



Giga-Joule

February 2014

<http://www.ashrae4greenville.com/newsletter.php>

Meeting Announcement

The February meeting will be held on Thursday, February 13 at the Wilkins Conference Center at Roper Mountain Science Center. For more information, please contact our Secretary, Ryan Tonnsen, at secretary@ashrae4greenville.com.

A Message from the President

Last minute update: This month's meeting has been cancelled.

We are having a special March 13 meeting which will be our 1st meeting in the NEW location at M.T. Anderson (100 Blassingame Road, Greenville, SC 29605). We'll be hearing from Mr. Rodney Hinton who will be presenting "Controlling Outside Air in VAV Systems." There will be a great meal provided and there will be NO COST to attend!!!

We are always looking for new faces to participate on a committee or serve on the Board of Governors. If you would like to hear more information on what this would entail, please let me know.

Daniel Lowe
Greenville ASHRAE President
lowed@cxconsultants.com



Membership

Greenville ASHRAE Members,

Tigue Garick
Membership Promotion Chair
Greenville ASHRAE
C: 864-616-0592

Greetings! A few things from Membership Promotion:

- 1) By now you should have received our membership promotion survey. There are several important questions that will help us determine the direction of our chapter. Please take a few minutes to answer the survey, and if you did not receive it, please let me know and I will resend to you.
- 2) Don't forget that our next meeting will be held on February the 13th. If you know of anyone that might be interesting in attending and/or joining our chapter, please don't hesitate to bring them. We will be drawing for a ***\$50.00 gift certificate to Best Buy this month.*** All you have to do to qualify is bring a guest to the meeting.
- 3) If you are interesting in joining the membership promotion committee, please email me at tigueg@jmpco.com.



Thanks for everything you do for ASHRAE, and we look forward to seeing you at our next meeting.

February Meeting

Presenter: Douglas T. Reindl, Ph.D, P.E.

Douglas Reindl is a professor in the Departments of Engineering Professional Development and Mechanical Engineering at the University of Wisconsin-Madison. In addition, he is the founding director of the Industrial Refrigeration Consortium (IRC) at the UW. He received his B.S. in Mechanical Engineering Technology from the Milwaukee School of Engineering and his M.S. and Ph.D. degrees from the University of Wisconsin-Madison. He is a registered professional engineer in the State of Wisconsin and presently serves on the Board of Directors of the International Institute of Ammonia Refrigeration.

As faculty member at the University of Wisconsin since 1996, Professor Reindl has taught at all levels: undergraduate, graduate, and continuing professional development. Professor Reindl has developed an internationally-recognized series of professional development courses focused on industrial refrigeration systems with an emphasis on the safe use of ammonia as a refrigerant. Through the IRC, Professor Reindl works with some of the world's leading food companies to improve the safety, efficiency, reliability and productivity of industrial refrigeration systems and technologies.

In addition to being an ASHRAE Fellow, Professor Reindl is also a member of the American Society of Mechanical Engineers, International Institute of Refrigeration, and the International Institute of Ammonia Refrigeration. He is a past recipient of ASHRAE's Distinguished Service Award and the first recipient of ASHRAE's George C. Briley Award for the best refrigeration article in the *ASHRAE Journal*. He is a past chair and member of ASHRAE's Standard 15 committee – Safety Standard for Refrigeration Systems.

Professor Reindl has published 6 books and nearly 100 technical papers on topics including: industrial refrigeration, building mechanical systems, energy systems, indoor air quality, and solar energy.

Programs: **Ammonia Refrigeration** – 1 PDH
 ASHRAE Standard 15 – 1 PDH

Location: Roper Mountain Science Center (www.ropermountain.org)

Date: Thursday, February 13, 2014

Time: 11:30 a.m. Doors Open
 11:35 a.m. Lunch Served
 11:45 a.m. to 12:00 p.m. Chapter Business
 12:00 p.m. to 1:00 p.m. “ Ammonia Refrigeration” Program
 Short break to allow those that need to leave to do so
 1:00 p.m. to 2:00 p.m. “ ASHRAE Standard 15” Program

Cost: Lunch Program: \$10/chapter member \$15/non-chapter member (catered lunch)

Education Credit: The Technical Programs qualify for 1.0 PDH (including NC PE) for each program attended.

**Please RSVP to lowed@cxconsultants.com
No later than Noon Tuesday, February 11, 2014**

Chapter Technology Transfer



*Myrna Dayan, PE
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Region IV
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This spring, we will start putting together our programs for 2014/2015. What presentations do you want to hear about? Please let me know of any topics or speakers you would like to hear about in the upcoming year. We have a list of ASHRAE distinguished lecturers that we can use (<https://www.ashrae.org/membership--conferences/distinguished-lecturer-program>) and we welcome other speakers. Topics in the past have ranged from a wide breadth of HVAC related topics, Refrigeration, litigation to project management.

ASHRAE Freebies

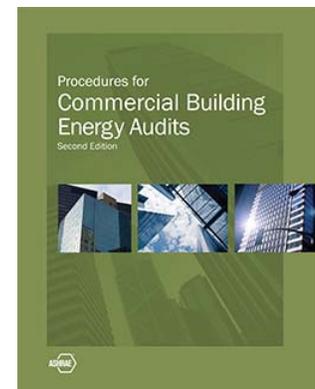
Sample forms and templates from ASHRAE's Procedures for Commercial Building Energy Audits, Second Edition, are now available for free download. Previously available only with the book, the forms show the content and arrangement of a complete, effective energy analysis report. https://xp20.ashrae.org/PCBEA/PCBEA_Supplemental_Files.html

South Carolina's Largest Solar Farm

Reprinted Article from SC Energy Office February Newsletter

In October 2013, Santee Cooper began work on the state's largest solar farm, a 3-megawatt project near Walterboro in Colleton County. Sitting on more than 14 acres in Colleton County, the farm will provide renewable energy and vital data about the costs and integration of utility-scale solar power in South Carolina. The farm will be operated by a subsidiary of the InterTech Group out of North Charleston, who will then sell the energy to Santee Cooper and the Central Electric Power Cooperative. The solar farm was officially dedicated at a January 24th ceremony.

The project, the first of its kind in South Carolina, will offer real-world data on the viability of large scale solar power generation. Each of the site's 10,010 solar PV panels will generate 300 watts, enough to power 300 homes throughout the service area. Supporters hope that the new array will demonstrate that solar can be successfully used to generate energy and that it can be integrated into existing generation fleets. Click here to view real-time power generation at the Colleton Solar Farm. .



South Carolina Energy Office Performance Contracting Workshop

An Energy Performance Contracting Workshop will be on February 13, 2014, at the Fairfield Electric Cooperative office in Blythewood.

In December 2012, a small steering committee chaired by the South Carolina Energy Office (SCEO) for Energy Performance Contracting was created and the Office of the State Engineer released common documents for public review. The common documents provide government entities a means to simplify the process of developing a performance contract.

An Energy Performance Contract (EPC) allows a building owner to identify and complete energy savings projects without having to pay upfront capital costs. EPCs begin when the building owner enters into an agreement with a private energy services company, usually called an Energy Service Company (ESCO). An ESCO is a business that identifies, evaluates, recommends, develops, installs, and arranges financing for projects that are designed to improve the energy and water efficiency and reduce maintenance costs for a facility. The ESCO will guarantee that savings meet or exceed annual payments to cover most or all of the project costs over the term of the contract. If the energy savings don't materialize, the ESCO pays the difference, not the building owner. After the contract ends, all additional cost savings accrue to the building owner.

Further information is available at:

<http://www.energy.sc.gov/newsletters/ec?st=1722>



Power Generation from Bacteria using water evaporation Cycle

Researchers at Harvard University have developed a prototype electrical generator that uses bacterial spores to harness the power of evaporating water. Power is generated by harnessing the movement of a sheet of rubber coated on one side with spores. The sheet bends as the spores dry out and straightens when the humidity increases. The bending back and forth can be used to generate electricity.

Researchers see applications from changes in humidity in sun-warmed ponds and harbors

"If this technology is developed fully, it has a very promising endgame," said Ozgur Sahin, Ph.D., who led the study, first at Harvard's Rowland Institute, later at the Wyss Institute, and most recently at Columbia University, where he's now an associate professor of biological sciences and physics.

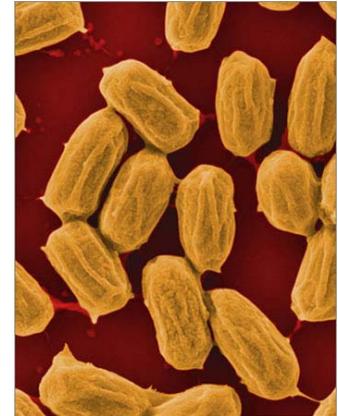
Water evaporation is the largest power source in nature, Sahin said. "Sunlight hits the ocean, heats it up, and energy has to leave the ocean through evaporation," he explained. "If you think about all the ice on top of Mt. Everest — who took this huge amount of material up there? There's energy in evaporation, but it's so subtle we don't see it."

A soil bacterium called *Bacillus subtilis* wrinkles as it dries out like a grape becoming a raisin, forming a tough, dormant spore. However, unlike a grape, they shrink reversibly and restore themselves to their original shape with water.

When Sahin first set out to measure the energy of spores, he was taken by surprise. He put a solution thick with spores on a tiny, flexible silicon plank, expecting to measure the humidity-driven force in a customized atomic force microscope. But before he could insert the plank, he saw it curving and

straightening with his naked eye. His inhaling and exhaling had changed the humidity subtly, and the spores had responded. You can see if for yourself here: <http://vimeo.com/85151102>.

The amount of force is so great that a pound of dry spores would generate enough force to lift a car one meter of the ground!



As Bacilli bacteria dry out and form spores (shown here), they wrinkle, and as they rehydrate, they swell. A team lead by former Wyss Institute resident scholar Ozgur Sahin harnessed these humidity-driven changes to power an actuator and generate electricity. Credit: X Chen/Columbia University

<http://wyss.harvard.edu/viewpressrelease/137/getting-a-charge-from-changes-in-humidity>

Technology Awards

ASHRAE Technology Awards recognize local members at the chapter level for outstanding design and innovations for effective energy utilization. The deadline for the Greenville Chapter will be March 1st, 2013.

Technology Awards Categories include:

- Commercial Buildings (New & Existing)
- Institutional Buildings
 - Education Facilities (New & Existing)
 - Other Institutional (New & Existing)
- Health Care Facilities (New & Existing)
- Industrial Facilities or Processes (New & Existing)
- Public Assembly Facilities (New & Existing)
- Residential Buildings (New & Existing)

Winning entries in each category will compete at the Regional Competition for a chance to compete at Society level. The publicity could be a great marketing opportunity for you, your firm and your client. More information is available on the ASHRAE website at <http://www.ashrae.org/membership--conferences/honors--awards/technology-awards-program>. The short form may be used for the Chapter competition. We look forward to your entries!

In addition, there are Refrigeration Awards available in both non-comfort cooling and comfort cooling refrigeration applications, which highlight innovation and/or new technologies. The deadline for submission to the Society Refrigeration committee is May 1st. Further information on the Refrigeration Awards can be found on the ASHRAE website at:

<http://www.ashrae.org/society-groups/committees/refrigeration-committee>

Event Dates for 2013-2014

Thursday 09/12/2013	Meet and Greet MEMBERSHIP PROMOTION MEETING	
Wednesday 10/09/13	ASHEVILLE Meeting @ Lenoir-Rhyne University Center for Graduate Studies of Asheville 36 Montford Ave., Asheville noon-1:30pm ASHRAE 90.1 - 2010 Waterside Economizer Standards	Presenter: James C. ("Chris") Edmondson, Jr. Distinguished Lecturer
Thursday 10/10/2013	ASHRAE 90.1 - 2010 Waterside Economizer Standards	Presenter: James C. ("Chris") Edmondson, Jr. Distinguished Lecturer
Thursday 11/14/2013	Liquid Desiccant Technology	Presenter: Steve Blinn
Thursday 12/05/2013	ASHRAE Greenville 50th Anniversary Party Greenville Hyatt 5pm-12am Featured Program: Climate Change	Presenter: Thomas E. Werkema, Jr Distinguished Lecturer
Thursday 01/09/2014	Thermally Active Structures for Green Buildings Joint meeting with USGBC	Presenter: Daniel Nall, PE Distinguished Lecturer
Thursday 02/13/2014	Ammonia Refrigeration Systems	Presenter: Doug Reindl, Ph.D Distinguished Lecturer
Thursday 03/13/2014	Controlling Outside Air in VAV Systems	Presenter: Rodney R. Hinton
Thursday 04/10/2014	Variable Volume Pumping	Presenter: David McDaniel
Thursday 05/08/2014	Integrated Building Design	Presenter: Charles E. ("Chuck") Gulledge III, PE Distinguished Lecturer



Unless otherwise stated meetings are:
 2nd Thursday of the Month
 11:30am – 1pm
 Wilkins Conference Center
 Roper Mountain Science Center