

FOG DISPENSER

LATE
EDITION!



If you missed this meeting but are interesting in learning more, go to:
https://ggashrae.starchapter.com/downloads/2019.04.18_ashrae_golden_gate.pdf

DINNER MEETING ,THURSDAY, APRIL 18

MAIN PROGRAM: DECARBONIZING AND CENTRALIZING HEATING SYSTEMS: UNIVERSITY CASE STUDIES

SPEAKERS: PIUS KAO, P.E. and JOANNA PYUN, P.E.

PIUS KAO, P.E. is a project manager at Affiliated Engineers with district energy experience at Stanford, Genentech, and UC Davis. His responsibilities on these projects include campus distribution piping, building conversion from steam to Low Temperature Hot Water heating, and providing alternate source for existing process steam heating needs.



JOANNA PYUN, P.E. is a mechanical engineer for the Piping Group at Affiliated Engineers Incorporated (AEI). She has 8+ years of combined experience in construction, maintenance, and design. She has brought her design and field experience with utilities and power plant design at MIT, ASU, Genentech, and UC Davis to help clients meet greenhouse gas reduction targets and reduce maintenance costs through infrastructure overhauls and retrofits.



TOPIC SUMMARY

While many regions in the US still burn natural gas to produce heat, California is leading the forefront on reducing carbon emissions by enacting legislation that requires a

continued on next page

**THURSDAY,
APRIL 18**

5:30 pm to 9:00 pm

**PACIFIC ENERGY CENTER
851 HOWARD STREET
SAN FRANCISCO, CA 94103**

AGENDA:

5:30 pm

Registration and Social Hour

6:30 pm

Dinner, Announcements
and Introductions

7:45 pm Break

8:00 pm Main Program

9:00 pm Adjourn

COST:

\$320.00 Chapter meeting
voucher

Chapter Members:

Before 5pm, April 15 \$55

After 5pm, April 15 \$65

Non-Members:

Before 5pm, April 15 \$65

After 5pm, April 15 \$70

Students/Voucher Holder

Free, but please register before
April 15 to help us better plan
for meal and venue seats.

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GOLDEN GATE ASHRAE
FOG DISPENSER
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APRIL 2019 COVER

40% reduction below 1990 GHG emission levels by 2030. Many heating distribution systems are transitioning from steam, which is produced by natural gas burning boilers, to hot water produced by electricity via heat recovery chillers or electric boilers. Steam production is not only a GHG heavy process, inefficient system, but it is also a costly system to maintain as steam and condensate are taxing on the pipe due to high temperatures and corrosive content.

A few years back AEI presented on the Stanford heat recovery chiller plant that significantly increased efficiency, reduced carbon emissions, and reduced potable water use. This presentation is the complement of the heat recovery chilled water plant - Convert the Campus from Steam to Low Temperature Hot Water (LTHW) distribution, convert buildings from steam to LTHW heat exchanger, and provide alternate solutions for process steam. We will look at the Stanford

campus conversion and the in-progress design at UC Davis.

We will share the design and planning process of converting the distribution piping, including a synopsis of different pipe materials considered, hydraulic calculations, load evaluation, Campus regional heat exchangers, building heat exchanger design criteria, expected building dT, and replacement for process steam in buildings.

https://ggashrae.starchapter.com/downloads/2019.04.18_ashrae_golden_gate.pdf

EVENT CALENDAR 2019

► **THURSDAY, APRIL 18** DINNER
LOCATION: PG&E Pacific Energy Center
TOPIC:
Decarbonizing and Centralizing Heating Systems:
University Case Studies

**FOR MORE INFORMATION
AND DETAILS GO TO
WWW.GGASHRAE.ORG**

► **THURSDAY, MAY 23** DINNER
LOCATION: PGE Pacific Energy Center
SPEAKER: Multiple
TOPIC: Product Show

► **THURSDAY, JUNE 20** DINNER
LOCATION: Scott's
SPEAKERS: Golden Gate Committee Chairs
TOPIC: Installation Dinner

**GOLDEN GATE CHAPTER
MICHELLE DIONELLO,
APRIL 2019**

Dear Golden Gate members,

I hope everyone enjoyed the March meeting with the Redwood Empire Section about large scale horticulture. We had a great panel discussion; Sam Burgner stood in for Dr. Michael Jenkins, who had a delayed flight and was stuck in Denver. Sam did an absolutely amazing job in giving us a crash course on photosynthesis and the daily cycle of plants. We also learned about the important effects of the indoor environment on growth of plants and the mechanical systems required to achieve this from James Falconer and Rob Battiston. We were very fortunate to have two of the high-school scholarship winners join us; it was nerve-racking but exciting to hear about their anticipated arrival of letters from their top choice universities and colleges. We wish them the best of luck! Overall, a very successful meeting with our Redwood Empire Section.

I am looking forward to our April meeting with our two speakers from Affiliated Engineering, Pius Kao and Joanna Pyun about district heating systems. Reminder to sign up for the photoshoot during social hour if you want to update your headshot from your antiquated cropped vacation picture. This photoshoot is almost fully subsidized by Golden Gate ASHRAE Student and Membership Promotion Committee. There is a limited number of spots available, so sign up before they are all taken! Also at this meeting, there will be calls for nominations for the Golden Gate ASHRAE Board; nominations will close after this meeting and the ballot will be published at our May meeting. If you would like to know more about how our chapter operates, please review the Manual of Chapter Operations, which can be found on this link at the Society site. April is a special meeting since it is Student and Membership Promotion night; please bring out new members and go home with ASHRAE swag or you could sponsor or befriend a Student at our meeting. Our Chapter proudly hands out close to \$50,000 to undergraduate and graduate students that are studying engineering or other sciences in the built environment.

I encourage you all to come to our Product Show & Expo this year on May 23rd. Doors open at 2:30pm with our first set of speakers coming on at 3pm to discuss research being completed in our Chapter. Aside from seeing innovative products at the vendor exhibits, you will have an opportunity to win door prizes by filling out your punch card to win. This will be the event of the year so make sure to not miss it! More details in this FOG or on our website.

My picture this month is from a few weeks ago in Tahoe where we were expecting spring skiing only to instead experience yet another powder day at the end of season. No complaints, but another reminder of the sporadic climate we are seeing. We lived through our longest drought from December 27, 2011 to March 5, 2019. We saw some of the deadliest fires rip through our area this fall, and then devastating flooding in the late part of February this year. As ASHRAE members, our designs use the planet's resources and we must continually push ourselves to lessen the impact we have on our world. I hope to see you all in April,

Michelle Dionello,
Golden Gate ASHRAE President 2018-2019





Tom Gilbertson, Chapter Historian

April 2019!

April!..... "April showers...may come your way.... they bring flowers...that bloom in May!"...(B. G. DeSyllva - 1924...now in the public domain...but introduced by Al Jolson in 1924...note:...Jolson died in San Francisco at the St. Francis Hotel in 1950)

1924...ASHRAE... (nee ASHVE)...was just gathering "steam"...and refrigerant was going through development and becoming "economically available"...and our industry was moving forward.....Who doesn't like "cooling"... and "dehumidification"!...the Country did!...and demanded more of ASHRAE's technology.

It would be unfair not to mention the role that refrigerant has played in our Country's history..., and not recall, the Volstead Act...ratified in 1919 and in force in 1920 until 1933....

But back to "refrigerant" Until 1929 refrigerators...the main user of refrigerants...used basically toxic gases as refrigerants... ammonia (NH₃), methyl chloride (CH₃Cl), and sulfur dioxide (SO₂)...bad business if you had a refrigerant leak. Carrier did not get around to "inventing" a home air-conditioner until 1932... (Marketed as an "Atmospheric Box")....But in 1929 the "invention of "FREON" as the family of CFS... had paved the way to development of the air-conditioning industry of today. The problem in 1929 until 1933 was two-fold...basically no one had any money to buy this new air-conditioning equipment...and there was no beer to cool until the Volstead Act was repealed in 1933.

Refrigerants were limited...R-717 – ammonia, R-718 – water, CO₂, and the FREON's or CFC's, and that is about it until 1929. The refrigerants were compounds not mixtures, and this simplified how they can be charged.

Today as we have moved through the CFC, HCFC, and HFCs, and seen a resurgence of CO₂, and R-717-ammonia ...and finally azeotropic refrigerants such as R-410A and R-407, to say nothing of the other multiple blends, which are mixtures.

Historically, here is it gets a little "sticky" ...

Today we see increasing use of "azeotropes" they "charge" as liquids...perfect mixtures...BUT when they "leak "..., most refrigerant leaks are "gas"...the more volatile component of the mixture "leak"...escapes first.

This alters the mixture percentages...and there is no way to add refrigerant charge to keep the mixture-percentages the same as the original....What does this mean?...It means that if you do have a leak with an azeotropic refrigerant...think R-410A... you really ought to evacuate the entire charge and start over.

As we left the 1920's and moved to the 2000's our comfortable ASHRAE-related business became much more complicated as we were forced to become aware of physical science...in addition to machine design, thermodynamics, and fluid dynamics, which had been the cornerstone of our industry.

Historically, there may be some rude awakenings when after a few years we discover how complicated our industry has become.

SFSU Student Career Fair

Help spread the word, the SFSU Student Career Fair will take place on May 01, 2019 from 6:00 PM - 9:00 PM!

The Career Fair will take place on campus at the following address:

SFSU Annex 1
1600 Holloway Avenue
San Francisco,
SFSU Engineering Career Fair



Scholarships and grants

The Golden Gate Chapter is offering up to two travel grants to students who would like to attend the ASHRAE Annual Conference in Kansas City, MO; June 22-16. The chapter sends chapter students each year to discuss the latest topics in the building industry, participate in technical tours, attend ASHRAE Learning Institute courses, and much more. The deadline for applications is April 30, 2019.

To see more details and obtain a grant application go to:

<https://ggashrae.org/Students>

Golden Gate GASHRAE 2019 May Road Ride

May 18, 2019

8:00 AM - 3:00 PM

Crissy Field

San Francisco, 94129

It's not a race but a day of fun on your bicycle!

\$60.00 Rider

\$75.00 after 05:00 pm May 14

\$20.00 1st Annual Golden Gate ASHRAE Bike Ride

T-shirt

\$0.00 Volunteer



Do you love riding your bike? Get ready for the 1st Annual Golden Gate ASHRAE Ride!

There will be bikes, snacks, BBQ, and a great time. Start time is at 9:00am but come out beforehand for snacks.

There are two courses that will ride through the Marin Headlands- 50km or 100km.

Riders will get:

- Goodie bags
- Snacks before and mid-ride
- SAG support
- BBQ lunch post-ride

Please sign-up early, so that we can plan accordingly but day of ticket to ride is \$75.

If you would like to be a volunteer for this event, please register using the link as a volunteer! For sponsorship inquiries or other questions, please reach out to our **Bike Chair, Jim Kelsey** at kelsey@kw-engineering.com.

YEA YOUNG ENGINEERS OF ASHRAE



Jake Barker, YEA Chair

Young Engineers of ASHRAE

The Young Engineers of ASHRAE Golden Gate held a joint social hour gathering with the AYP Bay Area chapter. For those unfamiliar with the AYP they are our fellow young engineers from the P pages on plan sets (plumbing). The AYP chapter teamed up with YEA members for a get together at Brewcade on April 11th. It was widely attended and a very fun event!



Jeremy Martinez

Did You know?

ASHRAE Guideline 29-2009R: Risk Management of Public Health and Safety in Buildings

Risk management of extraordinary incidents is a critical step in the process of establishing project goals and programs in the design and operation of new facilities or the renovation of existing facilities. This process will assist in determining what facility protection measures are appropriate to mitigate potential threats to meet the decision maker's operational needs at an acceptable cost.

1. PURPOSE

The purpose of this guideline is to provide guidance for the practical evaluation, design, and implementation of measures to reduce multiple risks in new and existing buildings.

2. SCOPE

This guideline contains qualitative and quantitative methods for management of the risk of extraordinary incidents in buildings. Specific subject areas of concern include air, food, and water.

The extraordinary events addressed in this guideline include fire, seismic events, chemical and biological releases, blast, and other extraordinary hazards.

The guideline will address extraordinary incidents from a multi-hazard perspective and will cover both intentional and accidental occurrences. The guideline addresses aspects of building performance that affect occupant health and safety, including egress; chemical, biological, and radiological (CBR) protection; fire protection; smoke removal or purging; filtration; air quality; entrance paths for contaminants; and building envelopes.

MEMBERSHIP PROMOTION



Brian Chacon, Membership Promotion Chair

Jazz Up Your Closet!

Looking to jazz up your closet with some new ASHRAE gear? Bring a new member to a meeting and get some new swag. All are welcome at our Golden Gate Chapter!!

<https://www.ashrae.org/membership/merchandise>



ASHRAE SPEAKER



ASHRAE TUMBLER



ASHRAE ASSORTED SHIRTS



Charlie Warren, Research Promotion Chair

What is the Resource Promotion Campaign?

The RP Campaign is an annual fundraising campaign benefiting the funding of numerous ASHRAE Programs. These programs include:

- **ASHRAE Research**
- **ASHRAE Scholarships for undergraduate students**
- **ASHRAE Learning Institute (ALI) development of new courses & materials**
- **Graduate Research Projects (Grants-in-Aid)**
- **Young Engineers in ASHRAE (YEA) Leadership Training**
- **Permanently endowed support to all of the above programs**

The RP Campaign is overseen by the RP Committee, a standing ASHRAE Committee. The committee is made up of 14 Regional Vice Chairs (RVC), 1 Consultant (past RVC), 3 Vice Chairs (past Consultant), and Chair (past Vice Chair). Staff support includes a 3-member team based at ASHRAE Headquarters. The RP Campaign raises over \$2.2 million a year from over 6,000 donors. These donors are made up of ASHRAE Members, industry associations, and industry organizations.

We have already had some generous donors. The following individuals have generously supported ASHRAE Research and Golden Gate Chapter for the 2018-19 Campaign.

Your contributions are much appreciated. Thank you for making a difference and shaping tomorrow's built environment today.

DONORS IN 2018-2019:

ORGANIZATIONS

\$250 to \$999

NAZZARO and ASSOCIATES

ORGANIZATIONS

Up to \$249

Genentech

INDIVIDUALS

Over \$1,000

Glen Friedman, PE

INDIVIDUALS

\$250-\$999

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Frank M Lo, PE
Steven Taylor, PE

INDIVIDUALS

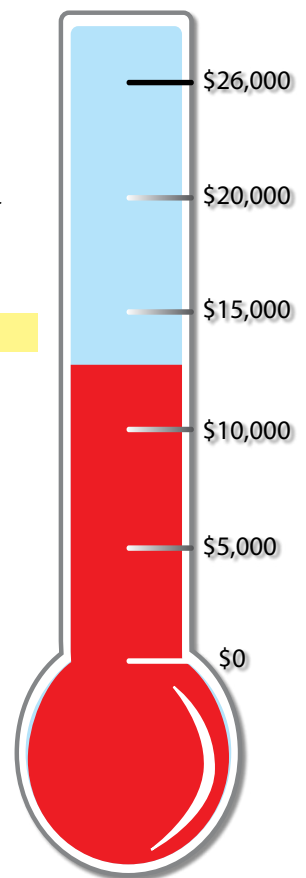
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Scott Wayland
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Gerald Yaffe



Donations are tax deductible, by check, credit card or online at www.ashrae.org/contribute

Mail Checks to: ASHRAE RP: 1791 Tullie Circle, NE: Atlanta, GA 30329

For more information, please visit Research and Promotions section on www.ggashrae.org or contact RP Chair Charlie Warren at (415) 742-9350, charlie@convexlabs.io

GOAL:
\$26,000

CONTRIBUTIONS:
\$12,644

2019 PRODUCT SHOW – GOLDEN GATE CHAPTER, ASHRAE

By John Plecnik, Product Show Chair

The annual Golden Gate Chapter ASHRAE Product Show will be held on Thursday, May 23 at the PG&E Pacific Energy Center in San Francisco. This annual event is a main fund raiser for the chapters' contribution to ASHRAE Society Research projects. This year we are changing the format to include speakers on various topics including:

2019 ASHRAE PRODUCT SHOW KEY SPEAKERS			
Lincoln Lorscheider, BSUBAS	How Great is BACnet?	Dr. Paul Raferty, CBE, UC Berkeley	Getting out of Hot Water: Electrification of VAV Reheat
Brandon Gill, Taylor Engineering	ASHRAE Guideline 36 Research: Past, Present, Future	Tyler Jones, Sindoni Consulting & Management Services	The Growing Challenges and Benefits of Commissioning: Trends & an Industry Tune-Up
Reece Kiriu, Taylor Engineering	Transforming Market Delivery for Building Automation Systems: ASHRAE Guidelines 36 and EPIC Best in Class	Adam Nakagoshi, Gensler	The Use of Virtual Reality (VR) in the Construction Industry

The mini seminars will be running concurrent with the product showcase.

Registration will open at 2:30 pm. The product showcase will start at 3:00 pm as will the seminars which will last 30 minutes each with 30 minute breaks in between. Again, seminars and the product showcase will be happening simultaneously. After the final presentation, there will be heavy hors d'oeuvres, a no host bar, and a raffle for door prizes which will help keep attendees at the show until the 6:30 close.

Price for a 3'x6' table is \$450, and \$225 for each additional table. This vendor fee includes one admission. Additional members of your company will pay the general admission cost of \$50, which includes entry to the event, one drink coupon, and heavy appetizers.

Thank you to all the vendors that have already signed up for this event including:

- **Belimo**
- **NIBCO**
- **Energex**
- **California Hydronics Corp**
- **Bayside HVAC Products**
- **San Jose Boiler**
- **Osborne Company**
- **Rehau**
- **RF MacDonald Company**
- **Paragon Controls**

Please consider exhibiting at the show. You'll get exposure to a great group of engineers and contractors and you'll be helping out the ASHRAE Society Research Projects at the same time. We would love to see you there. Call or email me for an application, we would like to see your name on the list for next month's Fog Dispenser. You can pay by check or with PayPal.

If you are interested in learning more about the event's itinerary and presenters, or registering as an attendee, visit the GGASHRAE website link, <https://ggashrae.org/>

Feel free to reach out to me for any questions you may have about this event at jplecnik@chchydro.com or phone: 510-266-7855.

See you at the next meeting!

Upcoming PG&E Events & Classes

TITLE 24 PROPER PROCEDURE FOR CHARGING AIR CONDITIONER AND HEAT PUMPS

This one-day class will provide hands-on training and exercises on the Title 24 methods for checking charge and measuring air flow for residential and small commercial air conditioners and heat pumps. The instructor will review the basics of the refrigeration cycle, and discuss in detail the three methods of charging systems; charging by superheat with fixed orifice metering devices, charging by subcooling with thermostatic expansion valve metering devices, and weighing in the charge. Portable AC and heat pump training props are used to enhance the learning process by practicing techniques discussed during the class.

Tue April 23, 2019, Stockton – Energy Training Center

9:00 am – 5:00 pm

Registration: <http://usi.pge.com/event-details?EventID=20304>

OPTIMIZING RESIDENTIAL HVAC SYSTEM PERFORMANCE

This class focuses on optimizing the actual performance of central forced-air heating and cooling systems in existing single-family residential buildings. This class is primarily geared toward mechanical and home performance contractors responsible for installing and maintaining these systems. The six performance factors that can be applied to HVAC design, installation and/or commissioning will be discussed. The instructor will review how each factor can be specified at design, implemented during installation and tested/adjusted during commissioning.

Wed April 24, 2019, Stockton – Energy Training Center

9:00 am – 4:30 pm

Registration: <http://usi.pge.com/event-details?EventID=20495>

HVAC FUNDAMENTALS: NEW IDEAS FOR NOVICES (TWO-DAY CLASS)

This class introduces mechanical system concepts to novice building professionals using equipment samples, in-class activities, and other interactive teaching techniques. Topics will include thermal comfort, heat transfer, load calculations, psychrometrics, mechanical system components, low-energy strategies, control systems, code compliance and building commissioning.

Thu April 25 - 26, 2019, San Francisco – Pacific Energy Center

8:30 am – 4:30 pm each day

Registration: <http://usi.pge.com/event-details?EventID=20632>

LIGHTING FUNDAMENTALS

This course, held in our lighting classroom, provides a basic overview of fundamental lighting topics, including a discussion of energy saving lighting techniques. The lighting classroom's color booths and built lighting displays provide a visual experience to demonstrate lighting terminology, vision, light and color theory, electric light sources, fixtures, controls, and calculations.

Tue April 30, 2019, San Francisco – Pacific Energy Center

9:00 am – 4:30 pm

Registration: <http://usi.pge.com/event-details?EventID=2040>

RCX101: IDENTIFYING AND ASSESSING COMMON RETRO-CX OPPORTUNITIES

Training focuses on practical tools and techniques related to retro-commissioning activities. These techniques can also be used to inform the design process, troubleshoot during new construction commissioning, and improve day-to-day operations. This class is a pre-requisite for the PEC's year-long Existing Building Commissioning Workshop Series.

Wed May 1, 2019, online and San Francisco – Pacific Energy Center

8:30 am – 4:30 pm

In-person registration: <https://usi.pge.com/event-details?EventID=20761>

Simulcast registration: <https://usi.pge.com/event-details?EventID=20763>

continued on next page

Upcoming PG&E Events & Classes

ELECTRIC HEAT PUMPS FOR DOMESTIC SPACE AND WATER HEATING: APPLICATIONS AND CONSIDERATIONS

This class will focus on efficiency gains and emissions reduction from electric heat pumps. The instructor will cover the advantages and limitations of these systems along with the available technology and refrigerant types.

Thu May 2, 2019, online and Stockton – Energy Training Center

9:00 am – 4:30 pm

In-person registration: <http://usi.pge.com/event-details?EventID=20488>

Simulcast registration: <http://usi.pge.com/event-details?EventID=20778>

ENERGY EFFICIENCY UPDATE: STRATEGIES FOR REDUCING ENERGY USE, OPERATING COSTS AND CARBON EMISSIONS AT COMMERCIAL FACILITIES

This one-day primer on energy efficiency strategies is intended for building professionals familiar with the basic concepts and interested in receiving an update on new and emerging technologies and controls. This class will also include modules on utility incentives, financial return calculations, interactive measures, incremental cost opportunities, as well as operations and maintenance considerations.

Tue May 7, 2019, San Jose – Environmental Innovation Center

8:30 am – 4:30 pm

Registration: <http://usi.pge.com/event-details?EventID=20631>

INTEGRATED DESIGN PROCESS: PROJECTS OF ALL SIZES AND DELIVERY METHODS

This webinar is part of a series on Integrated Design and focuses on three case studies of successful projects of varying delivery methods including Design-Bid-Build, Design-Build, and Design-Assist. Presenters will offer viewpoints from different team members to describe what worked well, what challenges existed and how they were resolved, as well as how best to leverage the knowledge and experience base of each team member.

Tue May 7, 2019, online

9:00 am – 11:00 am

Webinar registration: <http://usi.pge.com/event-details?EventID=20543>

AG./INDUSTRIAL REFRIGERATION SYSTEMS EFFICIENCY

This class will provide attendees with the basic knowledge to identify and quantify energy efficiency opportunities for industrial and refrigerated warehouse refrigeration systems. Among the topics that will be discussed are the basics of refrigeration systems, common energy efficiency measures, case study examples, and PG&E's energy efficiency programs. An explanation of PG&E incentives, baselines, and how they relate to Title 24 requirements for Refrigerated Warehouses will be discussed.

Wed May 8, 2019, San Francisco – Pacific Energy Center

9:00 am – 5:00 pm

Registration: <http://usi.pge.com/event-details?EventID=20486>

KW ENGINEERING

Are you passionate about saving energy in high performance buildings? Come to kW Engineering! We are a community of gifted engineers who are dedicated to making a real impact.

We are currently looking for a Commissioning Project Manager who is a technical leader in New Building Commissioning. The ideal candidate will have project management experience, strong communication skills, detail oriented and a solid understanding of engineering concepts and advanced problem-solving skills expected of a bachelor level engineering degree or above.

CCP, PE, LEED AP, and/or CLCATT Certifications a plus.

Email resumes to: careers@kW-engineering.com

kW Engineering

287 17th Street, Suite 300

Oakland, CA 94612

www.kW-Engineering.com

Commissioning Engineer Level I or II – AMBIENT ENERGY, INC. – SAN FRANCISCO OFFICE

REQUIREMENTS:

- 3+ years of professional experience working as a Commissioning Engineer or MEP Design Engineer
- Experience with site inspections, functional testing, and energy audits
- Technical knowledge and understanding of HVAC, HVAC controls and electrical systems
- Demonstrated technical review, writing, and editing skills
- BS in Mechanical or Electrical Engineering or related discipline required
- PE, MS in Mechanical or Electrical Engineering, CxA, CCP or QCxP
- Participating in business development and proposals
- Experience working on at least 2 LEED projects

ENHANCEMENTS:

- Energy Audits, Retro-Commissioning, Energy Modeling

Work is anticipated to take place at San Francisco International Airport and in San Francisco.

To apply contact Christina Seri at cseri@ambient-e.com or by phone at 303-278-1532x214.

MARCH MEETING RECAP



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A big thank you to the following sponsors for supporting publication of the Fog Dispenser.

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