenters

An on-demand technical program of some 90 sessions
Scheduled live video chat sessions with speakers from on-demand sessions
Downloadable copies of all conference papers
ASHRAE Leadership Moments each day from Society leaders
Virtual networking happy hours
Registrants will be receiving an in-depth learning experience, providing solutions, technology demonstrations and industry insights. The technical program will explore how building and energy systems interact, while examining how buildings are becoming integrated, flexible and resilient systems to respond to climate change challenges.

"The traditional tech-heavy and diverse topics of the onsite technical program is maintained and enhanced by interactive elements and sessions suited for the virtual environment and a worldwide audience," said Bing Liu, conference chair. "Literally hundreds of opportunities will be in place for attendees to (See **CONFERENCE** page 5)

CHAPTER OFFICERS

PresidentDavid M. Lawson
 President-Elect Benjamin L. Chesser
 Vice President Brian Sybesma
 Treasurer Mary Johnson
 Secretary Chris Farrington

BOARD OF GOVERNORS

Jeff Conrad Greg Glover
 Eric Decker, PE. Stephen J. Rawski, PE.
 Kenneth E. Golovko, PE. Matthew Waller, PE.

CRC DELEGATE

David M. Lawson

CRC ALTERNATE

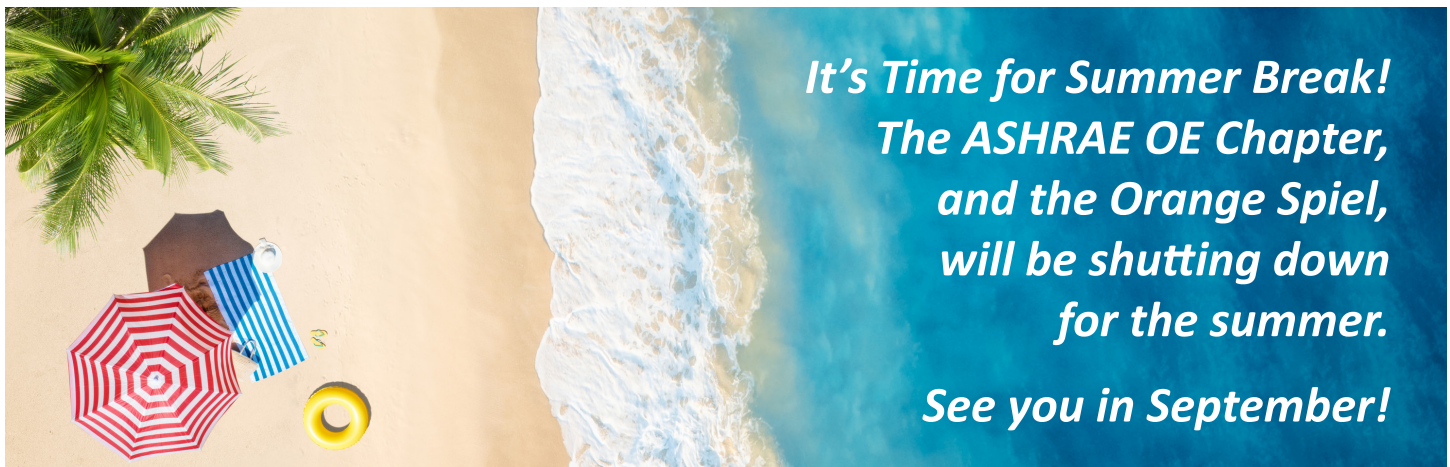
Benjamin L. Chesser

**ASHRAE
 ORANGE EMPIRE CHAPTER
 2019-2020
 PARTIAL ROSTER**

**HAVE A GREAT
 SUMMER!**

COMMITTEES AND CHAIRPERSONS

Administrator Jeffrey D. Hanzel
 Administrator John Sawyer
 Communications Ryan Sibley
 Diversity in ASHRAE Mary Johnson
 Government Affairs Chris Farrington
 Historian Christopher L. Mellen
 Membership Promotion Jeffrey D. Hanzel
 Newsletter Editor Robert G Hagstrom, PE
 Refrigeration Chris Farrington
 Research Promotion John Sawyer
 Student Activities Matthew Dale Donoghue
 Student Activities Co-Chair Nicholas J. Hardy
 Technology Transfer Brian Sybesma
 YEA Nicholas J. Hardy
 YEA Co-Chair Matthew Dale Donoghue
 YEA Co-Chair Kevin M. Smith, PE
 Webmaster Ryan Sibley



CONFERENCE


(continued from page 4)

interact with speakers during the Q&A session via a live chat with session speakers. Every day the virtual conference will feature several live sessions to highlight hot topics and COVID-19 related topics as well. Industry professionals have a wide-range of choices of sessions to select

from in tracks on resiliency, zero energy buildings, residential, the grid, fundamentals, equipment and professional development.”

Additionally, incoming 2020-21 ASHRAE President Chuck Gulledge, P.E., Fellow ASHRAE, will present the Society theme for the coming year, The ASHRAE Digital Lighthouse and Industry 4.0.

Professional development hours can be earned for all on-demand sessions and 12 live sessions upon successfully completing a short quiz. Registration includes access to all the technical content on-demand for 18 months. Company packages are also available.

To learn more and to register, visit ashrae.org/2020virtual. 



ORANGE EMPIRE CHAPTER

WINTER/SPRING 2019/20 SCHEDULE

MEETING LOCATION:

THE PHOENIX CLUB

1340 S. Sanderson Avenue
Anaheim, CA 92806

Statements made in this publication are not the expressions of the Society or of the Orange Empire Chapter and may not be reproduced without special permission of the Orange Empire Chapter. The Orange Spiel is not responsible for the accuracy of the technical articles.

TUESDAY, SEPTEMBER 24, 2019

*Dinner: VRF and Hydronics Systems:
A Strategic Comparison*

Theme: Energy Night

Place: Phoenix Club, Anaheim

TUESDAY, OCTOBER 22, 2019

*Tech: The Devil's in the Details - a CEU
Presentation on what to Look out for
when Installing Boiler and Water Heater*

Dinner: Balanced Energy

Place: The Phoenix Club, Anaheim

TUESDAY, NOVEMBER 19, 2019

*Tech: Driving to Net Zero: What Does it take
for a Student Housing Project?*

*Dinner: 2019 California Code Updates from a
Mechanical Perspective*

Theme: Research Night

Place: Phoenix Club, Anaheim

TUESDAY, DECEMBER 10, 2019

*Dinner: Holistic Thinking for Multidisciplinary
Design Solutions*

Theme: Joint Meeting with Tri-County Chapter

*Place: So Cal Gas Energy Resource Center,
Downy*

TUESDAY, JANUARY 28, 2020

*Dinner: Sustainable Refrigeration Systems:
Trends and Practices*

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

Place: Phoenix Club, Anaheim

TUESDAY, FEBRUARY 25, 2020

Tech: Fault Detection and Diagnostics

*Dinner: A Picture Stroll Through HVAC; the
Good, the Bad and the Ugly from a
Maintenance Perspective*

Theme: Membership Promotion Night

Place: Phoenix Club, Anaheim

TUESDAY, MARCH 10, 2020

*Dinner: Net-Zero Building vs. Net-Zero District
Perspective*

Theme: Joint Meeting with San Diego Chapter

Place: Bagby Beer Company

TUESDAY, APRIL 28, 2020

Tech: TBD

Dinner: HVAC System Design

Theme: Student Night

Place: The Phoenix Club, Anaheim

MAY DATE TBD

Dinner: 2020-2021 Installation Night Dinner

Theme: Officer and Board Installation

Place: Cancelled



Orange Spiel



www.orangeempirearise.weebly.com

MEETING SUMMARY

MAY 2020

**THE MAY MEETING
WAS CANCELLED**

Orange Empire ASHRAE

2312 Park Avenue, #407
Tustin, CA 92782