

FOG DISPENSER

Golden Gate Chapter



ASHRAE

VOLUME XLVIV - NUMBER 3

December 2010

DECEMBER 2010 DINNER MEETING

Main Program: Modeling in a Sustainable World

Thursday, December 9, 2010 (5:30 pm to 9:00 pm)

Doubletree Hotel San Francisco Airport

835 Airport Blvd., Burlingame, California, United States 94010-9949

Agenda:

- 5:30 pm Registration and Social Hour
- 6:00 pm YEA discussion with President Bellenger
- 6:30 pm Dinner with announcements and introductions
- 7:45 pm Break
- 8:00 pm Main Program
- 9:00 pm Adjourn

Speaker:



Lynn G. Bellenger, P.E., Fellow ASHRAE, is a partner with Pathfinder Engineers, Rochester, N.Y.

As ASHRAE's president, Bellenger directs the Society's Board of Directors and oversees the Executive Committee. She formerly served as president-elect, treasurer and vice president. Bellenger is ASHRAE certified as a Building Energy Modeling Professional and a High Performance Building Design Professional. She is the first female president in the Society's 116 year history.

"We have an immense talent base in our ASHRAE members, each with unique experience, education and skills for meeting the challenges facing our global society," she said. "Our greatest opportunity is mobilizing those resources to utilize the tools available, and those being developed, to reduce worldwide energy use. The net-zero-energy building conference that ASHRAE sponsored in San Francisco in March 2008 demonstrated that net-zero-energy buildings can, and are, being built today. We need to inspire and motivate the developers, owners, design professionals, contractors, and operators – everyone involved in the built environment – to accept the challenge to 'take energy out of buildings' and provide a healthy, productive environment at minimal energy use. And we need to continue and accelerate our

efforts to provide the tools to do so.”

Bellenger is a member of member of the Indoor Air Quality Design Guide Steering Committee, the Joint Expo Policy Committee, and technical committee 4.1, Load Calculation and Data Procedures. She formerly served as treasurer and vice president.

Bellenger is a recipient of the Exceptional Service Award, the Distinguished Service Award, two first-place ASHRAE Technology Awards and the Lincoln Bouillon Membership Award.

She received a Bachelor of Science in mathematics from Principia College and a master of science in environmental science from Rutgers University.

**Presentation
Summary:**

“Modeling a Sustainable World” highlights the role ASHRAE members play as leaders in sustainable design. In energy simulation, daylight analysis, CFD, and BIM software, we have powerful modeling tools that enable us to create and redefine our vision of a building – its appearance, systems, operation, and performance. Those resources, used effectively in an integrated design process for new buildings and in analyzing retrofit opportunities in existing buildings, will help us guide building owners, architects, developers, and contractors in building orientation, shading and shape and in selecting materials, windows, equipment, and systems that optimize building performance.

Cost:	Before 3pm, Fri. 12/3	After 3pm, Fri. 12/3
GG ASHRAE Members	\$40.	\$50. but please register
Non-members	\$50.	\$55. but please register
Students	Free, but please register	Free, but please register
Voucher holder	\$0, but please register	\$0, but please register

Golden Gate Chapter President's Message, December 2010



Dear Golden Gate ASHRAE Members and Friends,

First, I want to thank our speaker last month, William Fisk with the Indoor Environment Department, Lawrence Berkeley National Laboratory. His research findings put a quantitative analysis on a qualitative subject...or was it a qualitative analysis on the quantitative? Hmmm, that sounds like either a trick question or one a psychologist has to figure out; but definitely not me and certainly not the week before Thanksgiving, as I write this.

At any rate, while we might know intuitively that improved ventilation increases productivity, Bill put a societal price tag on these concepts. His excellent and thoughtful presentation was in 2-parts, *How HVAC Affects People* and *CO₂ Measurements for Demand Controlled Ventilation*. For more information, please visit: www.iaqscience.lbl.gov and www.demandcontrolledventilation.lbl.gov

I will continue to ask for your financial support of ASHRAE Research, as a tax deductible donation, each according to your means, and it makes an excellent stocking stuffer...well maybe not, but you can most easily do this on-line www.ashrae.org/aboutus/resource_promotion.asp.

I will be attending the 2011 ASHRAE Winter Conference in Las Vegas (Jan 29-Feb 2, 2011) and I encourage you to attend. Walking the AHR Show is an experience all unto itself. The conference will feature a range of programs and papers addressing the real cost of net-zero-energy design, the efficient use of energy, the greening of the industrial base, and other topics related to design, standards, codes, and professional skills. For complete information, including abstracts on all technical program sessions, and/or to register, visit www.ashrae.org/lasvegas.

With the holiday season arriving, what is on your favorite engineer's gift list? Here are some ideas: "The Stoker" from Rock's Bar-B-Que, www.rocksbarbque.com; "Kill-A-Watt EZ™", www.killawattplus.com; Books: *Consumer Guide to Home Energy Savings* (9th Edition), and a sampling of the series for the evil genius in your midst: *50 Green Projects for the Evil Genius*, *51 High-Tech Practical Jokes for the Evil Genius*, Edmund Scientific www.scientificsonline.com, Car Talk www.shamelesscommerce.com. Happy Shopping!

The holidays are of course, much more than stocking stuffers. It is a time of family & friends, celebration, sharing, and reflection. To everything there is a season and a time for every purpose under heaven. "Love your neighbor as yourself" is a statement, a phrase and philosophy inherent in every great religion; and is a verse that has such relevance in everyday life. It is the most simple of statements. It is arguably the most profound and the most important.

Thinking about "love of neighbor" requires one to think about just how much love and respect is given to "self". Today, it is hard to love ourselves, let alone our neighbors. Realities tell us that loving others is difficult. It is the opposite of selfishness, a basic human practice. No matter how far away, whatever the race, religion, or political beliefs; your neighbor deserves to be treated as well as you would treat yourself.

I have found a simple way to love yourself and your neighbor is to practice random acts of kindness...and not just here and now, but 12 months, 24/7. I enjoy being creative with my random acts and I also enjoy structure in this regard. For those who like structure (and the opportunity to be an elf) please visit www.secretsantausa.com.

Merry Christmas, God Jul, Feliz Navidad, Joyeux Noel, Froehliche Weihnachten, Tchestita Koleda, Milad Majid, Gun Tso Sun Tan'Gung Haw Sun, Mele Kalikimaka, Buone Feste Natalizie, Cristmas-e-shoma mobarak bashad, Maligayan Pasko...and Happy New Year!

Gary Harbison, Chapter President

End of the Year

Tom Gilbertson, Chapter Historian

"December – the End of the Year"

Another year!.....and the time to look back at ASHRAE History....and the history of this great Society that we find ourselves in....(to be correct it wasn't even "ASHRAE" until about 1957)....The archives are full of stories of the "Golden Gate Chapter's Annual "ASHVE" Christmas Parties"...usually held at the Fairmont Hotel....with price of \$3.50 or \$4.00 per couple....well...that is in the late 1940's.....but it included a dinner and the dance band!....later on the "ASHRAE" Golden Gate Chapter's annual dinner dance replaced the Christmas Party...In 1962 John Destin of Gilmore Air-conditioning won the "Balloon Dance"....dancing with my wife!....I never did catch on as to how he managed to break the balloon at the last moment!....ah...ASHRAE was then in a more simple time!...And the prices!.....In 1961 we had just received news on the latest innovation....."plastic tubing for pneumatic controls"....our cost was \$2.14 per hundred foot...according to my 1961 Johnson Service (Controls) Price Book....and it came in 8 colors.....a wonderful idea...until we found out that rats just loved the "red" tubing....and we fixed leaks until we discovered that the rats "ate-em" faster than we could "fix-em".....A high tech problem from "yesteryear".

I recall going out to estimate the control remodel on the John Swett Public School in San Francisco....and nearly getting caught in the supply fan's chain drive....no guard in the fan room...obviously before OSHA....and the links were each almost 5-inches long!

Remember Joe Murray?.....the firm of **Buonacoursi & Murray**?...at one time one of the largest consulting firms in the West....Carl Jordan and Dick Glumac, and Bert Stubblefield all worked there at one time.....Joe “lost” the ASHRAE-gavel that was passed between the Golden Gate Chapter and the Sacramento Chapter...and in 1953 was presented with the large “mallet” with admonishment of “lets see you lose this!” ...(okay).....who knows where that gavel/mallet is now?”....lets see if someone can find it!)

Joe came to my rescue when I tried the mercury-mining business up in Nevada in 1963....I had a lease on a mine outside of Tonopah, Nevada...and had hired a consulting mining engineer, when Joe found out, and intervened in my behalf.....Joe’s comment was that he didn’t “trust” the fellow....as Joe had run a mercury mine that belonged to Daryl Zanuck...(of movie-fame)...in 1939....and had previously hired this fellow, and had “bad-luck” with him....so Joe Murray guided me to a different arrangement....you see ASHRAE had lots of diversity in those days.

Al Buonacoursi was the engineer who gets credit for building Hunters Point Naval Shipyard...story goes that a Naval Officer came to the Bay Area in 1940 with orders to “construct the shipyard”....This U. S. Navy Officer inquired as to “who was the most qualified and capable engineer in town”...and he was directed to Al who was an “up and comer” at PGandE.....so the Officer called on Al at PGandE and asked Al to join him as chief engineer for the construction of Hunters Point Shipyard...all it was then was a wide-open space....Al told the Navy man “no”...that he had a good job, with a future...right there at PGandE.....(If you knew Al you can imagine that he might not have been “exceptionally cheerful”).... The following day, two, armed, Navy Shore Patrol called on Al and placed him under arrest and took him to the Officer’s location where the Navy-man told Al that he could either come and work for him...as a civilian...or he would have Al immediately drafted.....and assigned to him....and he would do the same work either way.....Story goes that Al accepted the job on the spot...and the following morning Al had arranged for dirt to began being moved on the Hunters Point site.

And you might have thought that the early men in our industry were just fan-valve-pump and boiler people....

Student Activities

John Williams

Contact info –

john-g.williams@arup.com (415) 946 0230

YEA Activities

Michelle Dionello

The Young Engineers of ASHRAE (YEA) is committed to encourage participation from our Golden Gate members 35 years old and below. Please contact Michelle Dionello (michelle.dionello@arup.com) with any comments or if you are interested in becoming more active in our group. We plan social events, technical tours, and help with outreach to young students!

Upcoming Events

LBNL Window/Daylighting Lab Tour- December 3rd 3:00-5:00pm

This is a joint event with International Building Performance Simulation Association (IBPSA). We will be touring the Lawrence Berkeley National Lab (LBNL) Window and Shading Lab. Learn about how Solar Heat Gain Coefficients and U-values are tested and meet other engineers in IBPSA! **Tour is sold out but please email me if you want to be placed on the wait list.** More details at: <http://lbnlwindowntour.eventbrite.com>

YEA PE Study and Application Session- December 8th 6:00-7:30pm

This is a friendly reminder that the PE exam application deadline needs to be postmarked by **December 17, 2010**. YEA will be hosting a one-time session, where we will go over the application and tips from past exam-takers! The

session will be at Arup, 560 Mission St Ste700 San Francisco. Please RSVP with michelle.dionello@arup.com if you are interested in attending. There will be milk and cookies for those that attend!

YEA Meets ASHRAE Society President Lynn Bellenger- December 9th 6:00pm

On December 9th, we have our chapter meeting at 835 Airport Blvd in Burlingame, please sign up on the GG website. Society President Lynn Bellenger will be presenting on “Modeling a Sustainable World,” **but first she wants to meet us, the younger members of ASHRAE!** She wants to find out more about our needs and what the society can do for us!! Please come join us at 6pm, during the chapter’s social hour to chat with our Society President.

Recent Past Event

YEA Bowl Night- November 11th - 6:00-8:00pm

The Golden Gate YEA committee hosted bowling night at Yerba Buena Bowling in San Francisco. We had 20 YEA members attend and 4 non-members! Thank you so much to the continued sponsorship from Nazzaro and Associates and California Hydronics Corporation.

Pictured below: (Left) Oren Rieger, Ted Jacob Engineering Group: Champion bowler of the night and (Right) Denni Tyrrell, ACCO with 2nd Place! Below other pics of our members!



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- 4-month rate: \$90 (\$20/mo.)
- Yearly Rate: \$150 (\$17/mo.)

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The *Fog Dispenser* circulation consists of consulting engineers, contractors, sales representatives, facilities engineers, and academics from all over the Northern California Bay Area. Over 900 people receive this publication every month!

If you are interested in advertising in the Fog, please contact Annie Foster Courtney at annie.foster@wspfk.com.

**NEW FOG
DISPENSER
DESIGN COMING
NEXT MONTH!**

YOUR AD HERE!

**CONTACT ANNIE
FOR MORE INFO**

Marble Draw

Annie Foster

A big thank you to Cal Hydronics, who graciously donated prizes for the last meeting! **Since nobody won the marble draw in November, the prize is up to \$1250!!!!** We won't be doing the Marble Draw in December (joint meeting), but in January, the odds will be 1 of 3! As always, we are in need of sponsors for each meeting. If your company donates prizes, your company's logo will display on a slideshow during the non-speaker portions of the meeting. Please contact Annie Foster for more details.

Sheila has moved, so we are looking for new marble draw coordinators!!! It's an easy job, and a great way to meet people. Please contact Annie Foster for more information.

Chapter Technology Transfer Committee (CTTC)

Tyler Bradshaw, ASHRAE Golden Gate CTT Committee Chair

2011 Technology Awards

It's not too early to start thinking about getting your project submitted for the chapter level ASHRAE Technology Awards. I would love to talk to anyone considering participating in this great program.

Every year ASHRAE conducts the Technology Awards program to:

- Recognize ASHRAE members who design and/or conceive innovative technological concepts that are proven through actual operating data;
- Communicate innovative systems designs to other ASHRAE members;
- Highlight technological achievements of ASHRAE to others, including associated professionals and societies worldwide, as well as building and facility owners.

Each year Society presents awards in some of the thirteen categories: Commercial Buildings (New and Existing); Institutional Buildings (New and Existing); Health Care Facilities (New and Existing); Industrial Facilities or Processes (New and Existing); Public Assembly Facilities (New and Existing); Residential Buildings (New and Existing) both single family and multifamily (Low & High Rise); Alternative or Renewable Energy Use.

For each category a first, second, and honorable mention winner may be named. Also, one of the category first place winners may be selected to receive the ASHRAE Award of Engineering Excellence. The recipient will have demonstrated the best overall compliance with the judging criteria.

Society's bar is set pretty high for the awards as indicated in the very short list of awards from the last few years.

The submitted project should be completed and occupied for one year by the due date for the Society award application - September 2011. Therefore, your project should have been occupied by September 2010. By that time there should be good measurement and verification data available. The one year of occupancy is not a requirement for the Chapter award but it is a strong suggestion. This is a requirement for the Society award competition. Please see our CTTC website or the following links for more info.

<http://www.ashrae.org/publications/detail/14703>
<http://www.ashrae.org/publications/detail/14692>

<http://www.ashrae.org/publications/detail/14704>
<http://xp20.ashrae.org/STANDCOM/ShortForm.pdf>

Join the CTTC Committee

If you like to assist the chapter and get involved with ASHRAE, the Chapter Technology Transfer Committee is one of the best places and we could use your help. Talk to a board member or contact Tyler Bradshaw at tbradshaw@rumseyengineers.com.

Chapter Research Committee

Jeff Violet, ASHRAE Golden Gate Research Committee Chair

ASHRAE Research Report

This year the ASHRAE Research campaign is starting off very well!

A special thank you to contributors who gave on the honor level or above:

Corporate Golden Circle (\$10,000+)

Corporate Honor Roll (\$250+)

Bay Area SMACNA

Redwood Empire ASHRAE Chapter

Nazzaro and Associates

Individual Honor Roll (\$100+)

*Richard Charles
Edgar DeGuzman
Thomas Weaver
Isabelle Lavedrine
Scott Wayland
Eric Kolderup*

*James MacDonald
Max Sherman
Kristin DeMartini
Gary Harbison
Annie Foster Courtney
Jeff Violet*

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

To make contributions please contact Jeff Violet, jcviolet@yahoo.com, 415-724-1214

Technical Article – Electric Motor Code Update

Gary Harbison

New electric motor efficiency standards go into effect on December 19, 2010. This means work to do for all you specification writers and editors, so get cracking!

Federal Energy Policy on Motors used in Commercial & Industrial Systems

Energy Policy Act 1992 (EPA92)

The former EPA92 established minimum efficiency standards for general purpose electric motors manufactured in or imported into the United States after October 1997. Based on NEMA standards, the Act provided a definition of and test procedures for motors. It covered the following:

- 2, 4 and 6 pole_s (3600, 1800, 1200 RPM), 1-200 HP
- 1-speed, poly-phase T-frame
- Foot-mounted
- Explosion Proof
- IEC frames from size 90 upwards
- Squirrel-cage induction motors
- NEMA design A₄ and B₄
- Continuous rated
- Operating on 230/460V

Energy Independence and Security Act of 2007 (EISA 2007)

Passed by Congress and signed into law December 19, 2007, the Energy Independence and Security Act of 2007 will go into effect on December 19, 2010. EISA 2007 builds upon EPCA92 raising the mandated nominal full-load efficiencies of general purpose, 3-phase, alternating current motors, from 1 to 500 HP. It applies to motors manufactured or imported for sale in the United States. EISA 2007 affects new general-purpose motor purchases only, based on date of manufacture. Motors manufactured prior to December 19, 2010 are exempt and will be grandfathered. They can be rebuilt as usual.

EISA 2007 Standards for Motors

Subtype I: General purpose motors manufactured after December 19, 2010, with a power rating of at least 1 horsepower but not greater than 200 horsepower, shall have a nominal full-load efficiency that is not less than as defined in NEMA MG-1 (2006) Table 12-12 (NEMA Premium®).

Subtype II: General purpose motors not previously covered by EPCA92 and manufactured after December 19, 2010 shall have a nominal full-load efficiency that is not less than as defined in NEMA MG-1 (2006) Table 12-11(EPCA92). The term “*general purpose electric motor (subtype II)*” means motors incorporating the design elements of a general purpose electric motor (subtype I) that are configured as 1 of the following:

- U-Frame motors
- NEMA design C₄ motors
- Close-coupled pump motor
- C face or D flange without base, i.e., footless motors
- Vertical solid-shaft normal thrust motors (tested in a horizontal configuration)
- 8-pole motors (900 rpm)₅
- Poly-phase motors less than 600V (other than 230 or 460V)

The new law grants two exceptions: One is for Subtype 1, NEMA Design B general purpose motors sized between 201 and 500 HP, which need only meet NEMA MG1-2006, Table 12-11. The same exception is made for fire-pump motors.

Summary EISA 2007 Efficiency Requirements

<u>Motor Type & Size</u>	<u>Applicable NEMA MG-1 (2006) Table Number</u>
Subtype I, 1-200 HP	12-12, (NEMA Premium®)
Subtype 1, NEMA design B, 201-500 HP	12-11, (EPCA92)
Subtype II, 1-200 HP	12-11, (EPCA92)
Fire-Pump Motors, all sizes	12-11, (EPCA92)

Motors not Covered by EISA 2007

- NEMA design D₄ with high slip
- Fractional HP and 48 or 56 frames
- Special purpose motors (custom shaft)
- Single-phase motors
- Adjustable speed with optimized windings (cannot be line started)
- Multi-speed motors
- TENV and TEAO enclosures
- Intermittent duty
- DC motors
- Submersible motors

Beyond EISA 2007

On February 28, 2010 DOE specified efficiencies for general purpose small motors, which have been defined as follows: ¼ to 5 HP, ODP, 1 and 3-phase, CSCR and CSIR, frame sizes 42, 48, 56 and IEC equivalents. This regulation goes into effect in 2015.

A growing number of commercially available, general-purpose motors now exceed NEMA Premium® efficiency standards. Some of these motors are equipped with die-cast copper rotors to reduce I²R losses. Better-than NEMA

Premium® motors are not specifically addressed by EISA 2007; however, their extra-high efficiency make them wise choices for large energy/cost savings and rapid pay-back. These motors have 5-10% lower total electrical losses than an average NEMA Premium® motor of the same size, as defined by U.S. Dept. of Energy (DOE) MotorMaster+ software². Readers are urged to consult the DOE software for manufacturers' names and model numbers.

Footnotes

1. The term “minimum, nominal, full-load efficiency” refers to ratings displayed on nameplates. It is useful for comparing motor efficiencies. However, since most motors operate more efficiently at lower loading, readers may wish to apply efficiency data reported for 50% and 70% loading as reported in the DOE’s MotorMaster+ software.
2. Both U.S. and international versions of the MotorMaster+ software can be downloaded from [EERE](#).
3. Today's NEMA Premium® standards are products of work jointly undertaken by the [National Electrical Manufacturers Association](#) and the [Consortium for Energy Efficiency](#).
4. Different motors of the same nominal horsepower can have varying starting current, torque curves, speeds, and other variables. The four NEMA (National Electrical Manufacturers Association) designs have unique speed-torque-slip relationships making them suitable to different type of applications (Most motors in use are NEMA B):
 - NEMA design A: maximum 5% slip, high to medium starting current, normal locked rotor torque, normal breakdown torque, suited for a broad variety of applications - as fans and pumps
 - NEMA design B: maximum 5% slip, low starting current, high locked rotor torque,, normal breakdown torque suited for a broad variety of applications - common in HVAC application with fans, blowers and pumps.
 - NEMA design C: maximum 5% slip, low starting current, high locked rotor torque, normal breakdown torque, suited for equipment with high inertia starts - as positive displacement pumps
 - NEMA design D: maximum 5-13% slip, low starting current, very high locked rotor torque, suited for equipment with very high inertia starts - as cranes, hoists etc.

Job Posting

Position Available: HVAC Business Development Engineer, Mechanical

The Business Development Representative will work closely with the mechanical and plumbing engineering departments of consulting engineers, design/build contractors, and large end users. This work will require technical expertise along with the ability to develop strong working relationships with the engineering community by regular visits to their offices and providing client education services. Development of strong business relationships with new clients is an essential function of this position.

Contact information to submit resume or for getting more information

California Hydronics Corporation, Human Resources, 2293 Tripaldi Way Hayward, CA 94545, 510-293-1993, 510-264-3499. To apply email hr@calhydro.com

2010 - 2011 Event Calendar

Date	Venue	Presentation Topic	Speaker(s)
Thursday, December 9 5:30 pm - 9:00 pm (Joint meeting with San Jose Chapter)	Doubletree Hotel, Burlingame	Modeling in a Sustainable World	Lynn Bellenger Society President Pathfinder Engineers and Architects LLP
Thursday, January 13 11:30am – 1:30 pm	PG&E Pacific Energy Center, San Francisco	Comparison between Standard 189, CalGreen & International Green code	Cole Roberts, ARUP
Thursday, February 3 5:30 pm - 9:00 pm	Scott's Seafood, Oakland	Unique Case Studies in Acoustics	J. Byron Davis, Vibro- Acoustic Consultants & Roman Wowk, Papadimos Group
Thursday, March 3 5:30 pm – 9:00 pm (Joint meeting with Redwood Section)	4 Points Sheraton, San Rafael	TABB/SMACNA	Gary Schwenk, SMACNA; Tim Perry, TABB Instructor & Pat Pico, ICOM Mechanical
Thursday, April 21 10am-1pm	www.ashrae.org/education/page/557	Ground Source Heat Pump Systems	ASHRAE Society Webcast
April Tech Tour	TBD	TBD	TBD
Thursday, May 5 5:30 pm - 9:00 pm	PG&E Pacific Energy Center, San Francisco	Showcase/Tech Awards/Student Science Fair	Vendors and Award Recipients
Thursday, June 9 5:30 pm - 9:00 pm	Scott's Seafood, Oakland	TBD	TBD

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