



Upcoming Events

- **March 9th** -
Tour of LEED Accredited Building
- **April 13th** -
Effective Room Air Distribution
- **May 11th** -
HVAC Acoustics for Applied Equipment
- **June 8th** -
Golf Outing

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Meeting Thursday February 10, 2011

1 PDH Credit Approved

Presentation: Modeling a Sustainable World

In the main presentation, 2010-2011 President of ASHRAE Lynn G. Bellenger will present *Modeling a Sustainable World*. In energy simulation, daylight analysis, CFD and BIM software, we have powerful modeling tools that enable us to create and refine our vision of a building – its appearance, systems, operation and performance. Those resources, used effectively in an integrated design process for new buildings and in analyzing retrofit opportunities in existing buildings, will help us guide building owners, architects, developers, and contractors in building orientation, shading, and shape and in selecting materials, windows, equipment, and systems that optimize building performance.

Tech Session: Air Filtration

In the tech session, Richard Krenmayer of American Air Filter will present on the following topics: The Need for Particulate Filtration, ASHRAE Filtration Product Review, High Purity Air Filtration Product Review, HELIOR™ PTFE Media/ MEGAcel™ 1 Filters, Gas-Phase Filtration and Green Building / LEED.

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

Program: 5:30 - 6:00 PM Attitude Adjustment Time
6:00 Dinner
6:30 - 7:00 PM Tech Session
7:00 - 7:15 PM Coffee
7:15 - 9:00 PM Presentation

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.

Please make reservations by contacting either:

Nicholas Salomone — nsalomone@olace.com 914-919-3140

Enzo Carlesimo — ecarlesimo@collado-eng.com 914-332-7658

President's Message

By Enzo A. Carlesimo

On behalf of the entire Chapter, I would like to extend our gratitude to Matt Seyer of Renew-aire and Dr. Hsin-Hua Tsuei of CAE Associates for their insightful presentations last month. Judging by the strong turnout, the two topics that they presented grabbed our members' interests and I am certain they were not disappointed. Our upcoming meeting on February 10th should make for yet another interesting and informative evening. American Air Filter sales representatives will be presenting air filtration fundamentals as our Tech Session. In this day and age, engineers are concerned about getting the highest MERV rating so that they can get those valuable LEED points. Hopefully, our presenter(s) will be able to show us how these high MERV ratings are attained and how a high MERV filter can impact the functionality of your air distribution system. In addition, we are extremely privileged to have Lynn G. Bellenger, PE, 2010-2011 Society President, give the Main Presentation for our February meeting. Lynn is a member of the Rochester, NY chapter and thus a Region I member, just like all of us. The theme for her presidency is *Modeling a Sustainable World*, which I am certain will be reflected in her presentation to our chapter. I hope that her presentation focuses on the importance of CFD, which as we have learned from last month's meeting, is an invaluable tool for an industry that is rapidly progressing towards green and sustainable design. I am looking forward to learning more about air filtration and sustainability on the 10th, and I hope that you all do too!



Enzo A. Carlesimo
Bi-State Chapter President

How to Tame Hammering Droplets

People living in older buildings often hear pounding noises in their plumbing or radiator pipes - a well-known effect called a water hammer, which can occur when a valve is suddenly opened or closed in a pipe carrying water or steam, causing a pressure wave to travel down the pipe with enough force that it can sometimes cause the pipes to burst. Now, new research shows that a similar effect takes place on a tiny scale whenever a droplet of water strikes a surface.

MIT's Kripa Varanasi, co-author of a report on the new finding published in the journal *Physical Review Letters*, says the phenomenon could help engineers design more durable condensing surfaces, which are used in desalination plants and steam-based power plants. Other co-authors include MIT mechanical-engineering graduate students Hyuk-Min Kwon and Adam Paxson, and associate professor Neelesh Patankar of Northwestern University.

Varanasi, the d'Arbelloff Assistant Professor of Mechanical Engineering, says the effect explains why blades used in power-plant turbines tend to degrade so rapidly and need to be replaced frequently, and could lead to the design of more durable turbines. Since about half of all electricity generated in the world comes from steam turbines - whether heated by coal, nuclear fuel, natural gas or petroleum - improving their longevity and efficiency could reduce the down time and increase the overall output for these plants, and thus help curb the world emissions of greenhouse gases.

There has been widespread interest in the development of superhydrophobic (water-repelling) surfaces, Varanasi says, which in some cases mimic textured surfaces found in nature, such as lotus leaves and the skin of geckos. But most research conducted so far on how such surfaces behave have been static tests: To see the way droplets of different sizes spread out on such surfaces (called wetting) or how they bead up to form larger droplets, the typical method is to add or subtract water slowly in a stationary droplet. But this is not a realistic simulation of how droplets react on surfaces, Varanasi says. Specifically, such droplets undergo a rapid internal deceleration that produces strong pressures - a small-scale version of the water-hammer effect. It is this tiny but intense burst of pressure that accounts for the pitting and erosion found on power-plant turbine blades, he says, which limits their useful lifetime.

This is one of the biggest unsolved problems in power-plant design, he says. In addition to damaging the blades, the formation and growth of water droplets mixed with the flow of steam saps much of the power, accounting for up to 30 percent of the system losses in such plants. Since some steam-based power plants, such as natural-gas combined-cycle plants, can already have overall plant efficiencies of up to 60 percent in converting the fuel's energy to electricity, if these droplet losses could be eliminated it could provide a significant boost in power.

Small-scale texturing of surfaces can prevent the droplets from wetting the surfaces of turbine blades or other devices, but the spacing and sizes of the surface patterns need to be studied dynamically, using techniques such as those developed by Varanasi and his co-authors, he says. Regularly spaced bumps or pillars on the surface can produce a water-shedding effect, but only if the size and spacing of these features is just right. This research showed that there seems to be a critical scale of texturing that is effective, while sizes either larger or smaller than that fail to produce the water-repelling effect. The analysis developed by this team should make it possible to determine the most effective sizes and shapes of patterning for producing superhydrophobic surfaces on turbine blades and other devices.

Committee Reports

Programs Nick Salomone, Chairman	Student Activities Carmen B. Yellen	Membership Promotion Erica L. Ross, Chairman
<p>The February meeting will feature <i>Modeling a Sustainable World</i> by Lynn G. Bellenger, P.E., Fellow ASHRAE and President of ASHRAE 2011-2011, as the main presentation. In the tech session, Richard Krenmayer of American Air Filter will present on air filtration related topics.</p>	<p>Engineers week is this month, February 20th through the 26th. The purpose of this event is to expose students to our industry and encourage their interest in engineering careers related to HVAC-R. As part of our society's new initiative, we have reached out to local engineering companies to open their doors to high school students for a day. We are honored to announce that we have eight companies, so far, offering their mentorship to bright minded engineering hopefuls.</p> <p>We are also teaming up with programs such as Fox Lane High School's ASPIRE internship program, and have successfully placed one student. Additionally, our ASHRAE BiState information booth will be making an appearance at Tappan Zee High School, to share information and generate interest from potential student members.</p> <p>Highlights of our participants and their testimonials will be published in next month's newsletter.</p>	<p>Well folks, it seems another week has passed, and so has another snow storm. Thanks to everyone who managed to get to the last meeting, on such short notice. The northeast has definitely been getting our fair share of snow this year! But please, don't let a few flakes stop you from making it to a Bi-State meeting. Once a month, you can mingle with colleagues and peers and talk about designs for those warm summer days that are just around the corner! Keep the Bi-State in mind for any new employees, also. It's a great way to keep the future ASHRAE members in the loop!</p>

Biography of Lynn G. Bellenger, P.E., Fellow ASHRAE — President of ASHRAE 2010-2011



Lynn G. Bellenger, P.E., Fellow ASHRAE, is a partner with Pathfinder Engineers and Architects LLP, Rochester, N.Y. Bellenger is ASHRAE certified as a Building Energy Modeling Professional and a High Performance Building Design Professional.

Bellenger is the first female president in the Society's 116 year history. As ASHRAE's president, Bellenger directs the Society's Board of Directors and oversees the Executive Committee.

Her presidential theme, *Modeling a Sustainable World*, notes that in energy simulation, daylight analysis, CFD and BIM software, we have powerful modeling tools that enable us to create and refine our vision of a building – its appearance, systems, operation and performance. Those resources, used effectively in an integrated design process for new buildings and in analyzing retrofit opportunities in existing buildings, will help us guide building owners, architects, developers,

and contractors in building orientation, shading, and shape and in selecting materials, windows, equipment, and systems that optimize building performance.

“Our biggest challenge is implementing integrated design in daily practice. The traditional approach where the architect designs the building shape, orientation, and envelope and then transmits the drawings to the mechanical and electrical engineers for their design is a silo approach that misses the rich opportunities for optimizing building performance through a collaborative approach from the beginning. It is going to require a real cultural shift in our industry to transform the design process, and it's a shift that has to occur if we are going to reach our goal of net-zero-energy buildings.”

She formerly served as president-elect, treasurer and vice president.

Bellenger is a recipient of the Exceptional Service Award, the 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.

Sustainability at Heart of \$45 Billion in U.S. — China Export Deals

The governments of the U.S. and China have announced more than \$45 billion in export deals. More than two-thirds of them involve energy efficiency, emissions reduction and clean technology solutions. Of the 31 transactions, projects and memoranda of understanding (MOU) cited by the U.S. and China, 22 are "green" business deals involving more than a dozen U.S. firms, including Duke Energy, General Electric, Alcoa, Cummins, Boeing, Pratt & Whitney and Honeywell. The arrangements include plans to develop technology for environment-friendly cities, renewable energy projects, carbon capture programs, and solutions to make coal plants and mines more environmentally responsible.

Final Energy Savings Figures Announced for 2010 Energy Standard

More than 30 percent energy savings can be achieved using the recently published 2010 version of Standard 90.1 vs. the 2004 standard, according to an announcement made by ASHRAE at its recent 2011 Winter Conference.

ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, which provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings, was published in November 2010. ASHRAE was awaiting the final results of analysis work from Pacific Northwest National Laboratories in support of the U.S. Department of Energy (DOE) Building Energy Codes Program on addenda included in the standard. The final figures were made available and announced at ASHRAE's annual press breakfast.

Without plug loads, site energy savings are 32.6 percent and energy cost savings 30.1 percent. Including plug loads, the site energy savings are estimated at 25.5 percent and energy cost savings 24 percent.

"Three years ago, the 90.1 project committee set an aggressive goal of 30 percent savings for the 2010 version," ASHRAE President Lynn G. Bellenger said. "That the target was met and exceeded is a testament to the talent and dedication of the men and women from ASHRAE and the Illuminating Engineering Society (IES) who developed and evaluated over 119 change proposals to increase the stringency of our flagship energy conservation standard. At the 35th anniversary of Standard 90.1, it continues to lead the way in our industry as the minimum standard for energy efficiency."

On a nationally aggregated level, building type energy savings ranged from 8.8 percent to 38.3 percent and energy cost savings from 7.9 percent to 33.6 percent. These figures include energy use and cost from plug loads.

Extensive analysis work was performed by a team from Pacific Northwest National Laboratories in support of the DOE Building Energy Codes Program. Sixteen different building prototypes were modeled in 17 different climate zones for a total of 272 building types and climate zone combinations.

How was the energy reduction achieved? Here are a few examples:

- The Scope was expanded so that 90.1 covers receptacles and process loads, including data centers. This allows future addenda to the standard to address energy consuming equipment and systems previously outside its scope.
- Building Envelope: Continuous air barrier and cool/high albedo roof requirements were added.
- Lighting: Most interior Lighting Power Densities were lowered, and additional occupant sensing controls and mandatory daylighting requirements were added for specific spaces, along with a new five-zone exterior Lighting Power Density table.
- Mechanical: Most equipment efficiencies are higher, energy recovery is required in more applications, economizers are required in more climates and more energy-conserving controls are required.
- Modeling requirements have been clarified and expanded so that building modelers can more accurately compare energy cost of their building project with an appropriate baseline building as defined by the standard.

"The 90.1 standard is a fluid document," Mick Schwedler, immediate past chair of the 90.1 committee, said. "As technology evolves, the project committee is continually considering new changes and proposing addenda for public review. The rigorous, open, public review process following ASHRAE and American National Standards Institute (ANSI) procedures, results in a document that is both technically sound and reaches consensus."

"I agree wholeheartedly with Mick on the strength attributes of Standard 90.1 based on our ASHRAE/ANSI consensus process," echoed Steve Skalko, current chair of the committee. "As we look ahead to exploring new areas of energy savings from energy consuming equipment and systems, we will seek input from materially affected and interested parties. We welcome their input to help the project committee in this endeavor."

The standard is written in mandatory code language and offers code bodies the opportunity to make a significant improvement in the energy efficiency of new buildings, additions and major renovations.

Officers and Governors 2010—2011

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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."

ASHRAE Region I Roster 2010-11 Executive Committee

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HELP WANTED

Employment ads may be submitted for inclusion in the following month's issue of **The Exchanger** as follows:

1. \$100.00 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.

Notice to business card advertisers:

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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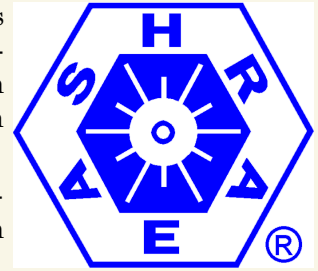
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The American Society of Heating, Refrigerating and Air-Conditioning Engineers advances the arts and sciences of heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world. Membership is open to any person associated with the field including indoor air quality, building design and operation, and environmental control for food processing and industry.



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	2/10/2011	Membership Promotion	Lynn G. Bellenger ASHRAE Society President	Air Filtration
March	3/9/2011	Membership Promotion	Tour of LEED Accredited Building (NYPA White Plains)	
April	4/13/2011	Sustainability	Effective Room Air Distribution	
May	5/11/2011	Student Activities	HVAC Acoustics for Applied Equipment	Variable Refrigerant Flow Fundamentals
June	6/8/2011	Membership Promotion	Golf Outing	

AES is First Battery-Based Energy Storage Project to Finalize Loan Guarantee

Energy Secretary Steven Chu recently announced a \$17.1 million loan guarantee has been finalized for the AES Westover facility. The loan guarantee will support the construction of a 20 megawatt (MW) energy storage system using advanced lithium-ion batteries. The AES project, located in Johnson City, New York, will help provide a more stable and efficient electrical grid for the state's high-voltage transmission network. "The AES project helps reduce carbon emissions and strengthens our energy infrastructure by allowing for more renewable energy sources like solar and wind to contribute to the electrical grid," said Secretary Chu. "Bringing more efficiency and reliability to the grid will help cut costs for consumers and power a cleaner energy future."

The AES technology can help reduce carbon emissions by 70 percent compared to frequency regulation provided by fossil energy suppliers. Traditionally, grid frequency regulation, which is needed to balance power generation and consumption on the grid, is maintained by burning additional fossil fuels at power plants. The AES project eliminates the need to burn fossil fuels and instead uses battery technology and new software that will provide the same regulation at a lower price. This advanced frequency regulation capability will allow renewable electricity generation to play a larger role in New York's transmission network. The AES project will include advanced lithium-ion battery cells from A123 Systems, Inc., a leading supplier of lithium-ion batteries. The contained battery and related electrical systems are assembled, tested and validated in an A123 manufacturing facility in Hopkinton, MA.

California Green Building Code Takes Effect

New buildings in California must now be more environmentally responsible under provisions of the state's Green Building Standards Code that took effect at the start of this year. CALGreen is the first statewide green building code in the country and contains voluntary as well as mandatory provisions. The required measures set a threshold for green building in the state and the voluntary portions provide parameters for higher standards of green building. CALGreen requires new buildings to be more energy efficient, use less water and emit fewer pollutants. Inspections of HVAC systems in nonresidential buildings larger than 10,000 ft² (930 m²) also are mandatory.

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