



Bi-State Chapter Exchanger

Volume XXVII, Issue 6

Serving the Hudson Valley and Western Connecticut

February 2014

Meeting Wednesday February 12, 2014 1 PDH Credit Pending NYS Approval

Presentation: Desiccant Dehumidification Systems for Energy Efficient Temperature and Humidity Control

Please join us on Wednesday, February 12th for an informative presentation on “Desiccant Dehumidification Systems” delivered by Mark Piegay from Kathabar Dehumidification Systems. Mark is the Northeast Regional Sales Manager for the dehumidification and energy recovery division of Kathabar Dehumidification Systems, Inc. in Buffalo, New York.

Mark’s presentation will discuss the effects of poor humidity control, will review the benefits and drawbacks of conventional dehumidification methods, and finally will dive into desiccant humidification systems – both ‘Dry Desiccant’ and ‘Liquid Desiccant’ systems.

Place: Casa Rina, 886 Commerce Street, Thornwood, NY 10592

Program: 5:30 - 6:00 PM Attitude Adjustment Time
6:00 - 7:30 PM Buffet Dinner
7:30 - 8:30 PM Main Presentation

\$25 Members, \$30 Non-Members

Engineering students: complimentary admission

The general public is invited and encouraged to attend. Walk-ins welcome.

Directions to Casa Rina

From Saw Mill Parkway - North or South
Exit at Marble Avenue - Exit # 27
Make right - continue to second traffic light
Make right onto Commerce Street
Casa Rina is the second house on your left.
Parking is on your right.

Please RSVP to Terry Connor if you plan on attending:

Email: Terry.Connor@jci.com

Phone: 914-593-5223

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Upcoming Events

- **March 12** - Steam Turbine Generators
- **April 23** - Parks and Rec Tour
- **May 14** - Golf Outing
- **June 11** - Save the date
- **August 14 through 16** - ASHRAE Region 1 2014 CRC Hosted by Bi-State Chapter

President's Message

By Terry Connor, LEED AP

I hope everyone had a chance to steal some time away from work to attend the AHR Expo last month in New York City. According to show organizer International Exposition Company, a total of over 61,000 attendees registered for the 2014 AHR Expo! HVACR professionals from all 50 states and more than 130 different countries braved the snowy conditions to see firsthand the latest products and technologies on display from more than 1,900 exhibiting companies!

Our chapter meeting for December will have us back at our usual venue (the Casa Rina Restaurant in Thornwood, NY) for an informative presentation on "Desiccant Dehumidification Systems" delivered by Mark Piegay from Kathabar Dehumidification Systems, Inc. Mark's presentation will discuss the effects of poor humidity control, will review the benefits and drawbacks of conventional dehumidification methods, and finally will dive into desiccant humidification systems – both 'Dry Desiccant' and 'Liquid Desiccant' systems.

Finally, I would like to make one final plea for volunteers to assist with the planning and execution of this year's CRC in August 2014. If you are interested in helping the Chapter successfully host this event, please reach out to our CRC Committee co-chairs – Mike Circosta (email: mjcarmonk@optonline.net / Ph: 914-273-9173) or Cliff Konitz (email: c.konitz@verizon.net / Ph: 845-297-5864) for more details.

Terry Connor, LEED AP
Bi-State Chapter President

NYS Energy Planning Board Issues Draft State Energy Plan

The New York State Energy Planning Board has issued the Draft 2014 New York State Energy Plan for public comment. The Draft Plan contains actionable policy recommendations and strategies to advance new energy technologies and foster an innovative clean energy economy in New York.

The Draft Plan outlines how State programs can connect with the private sector in ways that encourage the private market to create new, valuable energy options for communities and customers. Empowering the customer and providing options they value when making energy choices is a driving theme in the Draft Plan. The Draft Plan is designed to put New York on a track to contribute to long-range global emissions reductions that reduce the impact of climate change.

The Draft Plan is divided into two volumes and is guided by statutory requirements of Article 6 of the Energy Law. The first volume provides 15 key initiatives to advance the State's energy future. The second volume addresses energy use, its sources and impacts, and provides detailed background that was used to develop the overarching vision and initiatives in the first volume.

In addition, the second volume provides forecasts for energy supply and demand, a statewide inventory of greenhouse gas emissions, environmental and public health impacts associated with energy production and use, and vulnerabilities of the energy system.

This Draft Plan envisions a flexible and clean energy system that empowers residential customers, businesses, and communities to receive the reliability and affordability they value. To achieve this, it focuses on the following five areas:

1. Improving energy affordability
2. Unleashing the power of private sector energy financing
3. Providing a more resilient, flexible and clean power grid
4. Giving customers more control over their energy use
5. Aligning energy innovation with market demand

Reformed regulations, new roles for utilities, and new strategies based on markets and customer priorities will result in an energy system that is innovative, sustainable, and reliable.

Public hearings on the Draft Plan will be held in Buffalo, Syracuse, Albany, Manhattan, Brooklyn and Long Island. For more information on dates and times for the hearings, and to view the full Draft Energy Plan, please visit energyplan.ny.gov. Public comments can be submitted in writing or electronically at energyplan.ny.gov.

Research Promotion Contribution Form

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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.

Newly Published Fourth Edition of the ASHRAE GreenGuide Available as an E-Book

When the first edition of the “ASHRAE GreenGuide” was first published 10 years ago, guidance on how practice green building design was not so readily available.

“Since 2004, the industry has witnessed the continued evolution of green building programs from strictly voluntary to being both more in the industry mainstream as well as being mandatory in jurisdictions that adopted these for their building codes,” Tom Lawrence, a member of ASHRAE’s technical committee (TC 2.8) on building environmental impacts and sustainability, said.

The newly published fourth edition of the “ASHRAE GreenGuide” contains updated guidance that reflects how green building practices as well as the industry have changed, according to Lawrence.

“ASHRAE GreenGuide: Design, Construction, and Operation of Sustainable Buildings, 4th Edition,” uses an integrated, building systems perspective to provide need-to-know information on what to do, where to turn, what to suggest, and how to interact with other members of the design team in a productive way.

Lawrence said the guide contains several changes that will impact green building design. First is a complete revision of the indoor environmental quality (IEQ) chapter with much of the content based on the *Indoor Air Quality Guide: Best Practices for Design, Construction and Commissioning*.

“While it is challenging as well as important to provide good indoor environmental quality in an energy efficient manner, in some cases the most effective means to improve IEQ can also save energy,” he said. “IEQ should not be sacrificed strictly to obtain energy use reductions. After all, the purpose of such buildings is to support the activities for which the building exists and to do so in a manner that does the least harm to the environment while enhancing the health and well-being of the human occupants.”

Another change is a new chapter on sustainable sites. While site issues may be outside the normal purview of most typical ASHRAE members, Lawrence notes that site sustainability is an important part of the design process of the future sustainable built environment. The chapter provides a summary of the key issues in the following topical areas:

- Where to locate the building project
- Landscaping
- Urban heat island effect
- Exterior lighting/light as a pollution source
- Storm water management

As in previous editions, the book contains GreenTips, or which are sidebars containing information on techniques, processes, measures or systems. There are 44 GreenTips in this edition, including new ones on topics such as condensing boilers, rain gardens, green roofs and data centers. The book now also contains figures printed in color, making them easier to read.

The cost of the print book and the e-book is \$103 (\$87, 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.

Southeastern Pennsylvania Transit Authority Installing Energy Storage and Recovery Systems

Southeastern Pennsylvania Transit Authority (SEPTA) is installing energy storage and recovery systems to save energy and money. The system will incorporate a hybrid approach to energy storage. It is designed to recover train braking energy to reduce electricity consumption. The system also enables the Authority to generate revenues by participating in ancillary (microgrid) services of the local regional transmission organization (RTO). The system will be installed at the Griscom Substation, located on SEPTA’s Market-Frankford Line, its most heavily traveled route.



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Georgia, USA

Atlanta – March 17-19, 2014

United Arab Emirates

Dubai – April 13-15, 2014

HVAC Design: Level II – Applications

New York, USA

New York City – February 27-28, 2014

Georgia, USA

Atlanta – March 20-21, 2014

Combined: Level I & II

New York, USA

New York City – February 24-28, 2014

Georgia, USA

Atlanta – March 17-21, 2014

Register: www.ashrae.org/hvacdesign

New Catalyst to Convert Greenhouse Gases into Chemicals

A team of researchers at the University of Delaware has developed a highly selective catalyst capable of electrochemically converting carbon dioxide -- a greenhouse gas -- to carbon monoxide with 92 percent efficiency. The carbon monoxide then can be used to develop useful chemicals. The researchers recently reported their findings in *Nature Communications*.

“Converting carbon dioxide to useful chemicals in a selective and efficient way remains a major challenge in renewable and sustainable energy research,” according to Feng Jiao, assistant professor of chemical and biomolecular engineering and the project's lead researcher. Co-authors on the paper include Qi Lu, a postdoctoral fellow, and Jonathan Rosen, a graduate student, working with Jiao.

The researchers found that when they used a nano-porous silver electrocatalyst, it was 3,000 times more active than polycrystalline silver, a catalyst commonly used in converting carbon dioxide to useful chemicals. Silver is considered a promising material for a carbon dioxide reduction catalyst because of it offers high selectivity -- approximately 81 percent -- and because it costs much less than other precious metal catalysts. Additionally, because it is inorganic, silver remains more stable under harsh catalytic environments.

The exceptionally high activity, Jiao said, is likely due to the UD-developed electrocatalyst's extremely large and highly curved internal surface, which is approximately 150 times larger and 20 times intrinsically more active than polycrystalline silver. Jiao explained that the active sites on the curved internal surface required a much smaller than expected voltage to overcome the activation energy barrier needed drive the reaction. The resulting carbon monoxide, he continued, can be used as an industry feedstock for producing synthetic fuels, while reducing industrial carbon dioxide emissions by as much as 40 percent.

To validate whether their findings were unique, the researchers compared the UD-developed nano-porous silver catalyst with other potential carbon dioxide electrocatalysts including polycrystalline silver and other silver nanostructures such as nanoparticles and nanowires. Testing under identical conditions confirmed the non-porous silver catalyst's significant advantages over other silver catalysts in water environments.

Over the last 20 years, electrocatalytic carbon dioxide reduction has attracted attention because of the ability to use electricity from renewable energy sources such as wind, solar and wave. “Selective conversion of carbon dioxide to carbon monoxide is a promising route for clean energy but it is a technically difficult process to accomplish,” said Jiao. “We're hopeful that the catalyst we've developed can pave the way toward future advances in this area.”

The research team's work is supported through funding from the American Chemical Society Petroleum Research Fund and University of Delaware Research Foundation. Jiao has patented the novel application technique in collaboration with UD's Office of Economic Innovation and Partnerships.

Growing 'Green' Building Materials from Organic Substances

Companies are developing building materials that can be created from safe materials that are built with renewable energy, and are completely reusable. Startup company bioMason has developed a brick made from bacterial by-products that cement sand particles together in a matrix that's strong enough to use for homes. In about five days the bacteria creates a natural cement similar to coral that binds aggregate into a brick without the heat and raw materials required for masonry bricks. Another company, Ecovative, has created a mushroom insulation material that uses agricultural waste products such as plant stalks and seed husks bound together with mycelium, a fungal material. The fungus can be grown in a mold or inside a wall cavity. It can also be used as spray-on foam insulation, blown onto a wall in a structure. The resulting rigid insulation is fire-resistant and fully compostable, and does not contain formaldehyde or other volatile organic compounds.

ASHRAE Conferences 2013-2014

Attend to See What's New, Learn New Skills, Earn PDHs, Network with Peers

ASHRAE IAQ 2013: Environmental Health in Low Energy Buildings

Oct. 15-18, 2013 | Vancouver, BC, Canada

www.ashrae.org/IAQ2013

Comprehensive overview presented via papers.

Co-organizer:



ASHRAE 2014 Winter Conference

Jan. 18-22, 2014 | New York, NY

Jan. 21-23, 2014 | AHR Expo

www.ashrae.org/newyork

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www.hpbmagazine.org/hpb2014

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Efficient, High Performance Buildings for Developing Economies

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www.ashrae.org/Developing2014

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June 28-July 2, 2014 | Seattle, Wash.

www.ashrae.org/seattle

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Sept. 10-12, 2014 | Atlanta, Ga.

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New Energy Efficiency Standards for Metal Halide Lamp Fixtures to Reduce Carbon Pollution

As part of the Energy Department's efforts to develop efficiency standards that cut carbon pollution and save money by saving energy, U.S. Energy Secretary Ernest Moniz has announced that the Department has finalized new energy efficiency standards for metal halide lamp fixtures, which are used in lighting for big box stores and parking lots. Over 30 years, these standards will help reduce harmful carbon pollution by up to 28 million metric tons – equivalent to the annual electricity use of 3.9 million homes – and save consumers more than \$1.1 billion on their energy bills.

“By working with industry and efficiency groups, we are developing appliance standards that are saving billions of dollars while helping to fight carbon pollution,” said Secretary Moniz. “Building on President Obama's Climate Action Plan, the Energy Department continues to make good progress to help communities and businesses save on their utility bills and build a more sustainable energy future.”

Under the Obama Administration, the Energy Department has finalized new efficiency standards for more than 30 household and commercial products, including dishwashers, refrigerators and water heaters, which are estimated to save consumers more than \$400 billion and cut greenhouse gas emissions by 1.8 billion metric tons through 2030.

To build on this success, the Administration has set a new goal: Efficiency standards for appliances and federal buildings set in the first and second terms combined will reduce carbon pollution by at least 3 billion metric tons cumulatively by 2030 – equivalent to nearly one-half of the carbon pollution from the entire U.S. energy sector for one year – while continuing to cut families' energy bills.

Metal halide lamp fixtures include the ballast which starts and regulates the electrical current for these lighting systems. They are commonly used for parking lots and streets, flood lighting, athletic facilities, big-box stores and warehouses. On average, one metal halide lamp fixture consumes about 2,210 kilowatt hours of energy per year.

The efficiency standards established will update the 2007 standards for metal halide lamp fixtures. These standards incorporate feedback from industry, consumer and environmental advocacy groups and other stakeholders and will go into effect three years after publication in the Federal Register.



APPLY

Each year the ASHRAE Foundation awards scholarships of up to \$10,000 each to qualified students.

DONATE

Help support ASHRAE's student scholarship programs.

www.ashrae.org/scholarships

Bi-State Chapter Officers and Governors 2013—2014

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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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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.

Solar Bridge Spans River Thames

The world's largest solar bridge has gone online in London where 4,400 photovoltaic panels cover the 6,000-sq-meter roof of the newly refurbished Blackfriars railway track, which spans the River Thames. The 1.1 MW array is London's largest PV installation and provides 900,000 kWh per year – up to half of the Blackfriars station's energy.

In addition to providing energy, Blackfriars solar bridge provides an architectural focal point along the River Thames. Solar-as-art is an emerging trend. Martifer Solar USA installed a 1.142 MW solar PV system – a combination of a parking lot carport and a hillside ground-mount – at Occidental College in Los Angeles, which incorporates elements of art into the design.



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
February	2/12/2014	Research Promotion	Desiccant Dehumidification Systems Kathabar Dehumidification Systems	
March	3/12/2014	Sustainability	Steam Turbine Generators	
April	4/23/2014	Membership Promotion	Parks and Rec tour	
May	5/14/2014	Student Scholarships	Golf Outing	
June	6/11/2014	Refrigeration	Save the date	
August	8/14/2014 through 8/16/2014		ASHRAE Region 1 2014 CRC hosted by Bi-State Chapter	

Prototype Generator Harnesses Power from Humidity

A new type of electrical generator uses bacterial spores to harness the power of evaporating water. Researchers at Harvard University's Wyss Institute of Biologically Inspired Engineering foresee electrical generators driven by changes in humidity from sun-warmed ponds and harbors. The prototype generators work by harnessing the movement of a sheet of rubber coated on one side with spores. The sheet bends when it dries out, much as a pine cone opens as it dries or a freshly fallen leaf curls, and then straightens when humidity rises. Such bending back and forth means that spore-coated sheets or tiny planks can act as actuators that drive movement, and that movement can be harvested to generate electricity. "Water evaporation is the largest power source in nature," said Ozgur Sahin, Ph.D., who led the study. "Sunlight hits the ocean, heats it up, and energy has to leave the ocean through evaporation," he explained. The research is published in Nature Nanotechnology.

DOE Revises Rules Governing HVAC&R Product Testing

The U.S. Department of Energy (DOE) has finalized new methods for rating and certifying commercial HVAC&R equipment. DOE's existing testing regulations allow the use of alternative efficiency determination methods (AEDMs)—computer modeling tools that predict the performance of non-tested basic models. AEDMs enable manufacturers to rate and certify their basic models by using the projected energy use or energy efficiency results derived from these simulation models in lieu of testing. AEDMs have previously been allowed for commercial HVAC equipment and water heating equipment. The new rule permits manufacturers to use AEDMs when certifying commercial refrigeration equipment, automatic commercial ice makers, beverage vending machines, and walk-in coolers and freezers. In addition, the DOE ruling covers specifics such as test procedures, methods that DOE would employ to determine if an AEDM had been used appropriately by a manufacturer, and the consequences if it had not been. It also amends the compliance dates for the initial certification of commercial HVAC, water heating and refrigeration equipment.

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