



**ASSOCIATION OF  
ENERGY ENGINEERS**

*Bay Area Chapter*

# NEWSLETTER

**March 2004**

## Meeting Information Tuesday, March 23, 2004

*AEE Bay Area Chapter Presents*

### “Panel Discussion on Energy Management Systems – Where We Are and Where We Are Going”

**6:00 – 7:00 p.m.**  
Social Time at Rustica

**7:00 – 7:30 p.m.**  
Dinner

**7:30 – 7:40 p.m.**  
Chapter Business

**7:40 – 8:30 p.m.**  
Presentation

**Location:**  
Rustica Restaurant

**Cost:**  
\$25 Members  
\$30 Non-Members  
\$15 Students

**Reservations:**  
Reservations can be made on our chapter website at [www.aee-sf.org](http://www.aee-sf.org), by e-mail to [raj.daswani@arup.com](mailto:raj.daswani@arup.com) or by fax at (415) 957-9096 using the handy FAX form.

## President’s Message

Hard to believe it’s still winter, eh? Record temperatures and reaching for the AC button in the car. Another sign of Spring is the blooming of Expo’s and sidewalk/plaza Fairs. Our Chapter, in fact, has been invited to setup a table at the upcoming Marin County Greenbuilding/Solar Expo. This open air community event is scheduled for Saturday March 20th from 10:00 a.m to 2:30 p.m. at the Masonic Center in downtown Mill Valley. This event is designed to provide a forum for these dynamic industries.

## President’s Message Cont.

The Masonic Lodge, a medium sized historic building recently underwent an extensive renovation which included the installation of a solar electric system with battery backup. A mix of residential and commercial vendors along with local government and non profits will be present to educate and inspire. (For more information call: Kevin Dugan at (415) 871-8929 or [okdugan@msn.com](mailto:okdugan@msn.com)).

Thanks to Dado Hernandez (EBMUD) and Luther Kopf for organizing and presenting a great tour of the new facilities at last month’s meeting. Click your mouse or flip the page to Jim Kozelka’s summary of the tour (Secretary Report). The next meeting is shaping up to be a great opportunity to get the straight talk on energy management systems. The Board will also be gathering for a Board meeting before the meeting...so let me know if you’d like me to bring up any issues regarding the Chapter.

Our fine Chapter has also nominated Karl Brown for three International categories; Energy Engineer of the Year, Energy Manager of the Year, and Energy Project of the Year - National. As you may recall, Karl received an Award for Energy Engineer of the Year from our Chapter last December. Any candidates that aren’t selected for an International award are automatically submitted for Regional award consideration. Thanks to Rory Moran for shepherding this through the system with the AEE national office.

For those of you who are interested in seeing renewable energy join the mainstream culture, I find it heartening that wind power will be integrated into the tallest, arguably most visible and “patriotic” building in the world. The plans for the Freedom Tower – centerpiece of new construction at the World Trade Center site – were recently unveiled. The design includes wind turbines that, perched at 1,500 feet, will generate 20% of the building’s electrical power needs. The building’s height and location at the confluence of the Hudson and East Rivers allows it to overcome turbulence associated with nearby buildings and generate electricity at least 40% of the time, covering the building’s base power demand. The architect is Skidmore, Owens, and Merrill LLP.

Hope the allergies aren’t too bad and we’ll see you on the 23<sup>rd</sup>.

Bruce  
Bruce Chamberlain  
[bruce@energy-solution.com](mailto:bruce@energy-solution.com)

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**Interested in involvement?**  
**Contact:** Bruce Chamberlain  
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# Secretary's Report

## EBMUD - POWER REVENUE ENHANCEMENT PROJECT OR MICROTURBINES WITH ABSORPTION CHILLER COME TO OAKLAND

EBMUD's Project Manager, Diosdado Hernanadez, and Mechanical Engineer, Frank Pizzimenti, treated a dozen AEE enthusiasts to a tour of the new cogeneration (or combined heat and power – CHP) system located at New Administration Building (NAB) in downtown Oakland. Working from the central plant concept, EBMUD installed ten 60kW microturbines to provide combined heat and power to the NAB. A 200-ton absorption chiller was included in the project. This project, and a smaller one at EBMUD's Adeline Maintenance Center (AMC) – two 60kW microturbines and a 30kW photovoltaic array – were conceived and implemented as the Power Revenue Enhancement Project, or PREP. PREP's goals were to save energy and money, increase energy independence, reduce energy distribution demand, and take advantage of California's Self Generation incentives (rebates and preferential natural gas rates for cogeneration systems).

The projects were executed via a design/build format (a unique approach for EBMUD; normally they do their own designs) that included EBMUD pre-selecting the primary equipment and took approximately 2.5 years from conception to completion. Both NAB and AMC systems have been operating for about six months.

The primary equipment for the cogeneration system at NAB consists of:

- Ten Capstone microturbines – 811MBH natural gas input @ 75-80 psig, 60kW and 571MBH exhaust heat output, each
- Five Micogen exhaust heat recovery (exhaust gas to water) heat exchangers
- Five CompAir Hydrovane natural gas compressors

A 200-ton York absorption chiller was also installed to provide cooling to the facility using the hot water generated from the exhaust heat recovered from the microturbines.

The NAB cogeneration system operates in accordance with building thermal demand - heating or cooling. The heat generated by the microturbines is recovered in the form of 160F to 200F hot water via the heat exchangers. The hot water is used to "fire" both the absorber – first priority - or to provide heat to the heating hot water (HHW) system – second priority.

The ten microturbines are staged to operate to provide heat to help meet the building's thermal requirements, either heating or cooling (using the absorption chiller for the latter). If there is no cooling demand then heat is directed to the HHW system, which requires some heat at all times. It was determined that at minimum heating demand three microturbines operate 24/7. The CHP provides almost 100% percent of the NAB heating requirements. And, the CHP system provides about 35% of the building's electrical usage and is expected to reduce electrical usage during the peak power period in the summer by another 12% due to reduced usage of electrically driven centrifugal chillers.

The costs and savings for the project at NAB are best approximated and easily summarized as follows:

Planning/ permits	\$ 60,000
Preliminary design	\$ 160,000
Construction support	\$ 190,000
Design/Build	\$ 3,390,000
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Total cost	\$ 3,800,000
Self generation rebate incentive	\$ 855,000
CEC loan (3%)	\$ 1,900,000
Annual savings	\$ 200,000

The only problems to date were some control issues on start-up and having to replace all Capstone exhaust back-flow prevention dampers. Also, the compressors had problems with rainwater entering the VFD/controls; the manufacturer is remaking the covers to fix the problem. The cogeneration systems at NAB and AMC are maintained under a "bumper to bumper" service agreement with a third party whereby EBMUD pays \$320,000 for "gold- plated" service of 12 units and 6 heat exchangers over five years.

AEE Co-Secretary,  
James L. Kozelka



AEE Bay Area Chapter serves as a unique forum for the discussion of energy issues and concerns. AEE Bay Area Chapter provides common professional meeting ground for facility managers, design and specifying engineers, utility and vendor representatives and energy researchers to participate in vigorous peer-to-peer dialogue, learning and group discussion.

AEE Bay Area Chapter strives to provide quality professional development opportunities that build knowledge and skills through meetings, seminars and publications. Emphasis is placed on:

- Assessing the applicability of emerging technologies, and
- Improving the performance and reliability of current technologies.

Meetings are typically held on the fourth Tuesday of the month. All interested persons are welcome to attend, participate and join the Chapter. If you are interested in joining the AEE Bay Area Chapter, you can contact Stan Boghosian at (510) 845-7468, or you can directly download a mail-in membership application from the AEE website at: <http://www.aee-sf.org/form.rtf> or <http://www.aee-sf.org/form.doc>

**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.**

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