



**ASHRAE**

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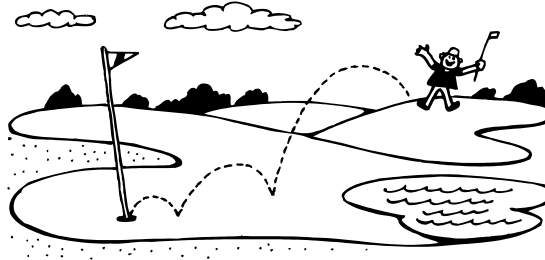
# Bi-State Chapter Exchanger

Volume XXVI, Issue 9

Serving the Hudson Valley and Western Connecticut

May 2013

## **2013 Bi-State Chapter Annual Golf Outing**



### **Wednesday, May 8**

**Same Great Location: The Links at Union Vale  
153 North Parliman Road  
Union Vale, New York 12540**

[www.thelinksatunionvale.com](http://www.thelinksatunionvale.com)

For more information please contact [sabbattista@olace.com](mailto:sabbattista@olace.com)

**Return form (on page 4) with payment by May 6, 2013.**

#### **18 Hole Championship Golf Course**

- 11:30 am: Check-In/Lunch
- 1:00 pm: Shotgun Start
- 6:00 pm: Dinner and Awards

#### **Event Costs:**

- \$200 per player
- \$750 per foursome
- \$65 for dinner only

#### **Inside this Issue**

President's Message	2
Historical Note	2
Research Promotion	3
Officers and Governors	8
Region 1 Executive Committee	9
Employment Ads and Sponsorship	10
Upcoming Meetings	11

#### **Upcoming Events**

- **June 12 -**  
Hold the date

## President's Message

By John A. Fusco, P.E., LEED AP

I would like to thank Nahom A. Gebre, Esq., P.E., Risk Management Attorney from Victor O. Schinnerer & Company, Inc., and Christopher O'Neil and his staff from O'Neil and Associates for presenting at April's meeting on Professional Liability. There were many questions asked, as it was a very informative presentation and pertinent topic.

Wednesday May 8 – Our Annual Golf Outing at The Links in Union Vale. Our flyer has been emailed out and is available on our website. May 6<sup>th</sup> is the last day to register, so get your foursomes together! Proceeds from this event go towards our scholarship efforts and chapter operations.

Our final meeting in June is still in the planning stages, we may have a building tour and presentation in the works. Stay tuned for details!

Thanks to continued support, the Scholarship Committee was able to award two scholarships to engineering students in our area, each for \$1,500. Simon Mysliwec of Manhattan College and Mitchell Bell of Fairfield University, both mechanical engineering juniors, are this year's recipients. Congratulations to both!

Again our chapter operates because of the efforts of the Board of Governors, Officers, and Committee Chairs. For us to continue this effort, we need volunteers to make it work. Any one of the board members or officers would be more than happy to discuss opportunities with those interested in chapter activities and leadership roles.

Please check for our emails and our website for information on upcoming events and to download current and past newsletters.

John A. Fusco, P.E., LEED AP  
Bi-State Chapter President

## Historical Note — Bob Roston, Bi-State Historian Fridge with Radio

“The Crosley Corp. has introduced a Shelvador electric refrigerator model equipped with a built-in radio. “It has been said that sixty percent of a housewife's time is spent in the kitchen working. Now by having a Shevador refrigerator with a radio built in its top, she may listen to the program she wants. Most radios are placed in the living room which is two or three rooms away from the kitchen, and the housewife either has to miss the program when she is in the kitchen or turn up the radio in the living room so loud that it will ordinarily drive everyone out of the house”

— “What's Going on in the Mechanical Refrigerator Field”  
*Ice and Refrigeration*, May 1937

## ASHRAE Publishes Second Edition of Hospital Design Manual

Health care HVAC systems serve facilities in which the population is uniquely vulnerable and exposed to elevated risks of health, fire and safety hazard. These heavily regulated, high-stakes facilities undergo continuous maintenance, verification, inspection and recertification, typically operate 24/7 and are owner occupied for long life. A newly published manual from ASHRAE provides guidance on addressing these issues for mechanical and consulting engineers, designers, architects, facility managers, infection control personal, maintenance staff, contractors, developers and code accreditation and licensure officials.

“HVAC Design Manual for Hospitals and Clinics, Second Edition,” provides in-depth design recommendations based on best practices, and presents proven, cost effective and reliable solutions that result in low maintenance cost and high reliability with systems providing desired performance and efficiency. The book, a complete rewrite of the first edition, focuses specifically on HVAC system design for health care facilities, omitting general system descriptions that are readily available in other ASHRAE publications.

“The manual presents a unified and comprehensive summary of engineering background on the standard, how to meet it and alternatives for best engineering practices beyond the minimum requirements,” Daniel Koenigshofer, P.E., editor of the manual, said. “A principle objective of the manual is to present what is different about designing HVAC systems for hospitals and healthcare facilities.” Chapter Two describes how the principles of infection control have influenced the regulations which in turn are the bases for the unique design principles needed for hospitals.

The cost of “HVAC Design Manual for Hospitals and Clinics, Second Edition” is \$115 (\$99 ASHRAE members). To order, contact ASHRAE Customer Contact Center at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide), fax: 678-539-2129, or visit [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore).

# Research Promotion Contribution Form

PLEASE COMPLETE THE INFORMATION BELOW AND RETURN WITH YOUR CONTRIBUTION TO:

James Kolk  
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North Babylon, NY 11703

Phone: 631-219-8502 Fax: 610-923-3352

Please accept my research investment in the amount of \$ \_\_\_\_\_

Make checks out to **ASHRAE Research**.

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Please check one:             Personal contribution  
                                      Company contribution

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Credit Card # \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_

Donors are recognized for their contributions as follows:

**Honor Roll** contributors are listed in the October ASRHAE Journal and receive the commemorative coin recognizing Giants in HVAC&R invention or innovation.

- Individual Honor Roll beginning at \$100
- Corporate Honor Roll beginning at \$150

**Investors** with contributions of \$250 or more receive a wall plaque that can display six commemorative coins.

*Contributions in any amount are gratefully received and 100% of the contribution goes directly to research. All contributions are tax deductible.*



**ASHRAE** **Bi-State Chapter**  
**Annual Golf Outing**



**Wednesday, May 8, 2013**  
**The Links at Union Vale**

**Schedule:**

- 11:30 am: check-in/lunch
- 1:00 pm: shotgun start
- 6:00 pm: dinner/awards

**Costs:**

- \$200 per player
- \$750 per foursome
- \$65 for dinner only

**Return this form with payment by May 6, 2013**

**Note:** *If payment is not received prior to the golf outing, your reservation may not be accepted.*

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Company Name: \_\_\_\_\_

Company Address: \_\_\_\_\_

Email: \_\_\_\_\_

- |   |  |
|---|--|
| <input type="checkbox"/> Individual for lunch/golf/dinner ..... \$200 | <input type="checkbox"/> Tee Sponsor.....\$200             |
| <input type="checkbox"/> Individual for dinner only ..... \$65        | <input type="checkbox"/> Beverage Cart Sponsor .....\$1000 |
| <input type="checkbox"/> Foursome for lunch/golf/dinner ..... \$750   | <input type="checkbox"/> Lunch Sponsor .....\$1500         |

Please check off participation level above and make checks payable to: *ASHRAE Bi-State Chapter.*

**List names of golfers below.** *(If less than four, the golf committee will complete pairings.)*

1. \_\_\_\_\_ 3. \_\_\_\_\_

2. \_\_\_\_\_ 4. \_\_\_\_\_

Mail completed reservation form and check to:  
ASHRAE Bi-State Golf c/o OLA Consulting Engineers, 50 Broadway, Hawthorne, NY 10532

# ASHRAE Bi-State Chapter

## Annual Golf Outing



### Directions to The Links at Union Vale

153 North Parlman Road, Union Vale, NY 12540 (845)223-1002

[www.thelinksatunionvale.com](http://www.thelinksatunionvale.com)



#### *From New York City and South:*

- Take the Taconic State Parkway north to Route 82 North.
- Travel 4-1/2 miles and make a right onto County Route 89
- Take the first right onto North Parlman Road (1 mile).
- Golf Course is 1/2 mile on right.

#### *From East or West:*

- Take Interstate 84 (east or west) to the Taconic State Parkway north (6-3/4 miles) to Route 82 North.
- Travel 4-1/2 miles and make a right onto County Route 89.
- Take the first right onto North Parlman Road (1 mile).
- Golf course is 1/2 mile on right.

#### *From the North:*

- Take the Taconic State Parkway south to Route 55 east towards Pawling.
- Take a left at the first light (Route 82 north).
- Make a right onto County Route 89
- Take the first right onto North Parlman Road (1 mile).
- Golf Course is 1/2 mile on right.

## Prototype High Concentration PhotoVoltaic Thermal System

A three-year, \$2.4 million (2.25 million CHF) grant from the Swiss Commission for Technology and Innovation has been awarded to scientists at IBM Research; Airlight Energy, a supplier of solar power technology; ETH Zurich (Professorship of Renewable Energy Carriers) and Interstate University of Applied Sciences Buchs NTB (Institute for Micro- and Nanotechnology MNT) to research and develop an economical High Concentration PhotoVoltaic Thermal (HCPVT) system capable of concentrating solar radiation 2,000 times and converting 80 percent of the incoming radiation into useful energy. The system can also provide desalinated water and cool air in sunny, remote locations where they are often in short supply.

The prototype HCPVT system uses a large parabolic dish, made from a multitude of mirror facets, which are attached to a sun tracking system. The tracking system positions the dish at the best angle to capture the sun's rays, which then reflect off the mirrors onto several microchannel-liquid cooled receivers with triple junction photovoltaic chips -- each 1x1 centimeter chip can convert 200-250 watts, on average, over a typical eight hour day in a sunny region.

The entire receiver combines hundreds of chips and provides 25 kilowatts of electrical power. The photovoltaic chips are mounted on micro-structured layers that pipe liquid coolants within a few tens of micrometers off the chip to absorb the heat and draw it away 10 times more effectively than with passive air cooling. The coolant maintains the chips almost at the same temperature for a solar concentration of 2,000 times and can keep them at safe temperatures up to a solar concentration of 5,000 times.

The direct cooling solution with very small pumping power is inspired by the hierarchical branched blood supply system of the human body and has been already tested by IBM scientists in high performance computers. An initial demonstrator of the multi-chip receiver was developed in a previous collaboration between IBM and the Egypt Nanotechnology Research Center. "We plan to use triple-junction photovoltaic cells on a micro-channel cooled module which can directly convert more than 30 percent of collected solar radiation into electrical energy and allow for the efficient recovery of an additional 50 percent waste heat," said Bruno Michel, manager, advanced thermal packaging at IBM Research. "We believe that we can achieve this with a very practical design that is made of lightweight and high strength concrete, which is used in bridges, and primary optics composed of inexpensive pneumatic mirrors -- it's frugal innovation, but builds on decades of experience in microtechnology."

"The design of the system is elegantly simple," said Andrea Pedretti, chief technology officer at Airlight Energy. "We replace expensive steel and glass with low cost concrete and simple pressurized metalized foils. The small high-tech components, in particular the microchannel coolers and the molds, can be manufactured in Switzerland with the remaining construction and assembly done in the region of the installation. This leads to a win-win situation where the system is cost competitive and jobs are created in both regions."

The solar concentrating optics will be developed by ETH Zurich. "Advanced ray-tracing numerical techniques will be applied to optimize the design of the optical configuration and reach uniform solar fluxes exceeding 2,000 suns at the surface of the photovoltaic cell," said Aldo Steinfeld, Professor at ETH Zurich.

With such a high concentration and a radically low cost design scientists believe they can achieve a cost per aperture area below \$250 per square meter, which is three times lower than comparable systems. The levelized cost of energy will be less than 10 cents per kilowatt hour (KWh). For comparison, feed in tariffs for electrical energy in Germany are currently still larger than 25 cents per KWh and production cost at coal power stations are around 5-10 cents per KWh.

Current concentration photovoltaic systems only collect electrical energy and dissipate the thermal energy to the atmosphere. With the HCPVT packaging approach scientists can both eliminate the overheating problems of solar chips while also repurposing the energy for thermal water desalination and adsorption cooling.

To capture the medium grade heat IBM scientists and engineers are utilizing an advanced technology they developed for water-cooled high performance computers, including Aquasar and SuperMUC. With both computers water is used to absorb heat from the processor chips, which is then used to provide space heating for the facilities.

"Microtechnology as known from computer chip manufacturing is crucial to enable such an efficient thermal transfer from the photovoltaic chip over to the cooling liquid," said Andre Bernard, head of the MNT Institute at NTB Buchs. "And by using innovative ways to fabricate these heat transfer devices we aim at a cost-efficient production."

In the HCPVT system, instead of heating a building, the 90 degree Celsius water will be used to heat salty water that then passes through a porous membrane distillation system where it is vaporized and desalinated. Such a system could provide 30-40 liters of drinkable water per square meter of receiver area per day, while still generating electricity with a more than 25 percent yield or two kilowatt hours per day -- a little less than half the amount of water the average person needs per day according to the United Nations, but a large installation could provide enough water for a town. The HCPVT system can also provide air conditioning by means of a thermal driven adsorption chiller.



## Nevada Deploys First U.S. Commercial, Grid-Connected Enhanced Geothermal System

The U.S. Energy Department has recognized the nation's first commercial **enhanced geothermal system**(EGS) project to supply electricity to the grid. Based in Churchill County, Nevada, Ormat Technologies' Desert Peak 2 EGS project has increased power output of its nearby operating geothermal field by nearly 38 percent – providing an additional 1.7 megawatts of power to the grid and validating this emerging clean energy technology.

**Enhanced geothermal system** projects capture power from intensely hot rocks, buried thousands of feet below the surface, that lack the permeability or fluid saturation found in naturally occurring geothermal systems. EGS technologies utilize directional drilling and pressurized water to enhance flow paths in the subsurface rock and create new reservoirs, capturing energy from resources that were once considered uneconomical or unrecoverable. With the support of research and development investments across the Energy Department's renewable energy and oil and gas portfolios, American companies like Ormat Technologies are now taking advantage of this untapped resource. The U.S. Geological Survey estimates that EGS in the United States has the potential to enable development of 100 to 500 gigawatts (GW) of geothermal resource capacity.

Leveraging a \$5.4 million Energy Department investment – matched by \$2.6 million in private sector funding – the Ormat Desert Peak project is extending the life of previously unproductive geothermal wells. Since the project's start in 2008, the Energy Department has worked with Ormat, GeothermEx, the U.S. Geological Survey, and Lawrence Berkeley and Sandia National Laboratories to develop cost-effective and innovative production technologies that utilize protective environmental best practices and monitoring.

The Desert Peak project follows achievements at two other Energy Department-supported projects focused on demonstrating the commercial viability of EGS: The Calpine demonstration project at The Geysers in Middletown, California and the AltaRock demonstration project at the Newberry Volcano near Bend, Oregon. These projects have realized important achievements in the Department's near- to long-term EGS strategy to develop resources ranging from existing fields to undeveloped or greenfield sites.

For more information on innovative, sustainable geothermal energy in the United States visit the Energy Department's **Geothermal Technologies Office website**.

## HVAC Design Training

2 Courses, 5 Days of Intense Instruction

March 18-22, 2013 • June 3-7, 2013 • August 12-16, 2013

### HVAC Design: Level I - Essentials

This training provides intensive, practical education for designers and others involved in delivery of HVAC services. Gain practical skills and knowledge in designing, installing and maintaining HVAC systems that can be put to immediate use. The training provides real-world examples of HVAC systems, including calculations of heating and cooling loads, ventilation and diffuser selection using the newly renovated ASHRAE Headquarters building as a living lab.

### HVAC Design: Level II - Applications

Developed by industry-leading professionals, the training course provides participants with advanced level information about designing, installing and maintaining HVAC systems that can be put to immediate use. Participants will gain an in-depth look into Standards 55, 62.1, 90.1, and 189.1 and the Advanced Energy Design Guides, as well as a range of other HVAC topics including: HVAC equipment and systems; energy modeling; designing mechanical spaces; designing a chiller plant; and BAS controls.

#### Creating Effective, Highly Skilled Engineering Team Members

- Gain knowledge to make immediate contributions to design projects
- Participate in in-depth, practice-focused training
- Learn from industry leaders selected by ASHRAE
- Receive free bonus resources valued at over \$200

Visit [www.ashrae.org/hvacdesign](http://www.ashrae.org/hvacdesign) to register

## Bi-State Chapter Officers and Governors 2012—2013

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### Why Be Involved in a Local Chapter?

- Learn about the latest technologies presented in the program sessions
- Attain continuing education credits
- Meet industry associates and discuss local concerns
- Network amongst designers, installers, vendors, educators, in your local area to help improve business for all
- Share experiences with others
- Enjoy a social hour
- Carry out ASHRAE's mission on a local level

*To advance the arts and sciences of heating, ventilating, air conditioning and refrigerating to serve humanity and promote a sustainable world.*



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We are currently accepting business card advertisements for this year's newsletters. The cost of a business card ad is \$125.00. The newsletter is published monthly, September through June (ten issues). That means for \$125.00 (\$12.50 an issue), your business card ad will circulate to approximately 300 recipients a month or an advertising cost of approximately 4 cents/recipient.

If you are interested in placing an ad, please forward a business card and check (payable to ASHRAE Bi-State) to:

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 e mail: lamysturgis@gmail.com

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## Employment Opportunities

Employment ads may be submitted for inclusion in **The Exchanger** as follows:

1. \$100.000 from companies placing ad for one (1) month.
2. \$150.00 from companies placing ad for two (2) months.
3. No charge for members looking for employment.

### Seattle School is World's Fourth 'Living Building'

Bertschi School, an independent elementary school in Seattle now features the first Living Building on the West Coast and the world's fourth fully certified "Living Building." Completed in February 2011, Bertschi's Living Building Science Wing is a 3,380 ft<sup>2</sup> (314 m<sup>2</sup>) interactive learning facility for students ages 5-11. It is the first built project to meet the standards of version 2.0 of the Living Building Challenge, a sustainable building certification program that integrates urban agriculture and the use of healthy building materials. The building is net zero energy and water. A 20 kW photovoltaic system provides all of the electricity, and cisterns collect rainwater that is used for irrigation and flushing the composting toilet.



ASHRAE, founded in 1894, is a building technology society with more than 50,000 members worldwide. The Society and its members focus on building systems, energy efficiency, indoor air quality and sustainability within the industry. Through research, standards writing, publishing and continuing education, ASHRAE shapes tomorrow’s built environment today.

ASHRAE will be the global leader, the foremost source of technical and educational information, and the primary provider of opportunity for professional growth in the arts and sciences of heating, ventilating, air conditioning and refrigerating.

## Upcoming Meetings

Month	Date	Promotion	Main Presentation	Tech Session
May	5/8/2013	Student Activities	Golf Outing	
June	6/12/2013	Student Scholarships	Hold the date	



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 Denver, Colorado | June 22–26, 2013

Register Early for the Best Deal!  
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Take advantage of the opportunity to discuss and examine the latest topics in the building industry, such as high performing buildings and integrated design, through the technical program; participate in technical tours; attend ASHRAE Learning Institute courses; and earn professional credits.

**Research Summit** — held in conjunction with the 2013 Annual Conference. The summit addresses the latest research results, innovative research techniques and forecasts future research directions.

**Technical Program** — presentations and papers focus on current research worldwide; core HVAC&R applications and systems; and Integrated Project Design, Energy Modeling and Building Efficiency Performance.

**Networking** — share ideas and learn from fellow members from your hometown and around the world.

**ASHRAE Learning Institute** — seven in-depth training courses including a new Professional Development Seminar on Operations and Maintenance of High-Performance Buildings and a new Short Course on Optimization of HVAC Systems and their Components.



**\$\$\$ Special first time attendee registration fee available!**

### Closed Windows and Airborne Infection Risk in Hospitals

The chance of infection in some hospital wards varies dramatically according to whether windows are left open, according to a recent study. A University of Leeds team studied airflow in a “Nightingale” ward — a traditional hospital ward design with two rows of up to 30 beds — by using tracer gases to simulate how airborne infections spread. The researchers found ventilation in the ward was generally good when windows were left open, keeping the danger of airborne infection low. However, when the windows were closed, the measured exposure to infection was typically four times higher, equivalent to a ventilation rate of only 1.5 air changes an hour (ach). ASHRAE/ASHE Standard 170-2008, *Ventilation of Health Care Facilities*, calls for a minimum of two outdoor ach and a minimum of six total ach in patient rooms. “People are being told to seal up their buildings to save energy. We found, if you do that without alternative ventilation systems, you could be increasing the airborne infection risk significantly,” said lead investigator Cath Noakes, Ph.D.

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