



Giga-Joule

December 2013

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

Meeting Announcement

The December meeting will be held on Thursday, December 5 at the Hyatt Regency. For more information, please contact our Secretary, Ryan Tomnsen, at secretary@ashrae4greenville.com.

A Message from the President

We are pleased to welcome Mr. Thomas Werkema, Jr to discuss Climate Change legislation for our December meeting. This meeting is our celebration of the Greenville Chapter of ASHRAE 50th anniversary. See the schedule below for more details on these events and all our 2013-2014 meetings. We are having a 5:30 PM meeting this time and it is located at the Hyatt in downtown Greenville, SC. The meeting fee is \$25 and spouses are welcome.

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

Ladies & Gentlemen,

Hello again from ASHAE Membership! I hope this letter finds each of you well and that you have recovered from the Thanksgiving festivities. I would like to take this opportunity to ask each of you to please consider bringing a prospective member to either our December the 5th banquet, or to our January meeting. Growing our membership, specifically our base of young engineers, is vital to the health of our chapter. As always, thanks for all that you do for ASHRAE, and I wish you and your families a very Merry Christmas!

Tigue Garick
Membership Promotion Chair
Greenville, SC
864-616-0592



December Meeting ASHRAE 50th Anniversary Party

Presenter: Thomas Werkema, Jr

Program: Climate Change

Please RSVP to lowed@cxconsultants.com

History

Greenville Chapter History 1993 - 2013

by Devon Cortright

In a previous issue of the newsletter a history of the chapter from 1963 to 1993 written by Benny Bootle was published. The article that follows picks up from Benny's 1993 chapter history and brings to 2013.

Previously we published a list of presidents up to 1993. Below we continue with a list of chapter presidents from 1993 to present.

1993/94	Kevin Melton
1994/95	Mike Metz
1995/96	Pete Arsenault
1996/97	Paul Jensen
1997/98	Hank McCullough
1998/99	Terry Bowen
1999/00	Mark Schnetzka
2000/01	Steve Abernathy
2001/02	Patrick Leake
2002/03	Mike Eckert
2003/04	Ryan McCleary
2004/05	Karl Counts
2005/06	James Bryan
2006/07	Eric Scott
2007/08	Karl Counts
2008/09	Will Thomason
2009/10	Davin Sandhu
2010/11	Devon Cortright
2011/12	Grant Wiegmann
2012/13	William "Ryan" Tonnsen
2013/14	Daniel Lowe

Benny's chapter history stopped in 1993 with meetings at the Holiday Inn at I85 and US25. From there meetings moved to the Phoenix Inn on Highway 291 where I attended my first one. Prior to the mid 90's the meetings were typically held in the evening with a seminar starting at 5:30, an "attitude adjustment session", dinner, followed by a program. Fees for an evening meeting were typically about \$12. In the mid 1990's occasional lunch meetings were scheduled and over time all meetings were moved to a lunch format, with exceptions for special occasions. During this transition period, meetings were held at two Piedmont Natural Gas Offices, Duke Power Offices, AmeriSuites, and Trane Upstate. Roper Mountain Science Center has been the primary location for the lunch meetings since 2002. As of this writing fees for

the lunch meeting are \$10 for members and \$15 for non-members. Having served on the Greenville board for many years I can say that the merits of an evening versus lunch meeting have been discussed many times, and will probably be discussed many more.

Up until 1996 the end of the ASHRAE year was frequently capped with a BBQ at Benny Bootle's residence. Benny passed away in December 1996.

In reviewing historical documents to write this history I noted that from 1992 through 1998 at least one meeting a year was held in the Asheville area, usually at the Holiday Inn, Arden. The Western North Carolina Section received its charter in April 1995. As of this writing I cannot state if the Section is considered active or not. In October of this year a meeting was held in Asheville at the Lenoir Rhyne Center for Graduate Studies. Attendance was very good.

A newsletter delivered via the US Postal Service was dropped in 2003 and the chapter electronic e-mail newsletter was born. In 2002-2003 printing and mailing the newsletter cost the chapter \$2640, a significant portion of the budget.

The Greenville Chapter website was established in 2003. Crashed (or more correctly froze) in 2011 giving the appearance of Grant Wiegmann remaining as on-going president. A new and improved website was reborn in November of 2013.

In 2006 the chapter was recognized by the North Carolina Board of Examiners for Engineers and Surveyors (NCBELS) as an authorized provider of continuing education credits for professional engineers registered in North Carolina. Seminars and programs are eligible for Professional Development Hours in North Carolina.

The Chapter Regional Conference (CRC) is held in August and hosted by the seven chapters in Region IV on a rotating basis. Greenville hosted CRC in 1998, 2005, and 2012. The 1998 CRC was held at the Grove Park Inn in Asheville, The 2005 and 2012 CRC's were held at the Embassy Suites on Verdae Boulevard in Greenville.

Benny's history article mentioned flying to the national meeting on a DC-3 for \$100 with numerous stops. The New York meeting in January 2014 has a registration fee of \$540 to \$695, early reservation hotel at \$240 a night, and add airfare at \$280 and up. Of course air travel now will only require one stop or less. Chapter membership is up to \$30 from \$5 and national dues are \$196.

Establishing a Clemson Student Chapter has been an on-going goal of the Greenville chapter for many years. The goal became a reality due to the efforts of Daniel Lowe, then Student Activities Chairman, and Dr. Richard Miller, faculty advisor. The student chapter's first official meeting was in November 2011 with Ron Jarnigan, ASHRAE President as their first speaker.

This was not Greenville's first student chapter. There was a student chapter at Greenville Technical College chartered in March 1995 with Jerry Moore, Student Activities Chairman and Tom Shiflet, Greenville Tech, as the organizers. Announcements of a new student chapter are made in bold type in the newsletter, the disappearance of a student chapter happens quietly. Based on the writer's not so impressive memory the Greenville Tech Student Chapter stopped functioning sometime before 2003.

Ron Jarnigan was not the first ASHRAE president to visit us. In March of 2002 William Coad, ASHRAE President, visited the Greenville chapter, and conducted a seminar on Ethics & Economics of Energy Conservation. Over the years the Board of Directors, lead by the Programs Chairman, work to present interesting and educational programs. They haven't all been home runs, but most have been very good. Below is a list of some of the highlights.

- 4/1996 Jim Oswald - How to Surf the Internet (It was a new thing then.)
 - 4/1998 Panel Discussion on Specifications
 - 3/1999 Dave Miller - Y2K - Joint Meeting with NSPE (Remember the scare associated with the millennium and computers?)
 - 9/2004 Marilyn Flenner - Litigation & Liability for Engineers. (There have been numerous speakers over the years addressing litigation and liability issues.)
 - 9/2005 Professor Stanley Mumma - Dedicated Outdoor Air Systems
 - 3/2006 Dan In-Hout - Diffuser Selection (He returned in 2007 to discuss VAV systems.)
 - 2/2009 Professor Essam Eldin Khalil, Cairo University - Ventilation of Archaeological Tombs
 - 5/2009 Thomas Creek Brewery Tour (For some reason not everyone stayed with the tour.)
- Various dates - Chris Edmonson - Numerous topics and always a favorite speaker.

There have also been many good speakers from our own ASHRAE Community. Please let the board know of suggested topics and speakers.

There are currently 206 members assigned to the Greenville Chapter. We are always looking for members willing to help with operations. One of the reasons I have stayed involved is the people that I meet and connections to others in this field, not just in Greenville, but all over the Carolinas and Georgia. We would love to see some new faces on the board.

Chapter Technology Transfer

Technology Award Winners

What do a net zero facility, a historic building, a cheese factory, a residence, a college building and an agriscience farm have in common? They all have been recognized by ASHRAE as innovative buildings as part of ASHRAE's Technology Awards. The designs incorporate ASHRAE standards for effective energy management and indoor air quality.

Here are some of the project highlights:

Packard Foundation Net Zero Energy Headquarters, Los Altos, CA

- Winner: Peter Rumsey, PE, Integral Group, Oakland CA
- Building size: 49,000 sq. ft.
- Largest certified net zero energy building in the world to date
- Energy reduction: 46% compared to California Title 24 standards
- Onsite power generation
- 40% water use reduction
- Capture or infiltration of rainwater
- Innovative design features:
 - Nighttime cooling tower and storage tank
 - High efficiency air source heat pump boiler with storage
 - Induction diffusers with chilled beams
 - Low pressure drop design

Spokane's Inland Empire Railroad (SIERR) Building, Spokane, WA

- Winner: David Budd, PE, McKinstry, Seattle, WA
- Building size: 68,000 sq. ft.
- Originally built in 1907 serving as an electric railroad car facility. Now the national historic landmark serves as a commercial office building.
- Now a model project for rehabilitating historic buildings through collaboration with National Park Service.
- Innovative design features: hydronic ground source loop, office space/radiant floor system; server room heat recovery; dedicated outside air system; and common areas/constant volume heat pump systems.

Fromagerie des Basques, Trois-Pistoles, Quebec

- Winner: Gheorghe Mihalache, Ph.D., P.Eng., Atis Technologies, Montreal, Quebec, Canada
- Family cheese factory transforming 3 million liters of milk to cheese
- Background: The factory used to send the whey to a local pork farm but that facility closed and the municipality was unable to treat the entire organic reject. To continue the production, the owner had to invest in a treatment plant. Change the heating and refrigeration of the site.
- Innovative Design features:
 - Construct a digester to produce biogas from the plant rejections (whey and white waters) and use the biogas in the production and buildings heating.
 - Treat the digester effluent to be able to correspond to the environmental standards permitting use of an absorption field.
 - Add ventilation (100 percent fresh air) in the cheese production area to ensure a positive pressure and correspond to Canadian Food Inspection Agency regulations.
 - Change the High Temperature Short Time to be able to preheat the milk in the pasteurization using the refrigeration heat reject.
 - Implement a control system performing survey of the mechanical system, automated control of main production processes, alarms handling and optimization of energy consumption.

Dageforde Residence, Omaha, Nebraska

- Winner: Darren Dageforde, P.E., director of utilities at the University of Nebraska Medical Center, Omaha, Neb
- Walkout raised ranch home operating at an energy use density of a remarkable 5.24 kBtu/ft²-yr.

- During the summer of 2012, the hottest summer on record in Nebraska, a total of 93 kWhrs was measured at an actual direct energy cost of \$3.70 to cool and air condition the house for the entire summer, a reduction of over 95 percent from an average regional house.
- Home was constructed at a cost significantly less than market price for a comparable custom home
- Innovative Design features:
 - Air conditioner-less (no traditional air conditioner/furnace)
 - Insulated concrete form walls and concrete floors with a standard truss rafter system.
 - Small solar array of 4.1KW of photovoltaic panels is installed on the roof.
 - Hydronic radiant heated and cooled floor slabs provide environmental conditioning.
 - Floor slabs provide thermal storage mass to evenly and continuously distribute thermal energy to the occupied environment.
 - Radiant heating system is driven from water-to-water heat pump connected to five closed loop geothermal wells as the heat source.
 - An original application geothermal tempered fresh air supply system provides humidity and carbon dioxide control for the home.
 - Domestic hot water is generated by a water-to-water heat pump also served from the geothermal well system. T
 - Through system integration “reject cooling” is recaptured from the domestic hot water heat pump for partially cooling the home in the summer time.
 - Additional cooling is derived directly from the geothermal well system.

University of Findlay, 300 Davis Street Building, Findlay, Ohio

- Winner: Stephen Hamstra, P.E., Greensleeves, Findlay, Ohio
- 42,000 sq. ft. science classrooms, offices, conference rooms and support spaces
- Innovative Design features:
 - A geothermal heat pump energy plant consisting of the magnetic-bearing chiller, pumps, variable speed drives and controls was factory-assembled and shipped to the site in portions for site assembly. This significantly reduced construction and commissioning time.
 - A control system using anticipatory predictive algorithms for the geothermal heat exchanger (GHX) seasonal and daily pre-conditioning to minimize energy use in lieu traditional “real-time” control that triggers closed-circuit cooling tower (CCCT) operation when the GHX temperature simply exceeds a setpoint. The CCCT may operate during the night or during winter months to pre-condition the GHX for summer cooling and minimize summer daytime CCCT operation.
 - The control system measures and “learns” the actual building load imposed on the GHX and adjusts the preconditioning algorithms in relation to this intelligent model.
 - Use of radiant cooling and active chilled beam sensible cooling via ground temperature water in lieu of chiller operation for much of the year.

Locust Trace AgriScience Farm, Lexington, Ky.

- Winner: Stephanie Febles, CMTA Consulting Engineers, Lexington, Ky.
- 82 acre, new vocational high school campus, consisting of a 43,000 square foot academic building, a 3,500 square foot greenhouse and a 21,500 square foot arena building.
- Innovative design features include:
 - 168 panel evacuated tube solar thermal that is capable of one million BTUs of peak generation and generates hot water for duct-mounted hot water coils, fin tube radiant heaters, and the energy recovery wheel hot water coil. On a cool cloudy day, geothermal water-to-water heat pumps back up the solar thermal system.
 - Plug load controls system installed throughout the building. Almost every receptacle in the building is swept off at night. Specific receptacles remain on due to the fact that they are lighting for incubators or filters for aquariums.
 - The energy usage and several other building vitals are displayed for the students, faculty and the district in the lobby and through a web portal.

Now it's your turn! Greenville Chapter 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, 2014.

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>



Myrna Dayan

Chapter Technologies Transfer Chair, Greenville Region IV

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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	<i>Tentative</i> The Art and Science of Building Enclosure Commissioning	Presenter: Fiona Aldous
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