

# The Central New Yorker

## ASHRAE Newsletter

The CNY Chapter of the American Society of  
Heating, Refrigerating and Air Conditioning Engineers

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## THE PRESIDENT'S Message

I'd like to thank Danja McMillan from Camfill Farr for coming in and speaking at last months meeting. Danja spoke about Appendix J of ASHRAE Standard 52.2-2007 (B) on how filters are tested. It was interesting to find out the filters true efficiency differs from it's advertised efficiency after it's been in use for a period of time. You would think that the longer a filter is in use and the dirtier it became that the more efficient it would be. The new test methods for Appendix J proved this wrong in some cases.

This months meeting is Carrier Sponsored History Night. Vishnu Sishtla from Carrier Corporation will speak on the History of Centrifugal Chillers. Vishnu Sishtla is an Engineering Manager of Centrifugal Compressor group. He has been working with Carrier for the past 24 years in developing water-cooled centrifugal chillers.

I look forward to seeing you on the 10<sup>th</sup>.

*Jim Walker*  
CNY Chapter President

### ASHRAE Monthly Meetings

Meeting Date: March 10, 2010

Location: Doubletree Hotel Syracuse

6302 State Route 298, Carrier Parkway East, Syracuse, NY 12205

Times: 5:30 – 6:00 p.m. Social Hour (cash bar)  
6:00 – 6:30 p.m. Dinner  
6:30 – 6:45 p.m. ASHRAE Business  
6:45 – 8:00 p.m. Main Program

Cost: \$25.00 per person.

Reservations: <http://centralnewyork.ashraechapters.org>

<http://www.centralnewyork.ashraechapters.org>

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# 2010 CNY ASHRAE Programs

## History of Centrifugal Chiller

*I would like to say thank you again to Ms. Danja McMillan, EDCO Sales and to all the members of ASHE for a great meeting.*

In March we will have Vishnu Sishtla who will speak on the History of Centrifugal Chiller(s). The centrifugal chiller plays an important role in the building central air-conditioning system. The first centrifugal chiller was patented by Dr. Willis Carrier in 1921. Since its invention, the chiller has gone through several changes both in refrigerant fluids and component architecture. Although, the primary function of the chiller is to provide chilled water for comfort cooling, over the last thirty years, it became one of the critical elements in the global climate change. The talk covers changes to the chiller from 1921 to the present day and future trends. The presentation starts with a brief overview of the vapor-compression cycle and the effect of refrigerant fluids, economizer and throttle loss recovery on system efficiency. The introduction is followed by function of major components such as heat exchangers, compressors and drives, with focus on their effect on efficiency.

Vishnu Sishtla is an Engineering Manager of Centrifugal Compressor group. He has been working with Carrier for the past 24 years in developing water-cooled centrifugal chillers. He has worked both with CFC and HFC chillers.

Please sure to get your reservations soon, it looks like it will be a very interesting lecture.

## Upcoming Programs

March 10	<b>Carrier History Night</b>
April 14	<b>Tour</b> — Cornell Combined Heat & Power Plant
May 12	<b>Julian DeBullet</b> — Variable Refrigerant Flow/Joint Meeting RSES
June	<b>Clambake &amp; Golf Tournament</b>

## CNY ASHRAE Participation 2010/11 Year

**J**t is that time of year when the Board and officers are nominated for next year. If you are interested in participating on the Board please contact me at 492-2445 or [Rae@buildingenergysolutions.net](mailto:Rae@buildingenergysolutions.net). Maybe you know someone whom you think would benefit from participation you could recommend that they contact me. No organization can exist without participation by its members, is it your turn?

*Thank you for your consideration.*

# Historically Speaking

## AC for Washington's Mount Vernon

Over the years, Carrier Corporation donated special air conditioning systems for significant historic structures. Central New York Chapter member Charlie Bullock, who recently retired from Carrier, was largely responsible for the design of many of these systems that were all very challenging. Charlie was kind enough to let me have a copy of his notes on these systems, from which I have developed this story on Mount Vernon.

The Mount Vernon Mansion was originally constructed around 1735 by Augustine Washington, father of George, who lived there as a young boy and inherited the property in 1754. Today it is owned by the Mount Vernon Ladies Association (MVLA) after purchasing it from the Washington family in 1858. Long term preservation of the Mansion and its contents was the goal of the MVLA with the 1999 installation of a year round AC system on the bi-centennial of George Washington's death.

The Mansion is situated on a bluff overlooking the Potomac River and is a wood frame building comprised of exterior walls of pine siding, 3x4 studs (air space, no thermal insulation), and interior lath and plaster. The windows are all single pane. There are three floors plus a full basement. The first floor is 32 ft wide by 95 feet long – 3040 square feet of floor area. The restrictions for an AC system acceptable to the MVLA were most challenging:

- a. No modifications to the building envelope, interior or exterior.
- b. No AC equipment of any kind inside the building, except for air ducts in the basement and in concealed locations on upper floors. Air handling units are forbidden, fearing noise, vibration and possible fire hazards. Water piping and refrigerant piping are also forbidden.
- c. No new holes in floors or walls for air supply or return.
- d. No visible AC equipment outside the Mansion, at least in the immediate vicinity.

Load calculations for the Mansion indicated a cooling load of 190,000 Btu/hr and a heating load of 240,000 BTU/hr. After working with the MVLA for nearly two years, a system design to preserve the Mansion was completed that had many unique features:

- a. The air-cooled water-chilling unit is located about 500 feet from the Mansion in a wooded area, hidden from the view of visitors by the forest tree line.
- b. The air handling units containing chilled water and hot water coils, and air cleaning units are located in an underground concrete vault adjacent to the Mansion that is covered over with sod so that it is essentially invisible.
- c. Chilled water lines are routed between the chiller and air handlers via insulated pipes in trenches.
- d. Conditioned (heated or cooled) air is ducted from the air handling units via conventional insulated sheet metal ducts which enter the basement below ground level.
- e. Conditioned air is distributed within the Mansion via ducts placed within existing wall cavities, and delivered to the various rooms through wall and ceiling outlets that are difficult to identify by the casual observer. On the main floor, unused fireplace grates hide floor-level air outlets.
- f. Space conditions within the Mansion are allowed to vary with the season in order to avoid moisture condensation on wall and window surfaces and to minimize thermal gradients across exterior walls. In winter, the space temperature can drop as low as 60 degrees F and the relative humidity to 30%. In summer the space temperature can rise to as high as 80F and the relative humidity to 60%.
- g. Numerous sensors within the Mansion monitor space air temperatures and humidities, window and wall temperatures and wall cavity humidities.

With this system the furnishings as well as the building interior have been protected from degradation from extremes in moisture content for future generations. Additionally, tourist comfort has been enhanced and artifacts, such as china, furniture and other personal memorabilia now can be displayed. There is further information on this and other Carrier systems in historic structures at [www.Carrier.com](http://www.Carrier.com) under Project Showcase. In it, there is a paragraph on this Mount Vernon project that caught my eye:

"The legacy of Willis Carrier is playing a role in preserving the legacy of George Washington. Though they lived more than a century apart, the "Father of Air Conditioning" made a generous donation to the man considered to be the Father of the United States of America".

— Paul Britton, Chapter Historian

# Thank You!

**W**ith the support of thousands, ASHRAE Research would like to extend a special thank you to these top investors in the Central New York Chapter and invite others (individuals AND companies) to add their names to the 2009-2010 Honor Roll of Investors at [www.ashrae.org/aboutus/resource\\_promotion.asp](http://www.ashrae.org/aboutus/resource_promotion.asp). Consider one of our higher levels of support as a way to show your commitment to ASHRAE Research!

## **Golden Circle Donors (\$5,000+)**

### **Silver Donors (\$1,000-\$4999)**

*Carrier Corporation – UTC*

### **Bronze Donors (\$500-\$999)**

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## Updated Course on New Green Building Standard Available

ATLANTA—With publication of the green building standard, an updated online seminar reviewing its requirements is now available from ASHRAE.

ANSI/ASHRAE/USGBC/IES Standard 189.1, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings, is the first code-intended commercial green building standard in the United States. It provides a long-needed green building foundation for those who strive to design, build and operate green buildings. The standard covers key topic areas of site sustainability, water use efficiency, energy efficiency, indoor environmental quality and the building's impact on the atmosphere, materials and resources, and also includes construction practices as well as plans for operation of the building after occupancy.

A course from ASHRAE on the requirements of the standard, Understanding Standard 189.1P for High-Performance, Green Buildings, takes place March 15 and is taught by Tom Lawrence, a member of the committee that developed the standard. The course is one of 14 being offered this spring.

"The course has evolved as the standard has taken shape, and I anticipate that the course will continue to evolve as changes and addenda are approved, resulting from changes in concepts, technologies and design for green buildings" Lawrence said. "Standard 189.1 has the potential to be a 'game changer' in the industry and thus anyone who is working with green design would benefit from learning more about the standard. One way to do that is by taking this course."

The 14 online, instructor-led seminars that will run from March until May and are available to those interested in expanding their knowledge of the HVAC industry and keeping up to date with the latest technology and their applications.

A full list of seminars and registration information can be found at [www.ashrae.org/onlinecourses](http://www.ashrae.org/onlinecourses). Other courses are:

- ❖ *Humidity Controls: Basic Principles Loads and Equipment*
- ❖ *Humidity Controls: Application, Control Levels & Mold Avoidance*
- ❖ *Introduction to Green Buildings and Sustainable Construction*
- ❖ *The Commissioning Process and Guideline 0*
- ❖ *Introduction to Thermal Energy Storage Systems for Air Conditioning*
- ❖ *Complying with Standard 90.1-2007 HVAC/Mechanical*
- ❖ *Energy Management in New and Existing Buildings: a Sustainable Activity*
- ❖ *Complying with Standard 90.1-2007 Envelope/Lighting*
- ❖ *Using Standard 90.1-2007 to Meet LEED Requirements*
- ❖ *Introduction to Cleanroom Design*
- ❖ *District Cooling and Heating Systems: Central Plants*
- ❖ *Complying with Requirements of ASHRAE Standard 62.1-2007*
- ❖ *Understanding and Designing Dedicated Outside Air Systems*

The three-hour-long courses are taught in real-time, from 1:00 p.m. - 4:00 p.m. EDT, and feature interactive audio. Three professional development hours or American Institute of Architects learning units or 0.3 continuing education units are available for each course.

ASHRAE, founded in 1894, is an international organization of some 50,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.

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# Conference Information



## IAQVEC 2010 *The 7th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings* August 15-18, 2010, Syracuse, New York, USA

Hosted by:



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### Invitation:

We cordially invite you to participate in IAQVEC 2010 at the picturesque campus of Syracuse University!

IAQVEC is a premier international conference series, held once every three years. It has previously been held in Montreal, Canada (1992, 1995), Lyon, France (1998), Changsha, China (2001), Toronto, Canada (2004), and Sedai, Japan (2007).

The theme of IAQVEC2010 is "Innovation and Integration". IAQVEC2010 will provide a forum for:

1. Presentations of original research work and findings,
2. Demonstration and displays of innovative technologies, and
3. Discussions of future challenges and opportunities.

It will cover a wide range of key research areas with the goal of simultaneously improving indoor environmental quality and energy efficiency, and enhancing wellbeing and sustainability.

We are looking forward to your participations and contributions!

<i>Jensen Zhang</i>	<i>Suresh Santanam</i>	<i>Hans Schleibinger</i>	<i>Robert Thompson</i>
<i>Conference</i>	<i>Co-Chairman</i>	<i>Co-Chairman</i>	<i>Co-Chairman</i>
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[Abstract submission deadline extended  
until January 31, 2010](#)



SU Quad for breaks & Lunches



Hall of Languages for Tech Sessions