



ASSOCIATION OF
ENERGY ENGINEERS

Bay Area Chapter

NEWSLETTER

February 2004

Meeting Information
Tuesday,
February 24, 2004

AEE Bay Area Chapter Presents

“EBMUD Facilities Tour and Presentation”

4:00 – 5:15 p.m.

EBMUD Facilities Tour and Presentation

6:00 – 7:30 p.m.

Drinks and Appetizers at Pacific Coast Brewery

Location:

Meet at EBMUD

Cost:

\$15 Members

\$20 Non-Members

\$5 Students

Reservations:

Reservations can be made on our chapter website at www.aee-sf.org, by e-mail to luther@energy-solution.com, call Luther Koph at (510) 482-4420 ext 230 or by FAX at (510) 482-4421 using the handy FAX form.

President's Message

Well I guess grassroots efforts do produce results. And I'm not talking about presidential campaigns. It appears (from a Draft Decision) that the PG&E Pacific Energy Center will continue to provide the same level of quality service and resources thanks to our collective, resonating vote of confidence. (If you're unclear on the context see last month's Pres Message.)

Thanks to Jim Kelsey for our refreshing presentation on refrigeration in January. Impressive energy saving opportunities – even in Utah where it's ~\$0.04 a kWh! (See Jim Kozelka's Secretary Report in this newsletter for more info). Before you decide to relocate to the Coal State for cheaper electricity, there's good news on the horizon.

President's Message Cont.

Pacific Gas and Electric Co. and the CPUC (as well as others) started out the year with a feel-good agreement that, if approved, could affect all 4.8 million customers – personally as well as professionally. The agreement proposes a rate reduction based on how much customers were paying in emergency surcharges that the utilities commission approved in March 2001 to help the state pay for additional power during the energy crisis.

For the average residential customer, rates will drop about 4.1%, and business customers, who paid the bulk of the surcharges, will see their rates go down between 9 and 15% depending on their customer class. If the agreement is approved by the CPUC later this month, the reductions will be made retroactive to January 1, 2004. Unfortunately, this will have no impact on natural gas prices which could easily top \$1.00 per therm (if it hasn't already).

In case this newsletter is placed in a time capsule, I'd like to make note of a budding energy resource technology. Who knows, when you clean out your closet in the future and look back at decade old issues of AEE newsletters you will see the first mention (besides Newsweek) of the Plasma Converter by Startech Environmental. The proprietary converter turns trash, even hazardous waste (SHAZAM!), into power, in the form of hydrogen-rich gas. As you might guess, there are units operating in Japan and bids out in Europe, Latin America, and Pacific Rim.

Bringing it back to here and now (or the next few months anyway), I'm looking forward to our future meetings, tours, and joint presentations (with other organizations). Raj and Luther are putting together a great schedule. I also would like to reinvigorate the Bay Area Chapter's scholarship efforts. The Board will be discussing details at our next Board meeting in March. Thanks to those of you who have already expressed interest in the subject. For that matter, as always, please let me/us know how we can be a better organization for you and the greater community.

2004 Board

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Membership / Database – Steve Rottmayer
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Community Involvement – Open

Scholarships and Awards – Rory Moran
(925) 437-2718

Member At Large – Ed Spivey
(925) 299-8983

Interested in involvement?
Contact: Bruce Chamberlain
(510) 482-4420 ext 227

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A special thanks to our Corporate Members. If you were a corporate member, you could have your card advertised (and on the web site too).



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President's Message Cont.

Gung Hay Fat Choy (which I just found out means "congratulations on prospering in money"- note the term is a congratulations for something already achieved). Best of fate in mastering the more enviable characteristics of the Year of the Monkey: "Clever, skillful, and flexible, they are remarkably inventive and original and can solve the most difficult problems with ease."

Bruce
Bruce Chamberlain
bruce@energy-solution.com

Secretary's Report

**AEE Dinner Meeting, January 27, 2004
At Rustica Restaurant, Oakland**

Jim Kelsey, kW Engineering: Commissioning State-of-the-Art Controls in Grocery Refrigeration Systems

The AEE Bay Area Chapter's own, Jim Kelsey, presented an interesting and compelling presentation on energy efficiency measures (EEMs) for grocery store refrigeration systems. Jim started by noting that the grocery market sector is a good market for EEMs because grocery stores have very high electricity consumption, typically approx 48 kWh/sf, which is more than twice that of the commercial office sector. And most opportunities are found in existing stores where refrigeration systems usually represent well over 50% of total store electricity usage.

Next, Jim reviewed the finer points of the basic refrigeration cycle, highlighting the fact that it is suction pressure control that sets the temperature the refrigeration system will control to. This discussion led Jim to defining the "Guiding Principles to Low Cost Energy Efficiency Measures":

- maintain lowest possible head pressure
- maintain highest possible suction temps
- minimize defrost cycle and lighting loads
- maximize use of the capabilities of your system and controls

Jim related how observing these principles requires verifying the existing operating parameters including checking: controller set points, for successive fan operation, VFD's are not bypassed, heat transfer surfaces are clean and unobstructed, defrost schedules (which technicians tend to set longer and more frequently than really necessary), suction set points are set as high as possible and heat reclaim is enabled.

Then, Jim proceeded to illustrate implementing several EEMs with greater capital requirements and savings potentials. Notably, those EEMs include:

- Anti-sweat heater control – The electric resistance heaters used in refrigeration cases to prevent sweating and fogging often run continuously and may account for as much as 10-20kW per store. These heaters are much more effectively controlled with PWM based on humidity. This EEM yields a .5 to 3 year payback.
- Defrost control – These controls are typically timed on fixed intervals and are improved upon by controlling defrost termination using case temperature sensors installed in the case. It can be very expensive to install these sensors so typical payback for this EEM is 2.5 – 6 years.
- Case lighting control – Usually illuminated 8760 hours/year, case lighting is simply and affordably controlled by adding time-of-day schedule. Typical savings of 25% of case lighting load also yield 5-7% savings of overall refrigeration load with a total payback of .2 to 2 years.
- Floating suction pressure control – Implementing controls that adjust suction pressure set point based on the load makes it possible to raise the liquid line temperature 2-10°F. This EEM pays for itself in 3-5 years.
- Floating head pressure control – Head pressure is typically maintained higher than necessary and should be allowed to "float" as low as possible – with caution that it doesn't drop too low. The trade off is more fan energy but less compressor energy. This EEM yields between 2-20% of annual refrigeration system energy use and pays for itself within 1- 4 years.
- Evaporative pre-cooling – At a cost of about \$25k for two condensers, retrofitting evaporative pre-cooling to existing air-cooled condensers can realize up to 24% savings on annual refrigeration system energy use. The example Jim showed yielded a 3 year payback at Utah electric rates!

Jim finished by stressing the importance of fully commissioning these systems, including field verifying operation. A prime example is an EMS control report showing the lighting contactor switching off at night however the control wiring to the contactor was never connected and lights were actually staying on all night. Also, Jim emphasized the impact service technicians have on energy savings – good ones saving energy and money and not so good ones costing energy and money.

Jim Kozelka
Co-Secretary, AEE Bay Area Chapter

Announcement

URGENT!! 2004 INTERNATIONAL AWARDS PROGRAM - CALL FOR ENTRIES

Recognition of excellence by your peers and other professionals in energy management, environmental engineering, and cogeneration is the purpose behind this program from AEE. Entries must be received by March 1, 2004 and there will be no extensions to the deadline and no exceptions will be made. You must also be a member in good standing to receive the award.

Please complete your forms for International and Regional candidates by clicking on the appropriate link below: International Awards form link: <<http://aeecenter.org/forms/form.html?id=38>>
Regional Awards Form Link: <<http://aeecenter.org/forms/form.html?id=40>>

Thank you for your participation in AEE International, Regional and Chapter Awards Program. The application process is fairly straightforward, but time is of the essence. If you are at all considering this or have any questions or concerns, please contact me at 925-437-2718 or rmoran@ureach.com or Jim Waltz at 925-447-1140. You are encouraged to submit for multiple appropriate categories.

Sincerely,
Rory Moran
Scholarships and Awards

Do you know someone who might be interested in joining AEE Bay Area Chapter?

The benefits of joining include:

- Participating in exciting and informative programs
- Receiving a monthly newsletter containing information on meetings, events, and job openings
- Communicating with other energy professionals

For membership application:
Contact Stan Boghosian
(510) 845-7468.

Membership applications may be downloaded from the AEE website at:

<http://www.aee-sf.org/form.rtf>

or

<http://www.aee-sf.org/form.doc>

Meetings are held on the fourth Tuesday of each month. All interested persons are welcome to attend, participate and join.



Bay Area Chapter

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