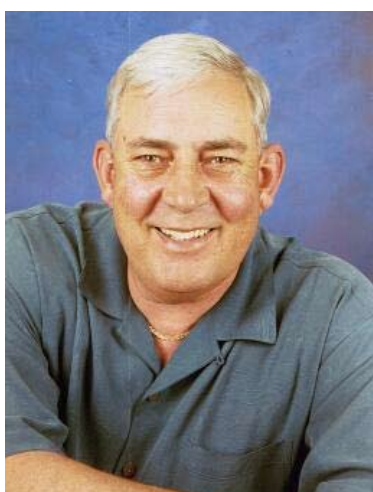


FOG DISPENSER



ASHRAE
Golden Gate
Chapter

NOVEMBER 2011 DINNER MEETING



MAIN PROGRAM: AQUIFER FOR COOLING

Speaker: TONY COSTA

Antonio (Tony) Costa, Chief Mechanical Engineer and President of Costa Engineers, Inc. He graduated from California Polytechnic University, San Luis Obispo, in 1969 with a Bachelor of Science in Environmental Engineering. His professional registrations include Mechanical Engineer licenses in California, Arizona, Colorado, Idaho, Nevada, Oregon, Utah and Washington. He is a LEED Accredited Professional, and is certified in Building Design and Construction by the

USGBCI. He is a life member of ASHRAE, and is also a member of the American Society of Plumbing Engineers (ASPE) and the National Fire Protection Agency (NFPA). He has earned ASHRAE Technology Awards at the Chapter, Regional, and Society level and has written articles that were published in the ASHRAE journal (2005 and 2011).

Tony was also a speaker at the 2007 ASHRAE conference.

PRESENTATION SUMMARY:

The presentation will discuss the utilization of well water as a cooling medium and its integration with displacement ventilation systems.

INSIDE THIS ISSUE:

Event Calendar	2
President's message	2
Historian Article	3
Employment Opportunitess	4
Marble Draw	4
Chapter Seminar Committee	4
YEA Activities	5
Chapter Research	6
Membership Promotion	6
Society News	7-8

Other News	9
Educational Opportunities	9-10
Technical Article	11-12
Ashrae Guides & Workshops	13-14
October Meeting Recap	15
Eric Andresen Tournament	15
Board and Chair Members	16
Ad Page and Ad Rates	17-18

THURSDAY, NOVEMBER 10,
2011 (5:30 PM TO 9:00 PM)
P G & E PACIFIC ENERGY
CENTER, SAN FRANCISCO

AGENDA:

- 5:30 pm
Registration and
Social Hour
- 6:30 pm
Dinner with announce-
ments and introductions
- 7:45 pm
Break
- 8:00 pm
Main Program
- 9:00 pm
Adjourn

COST:

GG ASHRAE members,
but please register

Before 3pm, Fri. 11/4	\$40.
After 3pm, Fri. 11/4	\$50.

Non-Members,
but please register

Before 3pm, Fri. 11/4	\$50.
After 3pm, Fri. 11/4	\$55

Students/Voucher Holder
Free, but please register

GOLDEN GATE ASHRAE
FOG DISPENSER
VOLUME XLVIV-NUMBER 9
NOVEMBER 2011 COVER

2011-2012 EVENT CALENDAR:

- **THURSDAY, NOVEMBER 10** **5:30 PM – 9:00 PM**
LOCATION: PG&E Pacific Energy Center, San Francisco
TOPIC: [Acquifer Cooling](#)
SPEAKER: Tony Costa, Costa Engineers, Inc.

- **THURSDAY, DECEMBER 8** **5:30 PM - 9:00 PM**
(JOINT MEETING WITH SAN JOSE CHAPTER)
LOCATION: San Mateo
TOPIC: [Health Care](#)
SPEAKER: Panel Discussion

- **THURSDAY, JANUARY 12** **11:30AM – 1:30 PM**
LOCATION: PG&E Pacific Energy Center,
San Francisco
TOPIC: [TBD](#)
SPEAKER: TBD

- **THURSDAY, FEBRUARY 9** **5:30 PM - 9:00 PM**
LOCATION: Scott's Seafood at Jack London Square,
Oakland
TOPIC: [TBD](#)
SPEAKER: TBD

- **THURSDAY, MARCH 8** **5:30 PM – 9:00 PM**
(JOINT MEETING WITH REDWOOD SECTION)
LOCATION: Four Points Sheraton, San Rafael
TOPIC: [TBD](#)
SPEAKER: TBD

- **THURSDAY, APRIL 12**
LOCATION: Scott's Seafood at Jack London Square,
Oakland
TOPIC: [TBD](#)
SPEAKER: TBD

- **APRIL TECH TOUR (DATE: TBD ??)**
TOPIC: [Building Tour](#)

- **THURSDAY, MAY 10** **5:30 PM - 9:00 PM**
LOCATION: PG&E Pacific Energy Center, San Francisco
TOPIC: [Product Show](#)
SPEAKER: TBD

- **THURSDAY, JUNE 14** **5:30 PM - 9:00 PM**
LOCATION: Scott's Seafood, Oakland
TOPIC: [TBD](#)
SPEAKER: TBD

TBD = To Be Determined. Visit www.ggashrae.org/calendr.htm for updates, presentation summaries, speaker biographies and to register for the meetings.

PRESIDENT'S MESSAGE, NOVEMBER 2011

Dear Golden Gate ASHRAE Members and Friends,



October has been filled with hot days and busy moments. It was wonderful to catch up with many of you at our chapter meeting at Scott's. We heard from Steve Taylor on why enthalpy economizers don't work and my appreciation for our chapter's amazing technology researchers and influencers struck me. We have an outstanding opportunity to get involved with ASHRAE locally, regionally, or at the Society level. Every member has knowledge and experience to contribute.

Another reminder of Golden Gate's strong roots and broad outreach came up this month. One of our chapter members contacted Society for Climatic Data we helped develop and publish which went on to become adopted into California Title 24. I learned that this document began in 1963 as Recommended Outdoor Design Temperatures – Northern California and is still referenced today by most of us without even knowing it. I imagine Steve Taylor's latest research and recommendations for ASHRAE standards benefit from this information as well. What we gain from publications and presentations will influence our designs, our decisions, and maybe even how we came to live in and enjoy Northern California's beautiful climate!

Please join me at the PEC in San Francisco on November 10 to hear from Tony Costa. He will present on his Aquifer for Cooling project at College of the Siskiyous, a 2011 ASHRAE Technology Award and feature in the October ASHRAE Journal.

Finally, as you may have learned from ASHRAE society, Immediate Past President, Lynn Bellenger passed away on October 19. I had the privilege of getting to know her only briefly when she presented to our chapter last December. She impressed me with her passion for ASHRAE, interest in YEA, and established leadership as a woman in engineering. She will be greatly missed.

Best Regards,

Kristin DeMartini, Golden Gate ASHRAE President

November – 2011.....Historically speaking...."Betterment"

Tom Gilbertson, Chapter Historian

The latest ASHRAE Journal documents a technology that has constitutently high...over 300% to 400% annual return on investment.....and it is the least expensive, and simplest of "technology".....and it is "old-fashioned"....(lets make that "historic").....it is "insulation".....Perhaps we should learn from this "old-fashioned" technology that seems to have the most beneficial of



applications in our industry....ASHVE and ASHRAE have "preached" insulation of years.....so lets just do it!...."efficiency" has become the watch-word of our technology....but the simple, old-fashioned "insulation" ratchets-up the effectiveness of the "efficiency".....we might as well make it so that our applied technology has to do "less work"...and that starts with "insulation"...to minimize the heating and cooling loads....

Over ASHRAE's nominal ..."100 year-run"...our industry has paralleled a little remembered historical act...the "Pure Food and Drug Act" of 1906....This act had a revolutionary concept at the time....and yet today....not having this Act in place is absolutely unthinkable....We take for granted that every package of food or drink that we open...is absolutely safe for consumption....historically....this was clearly not the case....part of the "demonstrations" that were in favor of the

repeal of Prohibition ...in the 1930's.....were anchored in the knowledge that frequently as many as 100 people at a time would either become sick....or would actually die...from consuming unsafe beverages....which gets us to the current activity... "demonstrations"...of which there have been many historic examples.....none of which seem to me to have involved our industry.....at least I cannot think of a single issue that brought ASHRAE-members, as definable participants....to the fore.....I guess we are just too busy solving all of the interesting engineering problems....and that is pretty good...ASHRAE, ASHRAE-technology, and ASHRAE members have made remarkable, and steady progress...real progress through the years.....in improving the quality of life for the people of the World....better food....better health....better comfort.....better working conditions.... better opportunities....historically.....ASHRAE is in the "betterment" business....



EMPLOYMENT OPPORTUNITIES

DISTRICT SALES MANAGER – CALIFORNIA BAY AREA COMPANY:

Belimo

Description

Come join Belimo's dynamic sales team! Belimo is a growth oriented global company committed to its products and the people who drive its success. Belimo is a world leader in the design, manufacture and marketing of damper actuators and control valve assemblies used in commercial HVAC systems. Belimo is seeking a dynamic District Sales Manager to cover the California Bay Area territory. The DSM is responsible for the successful sale and support of our Commercial HVAC Electric Damper Actuators and Motorized Control Valves. Our Customer/Partner is the specialized community of commercial Control Contractors and Control Distributors. The basic sales strategy is to grow existing repeat business through outstanding service, relationship building, product knowledge, and application knowledge. New business is acquired via this same strategy but is complimented with "pull through" sales efforts with End-Users and Consulting Engineers for the purpose of acquiring "flat specification" demand for our products.

Qualifications:

- 5 years proven sales track record*
- 5 years experience in the HVAC or related technical field*
- Strong organizational, interpersonal, and negotiation skills*
- Strong communication and presentation skills*
- Value added sales style with demonstrated ability as technical solution provider*
- MS Excel, MS Word and other computer skills required for sales reporting and managing home office*

Interested candidates should visit our career web site at www.belimo.us/careers.com or send resume to cindy.niedziela@us.belimo.com

MARBLE DRAW



Ross Farris & Christine Lee

A big thank you to California Hydronics Corp, who graciously donated prizes for the last meeting!

We would also like to extend a big congratulations to Matthew Jaeger for winning the marble draw last meeting! Talk about beginners luck; it was his first meeting attendance and he took home a whopping \$500 big ones! So the odds of winning have been reset to 1 in 9 for a prize of \$500. Who knows, maybe next month is your luck month!

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 Ross Farris or Christine Lee for more details:

RFarris@glumac.com - 415.398.7667.

Christine.Lee@arup.com – 415.957.9445

SEMINAR COMMITTEE

Chapter Seminar Committee

For any information or with any questions about tech awards, please contact David Blindheim



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. YEA hosts social events, technical tours, and helps with outreach to young students in the Bay Area. We have a fun schedule planned this year, so pencil them into your calendar!

Recent Event - Critchfield Mechanical Fabrication Shop Tour

For those of you that missed this tour, it was described by one of the YEA members as "the best tour ever!" Seven Golden Gate YEA members and four San Jose YEA members made the trip down to the CMI facility in San Jose. There were two parts to the tour: 1) BIM presentation and then the 2) fabrication tour. On the tour, the young engineers saw the waterside and airside systems being built. CMI also made personalized YEA signs with the laser cutter for the members on the tour (pictured above)!!

For more information and photos of the visit check out:

www.ggyea.org

Group photo of the YEA members:

Thank you to our wonderful hosts and organizers: Steve Poe, Dino Spadoni, Dustin Holley, Rishav Bordoloi, Althea Benigni, Tim Trias, Navid Saiidnia, Kyle Martinez (all CMI), and Joe Chin (San Jose YEA Committee Chair).

Designers of the laser cut YEA signs: Tim Bradley and Pete George (both CMI)



Next Event- 2011 YEA Bowl Night

November 9th, 2011-6:00-8:00pm- Yerba Buena Bowling, San Francisco, CA

Our 3rd Annual YEA Bowl Night is here, there will be bowling, food, beverages, and trophies! Come out and join the fun. It is very important to RSVP to insure a spot on the lane and make sure you get enough food!! Sign up today!

Golden Gate Members: \$5

Chapter Members (San Jose, etc.) & Society Members: \$10

Guests: \$15

RSVP by November 4th <http://2011yeabowl.eventbrite.com/>

THANK YOU TO OUR BOWL NIGHT SPONSORS:

ARUP



MEMBERSHIP PROMOTION

Erica Stewart

October was Membership Promotions month and we had an excellent turn out of new and continuing members at our dinner meeting on October 13, 2011. As a special incentive, those who joined during the month of October will get a free dinner at our November dinner meeting at the Pacific Energy Center. If you know colleagues who are not currently ASHRAE Society or Chapter members and would benefit from membership, but missed this special offer there's another chance to take advantage of a special promotional offer: we'll have another Membership Promotion event in February, so stay tuned!

Please join us in welcoming our new members:

STUDENTS

Mr. Sam Brunswick
Mr. Nicholas Riedel

ASSOCIATES

Mr. Elliot Alvarez
Mr. Dwain Botello
Mr. Philip Cunningham
Mr. Nicolas Faudier Magnan
Mr. John Hill Gardner III

Ms. Elizabeth Joyce
Mr. Lloyd Mariner
Mr. Steve Ouimet
Mrs. Suheeva Sivakumar
Mr. Shaun Van't Hul

MEMBERS:

Mr. Porus Antia
Mr. Armando Concepcion
Mr. Je Keple-Korn

MEMBERSHIP ADVANCEMENT

If you are an Associate Member, becoming a full member may be easier than you think. The following count toward the 12 points necessary to advance to full Member:

Non-accredited degree = 4 points

Accredited degree = 6 points

P.E. = 3 points

Every year working in industry = 1 point

The following people have recently advanced from Affiliate to Associate or from Associate to full Member.

Please join me in congratulating them:

Mr. Jason Benson, Associate
Ms. Kristin DeMartini, Member
Ms. Annie Foster-Courtney, Member

CHAPTER RESEARCH COMMITTEE

The following individuals and companies have generously supported ASHRAE Research and the Golden Gate Chapter for the 2010-11 Campaign.

Thank you for supporting the research of tomorrow, TODAY!

ORGANIZATIONS

\$1000 & Over

Bay Area SMACNA

\$250 to \$999

Taylor Engineering LLC
Acutherm
Nazzaro & Associates

Up to \$249

Peterson Mechanical

INDIVIDUALS

\$1000 & Over

Thomas Gilbertson
Glenn Friedman

\$250 to \$999

Richard Charles
James MacDonald
Max Sherman
Edward Arens
Steven Taylor
David Nazzaro

Up to \$249

Clifford Scofield
Jack Palmer
Gerald Yaffe
Edgar De Guzman
Kristin DeMartini
Dick Friedman
Gary Harbison
Carl Jordan
Joo Kim
James Nemecheck
Shlomo Rosenfeld
John Cross
Meng-Hsiu Chen
Wasil Popow
Scott Wayland

Erik Kolderup
Jeffrey Violet
Mark Walton
Thomas Weaver
Isabelle Lavedrine
Annie Foster Courtney
James Dunham
Yehia El-Sayed
Eugene McCabe
W. Rinefort
John Estes
Jeffrey Solberg
Jonathan Robertson
Alfonso Ortega
Earl Bedard
Gail Brownell

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

For more information, please contact Jon Shipley 415-264-5509, jshipley@victaulic.com

We are currently at \$26,500.

ASHRAE and Penn State Partner on Building Efficiency Hub

Philadelphia – A newly signed memorandum of understanding brings together ASHRAE and Pennsylvania State University (Penn State) to improve energy efficiency and reduce the environmental impact of buildings through the Greater Philadelphia Innovation Cluster (GPIC) for Energy-Efficient Buildings.

ASHRAE and Penn State signed the memorandum today to pursue common objectives related to GPIC. GPIC is a 24-member consortium, being led by Penn State, which has been designated as an Energy Innovation Hub of the U.S. Department of Energy and is located at the Navy Yard in Philadelphia, Pa. The goals of GPIC are to transform the building retrofit industry from serial fragmentation to integrated systems methods, to improve design tools, building systems, public policies, market incentives and workforce skills needed to achieve a 50 percent reduction of energy use in buildings, and to stimulate private investment and quality job creation in Greater Philadelphia and beyond.

"ASHRAE is looking forward to working closely with Penn State and other GPIC members on improving energy efficiency and reducing carbon emissions," Ron Jarnagin, ASHRAE president, said. "GPIC represents an exciting step forward in finding ways to increase energy efficiency. ASHRAE is happy to bring the knowledge and technical expertise of its volunteer members to the table to help create a broader knowledge of energy efficient and sustainable building practices."

"ASHRAE brings a tremendous amount of technical knowledge and experience that will be very useful to the GPIC as we strive toward solving one of the nation's most serious energy problems by dramatically reducing energy consumption in commercial buildings. Together, we can create quality jobs in the region and boost the building industry," Henry Foley, executive director of the GPIC and vice president for research for Penn State, said.

ASHRAE will assist in the GPIC effort in several areas, including research, education, certification, standards and guidelines and by applying the society's Building Energy Quotient (bEQ) program to buildings at the Navy Yard. ASHRAE may also help obtain As-Designed and In-Operation bEQ ratings for buildings in Greater Philadelphia and can ensure that GPIC considers use of ASHRAE certifications to support its objectives.

ASHRAE Presidential Member Bellenger Remembered

Immediate past ASHRAE President Lynn G. Bellenger, who served as the first woman president in the Society's 116 year history, passed away Wednesday, Oct. 19. She was president for the 2010-11 Society year, with her term ending in June 2011.

Bellenger, P.E., Fellow ASHRAE, was a recognized expert in energy management, with a strong focus on the need for energy modeling to help create and refine more efficient buildings. She was a partner, Pathfinder Engineers & Architects, Rochester, N.Y.

"We at ASHRAE are greatly saddened by the death of our former president and our friend," Ron Jarnagin, ASHRAE president, said. "Her lifelong passion for engineering excellence resonated within our membership and our industry, inspiring us through her belief that engineers will lead an energy revolution with innovation. Through her service, she showed that there is a path available to all who wish to extend the influence of engineering principles to better serve the world we live in."

As ASHRAE president, Bellenger focused on Modeling a Sustainable World, sharing her thoughts about the role of modeling tools and how all involved in the built environment industry must come together to take advantage of "the rich opportunities for optimizing building performance through a collaborative approach from the beginning." You can watch Lynn deliver her speech here. You may also read her presidential speech as it appeared in the August 2010 ASHRAE Journal here.

In an interview last year, Bellenger talked about her involvement in energy efficiency and how much has been put in recent years on the need to save energy.

"One of the cool things about the sustainability movement is that it has ignited a passion in people that is changing the world. That passion has brought a sense of energy and excitement to the industry and attracted people who are committed to designing and operating sustainable buildings. I don't see that changing in the future," she said.

To honor the remarkable legacy that she leaves, ASHRAE announced on Friday the creation of the Lynn G. Bellenger Memorial Fund, which will be used to recognize women in engineering through scholarships or other means. Please click here if you would like to donate. Otherwise, contributions can be mailed to Lynn G. Bellenger Memorial Fund c/o ASHRAE 1791 Tullie Cir. NE Atlanta, GA 30329.

Bellenger was a recipient of an ASHRAE Exceptional Service Award, a 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.

Funeral arrangements are private.

If you would like to send your condolences please email publicrelations@ashrae.org. Messages will be assembled into a remembrance for the Bellenger family.

DOE Updates National Reference Standard for Commercial Buildings to 90.1-2010

Following preliminary analysis that ASHRAE/IES's 2010 energy efficiency standard contains significant energy savings over the 2007 standard – 18.2 percent source energy savings and 18.5 site energy savings – the U.S. Department of Energy (DOE) has issued a ruling that establishes the 2010 standard as the commercial building reference standard for state building energy codes.

In an announcement in the Oct. 19 edition of The Federal Register, DOE attributes the greater energy savings to improvements in ANSI/ASHRAE/IESNA Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, related to better lighting, daylighting, controls and building envelope and better mechanical systems and application to more systems.

With the Oct. 19 ruling, Standard 90.1-2010 serves as the commercial building reference standard for state building energy codes under the federal Energy Conservation and Production Act. As a result, states are required to certify by Oct. 18, 2013, that they have updated the provisions of their commercial building code regarding energy efficiency to meet or exceed 90.1-2010.

"The foundation of energy efficient buildings continues to grow stronger with the news that DOE is now referencing the 2010 standard," Ron Jarnagin, ASHRAE president, said. "ASHRAE hopes to make that foundation even stronger through our current work with IES developing the 2013 standard."

"The DOE has determined that the quantitative analysis of the energy consumption of buildings built to Standard 90.1-2010, as compared to buildings built to Standard 90.1-2007, indicates national source energy savings of approximately 18.2 percent of commercial building consumption," according to DOE. "Additionally, DOE has determined site energy savings are estimated to be approximately 18.5 percent."

The DOE noted that the newer version of the standard contains 19 positive impacts on energy efficiency. These impacts included changes made through the public review process in which users of the standard comment and offer guidance on proposed requirements. Specifically the positive impacts include:

- *Requirements for daylighting controls under skylights and commissioning of daylighting controls; increased use of heat recovery; cool roofs in hot climates; lower illuminance in certain exterior zones; skylights and daylighting in some building types; reduced ventilation energy; supply air temperature reset for non-peak conditions; efficiency requirements for data centers; lower lighting power densities; control of exterior lighting; occupancy sensor for many specific applications; daylighting control requirements for side-lighted spaces; and daylighting controls in more spaces.*
- *Updated chiller efficiency requirements.*
- *Extension of VAV fan control requirements.*
- *Expansion of new lighting power densities to more retrofits and automatic damper requirements and use of economizers*
- *Minimizes exceptions to switched receptacle requirement.*

The ruling comes on the heels of a July announcement that established the 2007 standard as the commercial building reference standard for state building energy codes. The DOE noted that because the 2010 determination was published prior to the two-year deadline states have to demonstrate that their energy code meets or exceeds the stringency of the 2007 standard, states are allowed to file just one certification to address both determinations.

Since being developed in response to the energy crisis in the 1970s, Standard 90.1 now influences building designs worldwide. It has become the basis for building codes, and the standard for building design and construction throughout the United States. ASHRAE and IES publish a revised version of the standard every three years.

GREEN TENANT TOOLKIT EMPOWERS WIN-WIN COLLABORATIONS BETWEEN OWNERS AND OCCUPANTS OF COMMERCIAL BUILDINGS

San Francisco, CA—Today, SF Department of Environment (SFE) and the Business Council on Climate Change (BC3) release the Green Tenant Toolkit, an online resource to enhance the energy efficiency and sustainability of commercial buildings by empowering collaboration between owners, property managers, tenants, and occupants in San Francisco.

Inspired by the Mayor's Existing Commercial Buildings Task Force Report (2009), the Green Tenant Toolkit includes best practices for tenants and building management to engage in win-win environmental initiatives, a guide to integrating green lease language into negotiations, and a scorecard to summarize key sustainability metrics for any property – whether or not it has a green certification. "Split incentives" are a key problem, where the person who pays for an energy retrofit might not be the one that benefits. The toolkit is designed to help owners and tenants mutually benefit. Eliminating barriers to sustainability throughout the life of a commercial lease helps to minimize operating costs, save water, reduce carbon emissions, and increase energy efficiency.

"BC3 continues to foster innovation between the public and private sectors," said Mayor Ed Lee. "The Green Tenant Toolkit is a great resource to help commercial tenants and property owners find win-win opportunities to reduce utility costs and make a positive contribution to our City's climate goals."

"The Green Tenant Toolkit is a key addition to San Francisco's campaign to improve the performance of the built environment using every tool at our disposal," said SFE Director Melanie Nutter. "Public policy and private leadership are essential to protecting the environment and rebuilding the economy, and the Business Council on Climate Change exemplifies that leadership."

The toolkit was produced by a Business Council on Climate Change working group of twenty-six professionals from leading commercial real estate companies, design and architecture firms, law firms, model tenants, and building trade organizations.

"Encouraging mindful behavior is critical to maintaining the sustainable performance of our buildings. The Green Tenant Toolkit can enable tenants, building owners and managers to work in unison to achieve sustainability goals," said Stephanie Rico, VP of Environmental Affairs at Wells Fargo and a member of the Green Tenant Toolkit Working Group.

The Green Tenant Toolkit is available online at www.greentenanttoolkit.com. As it is intended to be a living, evolving tool, user feedback is encouraged and appreciated.

EDUCATIONAL OPPORTUNITIES

New Course on Building Codes for Mechanical Engineers

UC Berkeley Extension is announcing a new course for mechanical engineers: **HVAC Mechanical Design Codes**. Learn the California mechanical code and related building, plumbing, electrical and fire codes that affect HVAC designs. Understand HVAC related codes, and acquire the skills to obtain design approvals from relevant government agencies. Examine the concepts of protecting occupants and buildings from hazards associated with mechanical equipment such as boilers, chillers, and ventilation exhausts and understand the importance of protecting exit routes. Examine practical design examples and understand how to apply relevant codes to meet mechanical and electrical code requirements and Cal/OSHA. (Please note, the California Energy Code is not included.) The course will be taught by Richard Paillon, PE

X415 (1 semester unit in Mechanical Engineering)

5 meetings

November 22 to December 20: Tues., 6:30-9:30 pm

San Francisco: Room 808, UC Berkeley Extension Downtown Center, 425 Market St., 8th Floor (enter on Fremont St.)

\$445 (EDP 301846)

To register go to: <http://extension.berkeley.edu/cat/course2546.html>

Obtain the skills needed to:

- Improve overall building performance
- Design high-performance HVAC systems
- Effectively collaborate on an integrated design team

ASHRAE has created the HVAC Design Essentials to provide intensive, practical education for designers and others involved in delivery of HVAC services. Developed by industry-leading professionals, this workshop provides participants with training design to accelerate their evolution into effective member on a design, construction or facilities maintenance team.

In addition to gaining in-depth knowledge and understanding, attendees will receive real-world examples of HVAC systems based on the newly renovated ASHRAE Headquarters building. The workshop teaches a systematic approach to guide a design team to a solution that optimally meets the client's expectations.

Visit www.ashrae.org/hvacdesign to register

ASHRAE HVC Design Essential Workshop

January 11-13, 2012 • ASHRAE Foundation Learning Center • Atlanta, GA

ASHRAE Learning Institute

Seminars & Courses at ASHRAE's Winter Conference in Chicago, IL

2 WAYS TO REGISTER

Internet: www.ashrae.org/lasvegascourses

Phone: Call 1-800-527-4723 (US and Canada) or 404-636-8400 (worldwide)

FULL DAY PROFESSIONAL DEVELOPMENT SEMINAR

\$485/\$395 ASHRAE Member -- Earn 6 PDHs/AIA LUs or .6 CEUs

The Commissioning Process in New & Existing Buildings

Saturday, Jan 21 – 8:00 a.m. to 3:00 p.m.

Data Center Energy Efficiency

Saturday, Jan 21 – 8:00 a.m. to 3:00 p.m.

Integrated Building Design

Saturday, Jan 21 – 8:00 a.m. to 3:00 p.m.

Using Standard 90.1 to Meet LEED Requirements

Tuesday, Jan 24 – 9:00 a.m. to 4:00 p.m.

Energy Modeling Best Practices and Applications: HVAC/Thermal

Tuesday, Jan 24 – 9:00 a.m. to 4:00 p.m.

HALF DAY SHORT COURSES

\$159/\$119 ASHRAE Member -- Earn 3 PDHs/AIA LUs or .3 CEUs

Understanding Air-to-Air Energy Recovery Technologies & Applications

Sunday, Jan 22 – 2:00 p.m. to 5:00 p.m.

Understanding & Designing Dedicated Outdoor Air Systems (DOAS)

Sunday, Jan 22 – 2:00 p.m. to 5:00 p.m.

Application of Standard 62.1-2010: Multiple Spaces Equations & Spreadsheet Calculation

Sunday, Jan 22 – 2:00 p.m. to 5:00 p.m.

Basics of High-Performance Building Design

Monday, Jan 23 – 8:30 a.m. to 11:30 a.m.

Complying with Standard 90.1-2010: Envelope/Lighting

Monday, Jan 23 – 8:30 a.m. to 11:30 a.m.

Energy Management in New & Existing Buildings

Monday, Jan 23 – 8:30 a.m. to 11:30 a.m.

Advanced High Performance Building Design

Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

The Commissioning Process & Guideline 0

Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

Comply with Standard 90.1-2010: HVAC/Mechanical

Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

Evaluating the Performance of LEED-Certified Buildings

Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

Combined Heat & Power

Tuesday, Jan 24 – 9:00 a.m. to 12:00 p.m.

Healthcare Facilities: Best Practice Design

Tuesday, Jan 24 – 9:00 a.m. to 12:00 p.m.

Project Management for Improved IAQ

Tuesday, Jan 24 – 9:00 a.m. to 12:00 p.m.

Healthcare Facilities: Best Practice Applications

Tuesday, Jan 24 – 1:00 p.m. to 4:00 p.m.

Design Toward Net Zero Energy Commercial Buildings

Tuesday, Jan 24 – 1:00 p.m. to 4:00 p.m.



STATE PRINTING PLANT SAVES ENERGY AND WATER

California's largest Indirect Evaporative Cooling (IEC) project has recently been installed and commissioned at the State of California's Publishing facility in Sacramento. Four Munters IEC modules, with a total air flow capacity of 354,000 Cubic Feet per Minute (CFM) and a sensible cooling production of over 704 tons of cooling, are in place to provide preconditioning for the 100% outdoor air required for the Printing Plant Production area..

Unlike Direct Evaporative Cooling (DEC) systems which cool outdoor air by evaporation of water which then enters the building with the cooled air, IEC or Dry Evaporative Cooling uses a horizontal Polymer tube air-to-air heat exchanger. Scavenger outdoor air is drawn upward across the outside of the horizontal tubes while water is sprayed down through the tube bundle. The outside surface of the tubes are chilled to the ambient Wet Bulb (WB) temperature which, on a hot day in Sacramento, is usually 30 F lower than the ambient Dry Bulb (DB) condition. Air entering the building is drawn through the inside of the horizontal Polymer tubes and dry cooled without the addition of any moisture. The

cooling process is identical to that of refrigeration cooling in that the energy level or enthalpy of the dry cooled air is reduced as it travels through the air-to-air heat exchanger. The hot and humid scavenger air is exhausted to the atmosphere off the top of the IEC module.

The amount of heat exchanger surface area in the Polymer tubes is critical to the heat transfer performance of the air-to-air heat exchanger just as it is in any Thermodynamic process. It has been estimated that the quantity of horizontal polymer tubes installed in the four Munters IEC modules, if laid end to end, would stretch for 28 miles.

The Efficiency of the system is measured by the approach of the entering air ambient DB temperature to the ambient WB temperature with full air flow through both sides of the air-to-air heat exchanger. Project specifications called for a 70 % approach of the DB to the WD condition. As an example, if ambient DB is 100 F and the WB is 70 F, the outdoor air should be cooled from 100 F DB to 79 F DB within the horizontal wetted tubes.

THE STATES DILEMMA

For 50 years, the State Printing Plant had provided pre-cooling of the outdoor air entering the facility with 57 F water pumped from a well and fed to chilled water coils located in the two penthouse mechanical rooms on the roof. The warm water leaving the coils was discharged into the American River. Several years ago it was discovered that the well water was polluted and the Environmental Protection Agency (EPA) stepped in to threaten the assessment of fines to the State of California for pollution of the American River. Something had to be done and fast. With the summer approaching, Printing Plant employees would not stay on the job without proper pre-cooling of the outdoor air.

SAVING ENERGY

Originally, an air cooled water chiller was evaluated to solve the pre-cooling problem. A 700 ton chiller would be required and would need to be located in the parking lot on grade and the chilled water would need to be piped up to the two rooftop penthouses and connected to the pre-cooling coils. The parking lot air cooled chiller would have consumed 1.2 KW of electrical energy per Ton including the water pumping energy up to the rooftop. The IEC modules, with an energy consumption of only 0.2 KW per Ton, were not only more energy efficient but would cost the State of California less in first cost to install. Estimated peak electrical demand reduction on the hottest days of summer would exceed 700 KW compared to the air cooled water chiller.

SAVING WATER

In addition to resolving their EPA problem with the termination of well water usage, the State was intent on minimizing the potable make up water consumed by their evaporative cooling systems. A Dolphin Non Chemical water treatment system was

specified for the water recirculation sumps of both the IEC systems to be installed on the roof and the existing Air Washers in the penthouse mechanical equipment rooms. These Pulse Power water treatment systems were originally developed for cold pasteurization in the liquid food industry. The device encapsulates water hardness minerals and particulate into a nonadherent powder that is harmlessly deposited in the bottom of the sump. The Dolphin unit controls scaling of the wetted heat exchanger surfaces and reduces biological growth in the sump water. Under proper operation, the pulse power component will maintain clean sump water with low bacteria counts free of biofilm and will eliminate the breeding ground for the amplification of Legionella and other waterborne pathogens.

Also, the Polymer tube IEC systems have been tested for over 6 years in California's most severe evaporative cooling environment; Death Valley. With summer design temperatures above 121 F and potable water with an average hardness of 1500 PPM, two systems installed at the CALTRANS Cow Creek Maintenance Facility, near the town of Bad Water, have demonstrated a self cleaning feature which helps keep the wetted surfaces of the Polymer tube free of water hardness deposits. During fan start up of the supply and scavenger fans, the heat exchanger tubes flex slightly due to air pressure differences from the wet to the dry side of each tube. The flexing causes the calcium deposits to drop harmlessly into the sump.

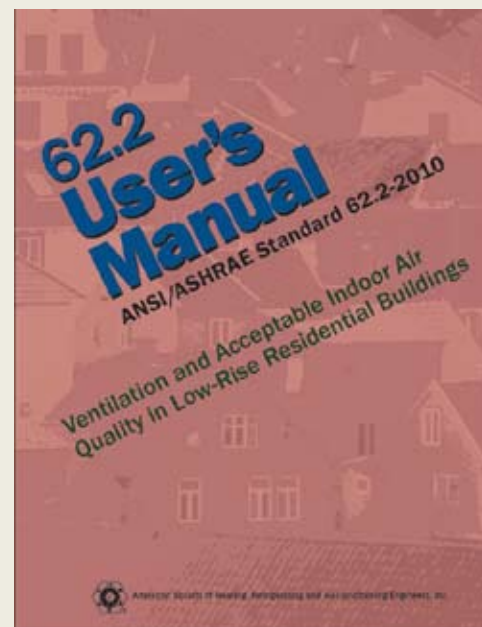
The combination of the Dolphin and the self cleaning feature of the Polymer tubes will allow the State to operate their IEC water sumps at higher cycles of concentration thereby reducing the amount of wasted water required for purging the minerals and particulate matter from the water recirculation system.

MEASURED PERFORMANCE

On August 25, 2011, a test was run on the IEC module Marked IEC-3. Ambient temperatures at 2:00 PM that afternoon were 95.5 F DB and 68.5 F WB (See Attached Psy. Chart). The Munters IEC unit was cooling the outdoor air leaving the dry side Polymer tubes down to 74.1 F DB and 61.5 F WB. This represents an approach to the ambient WB condition of 79.26 %, 11 % above the specified performance requirements with full CFM flow through both sides of the air-to-air heat exchanger. The dry side flow through the heat exchanger is 98,200 CFM constant volume. The sensible cooling produced is calculated to be 192.6 Tons. Assuming an 80 % Saturation Efficiency for the Air Washers located downstream of the IEC module, the supply air to the building would be in the range 64 F DB, ignoring fan heat. The sprays on the Air Washers are modulated on and off to maintain a room relative humidity of around 60 % which is optimal for the printing process. Leaving air temperature set point off the IEC coolers is controlled by varying the wet side air mass flow with Variable Frequency Drives (VFD) on the scavenger fans.

For more information, please contact Mike Scofield via email at cmscofield@aol.com.

Mike Scofield, P.E. is an active member on ASHRAE Technical Committees TC-5.7 Evaporative Cooling and TC-5.5 Heat Recovery and has presented many seminars at Society meetings on energy conservation topics. He is an ASHRAE Fellow and serves on The College of Fellows Committee for Society.



62.2 User's Manual

This is a complete guide to meet the requirements of ANSI/ASHRAE Standard 62.2-2010, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings*. This manual provides explanations for every section of the standard and includes many clear, specific examples covering most sections.

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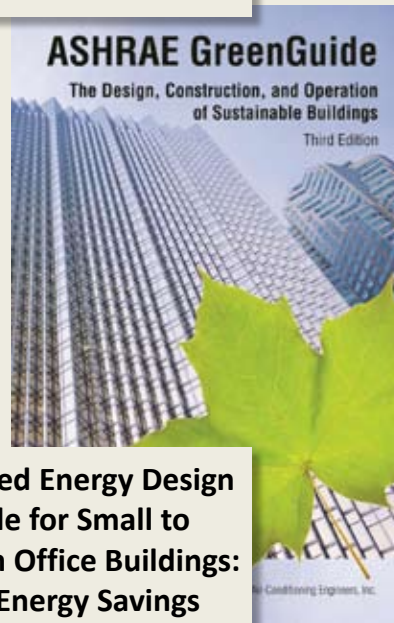
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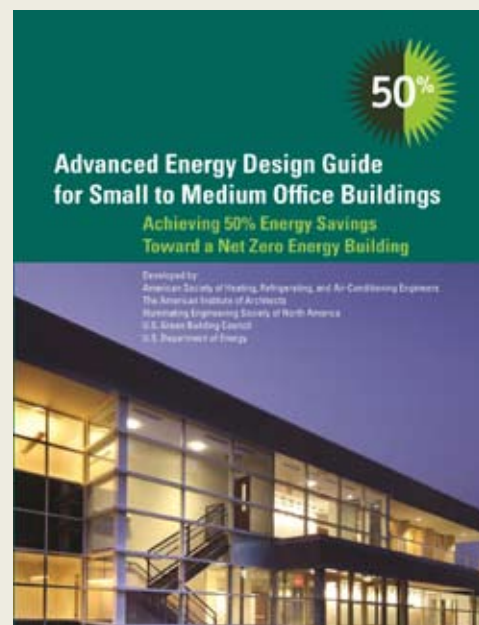
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Joel Primeau, ASHRAE Member, HBDP - Course leader

For more information and to register, visit ashrae.org/hvacdesign

OCTOBER MEETING RECAP



ERIC ANDRESEN MEMORIAL TENNIS TOURNAMENT

On Friday October 21, 2011 Golden Gate ASHRAE hosted the 6th annual Eric Andresen Memorial Tennis Tournament at the San Francisco Tennis Club. This year, thanks to generous sponsorships from Trinity EMCS and Air Treatment Corporation, 100% of the tournament entry fees went to Eric's memorial scholarship fund and we raised over \$900. With 12 entrants from 7 companies we had plenty of heated competition. Perennial contender Dan Noone from Air Treatment emerged victorious this year, followed closely by John Adachi of Enervex in second and Saied Nazeri of WSP Flack + Kurtz in third. Prizes of gift certificates to Apple, Golfsmith, and Peets were provided by Norman S. Wright. We look forward to seeing more of you out there next year!



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