



Post Time

ASHRAE Newsletter – Bluegrass Chapter

November Meeting & Program

Mr. Robert Baker, ASHRAE Distinguished Lecturer

ASHRAE Standard 180, A New Approach to HVAC System Maintenance

The recently published ASHRAE, ACCA, ANSI Standard 180 establishes for the first time ever, a minimum acceptable level of performance for HVAC System maintenance. This talk introduces the new standard and explains how it can be valuable to design engineers as well as building owners. After hearing this presentation, attendees will be able to explain how implementation of the new standard coupled with retro-commissioning of a building can save an owner thousands in wasted energy, improve indoor air quality and sustain a satisfactory level of indoor environmental quality.

Robert Baker is President of the RGB GROUP which provides business advisory services on HVAC maintenance and related indoor environmental issues to building owners, their staffs and the service and product suppliers who serve them. He has over 25 years of experience in all facets of building operation and maintenance. In the RGB Group, he has assembled a team of Engineers and technical experts in all phases of HVAC maintenance and indoor environmental quality. They provide training, building operational support, expert witness and prepare technical reports on both HVAC maintenance and energy efficiency. The group works throughout the Americas and recently has established an active practice in Asia, Based in Shanghai.

He is an enthusiastic contributor to our industry through several organizations. He is the immediate past President of the Indoor Air Quality Association (IAQA). He sits on two ASTM Standards committees, four ASHRAE Standards and Technical Committees, and has written numerous papers, articles and is a regular ASHRAE presenter. He is chair of the ASHRAE/ACCA HVAC Inspection and Maintenance Standards Project Committee (SSPCISO) and the Indoor Air Quality committee of the Consumer Specialty Products Association (CSPA). He previously chaired the IICRC S520 Standard Committee and served on the HVAC Hygiene Standards committees of both ACCA and NADCA. He has been awarded the ASHRAE Distinguished Service Award and is a member of the ASHRAE Standards Committee. An avid researcher, Mr. Baker holds both product and method patents in HVAC/R system cleaning technology and received the IAQA award for product technology for the year 2001. His current research interest is the impact of maintenance of HVAC systems on air quality, system life and energy efficiency.

Date	Friday, November 20, 2009	
Time	11:45 am	Lunch
	12:00 – 1:00	Meeting
Place	Harshaw Trane Lexington 2350 Fortune Drive Lexington, KY	
Meal & Cost	Italian Bar by Good Faith Catering Members: \$10 Non-Mem:\$15 Cash or check Students: \$4 only	
RSVP Required	RSVP to Chris Tyler at chris@thermaleq.com	

Please RSVP by Tuesday, November 18th to Chris Tyler @ chris@thermaleq.com if you plan to attend.

Our Chapter relies solely on volunteer effort to accomplish tasks that make all things go for Bluegrass ASHRAE. Participation in the Chapter requires only minimal effort for an excellent payback in knowledge, camaraderie, and a sense of involvement. If you are interested in participating in your Chapter activities in anyway, big or small, please contact Grant Page at 859-253-0892 (grant.page@gmail.com). We could really use your help!

President's Letter

by Grant Page, PE, 2009-10 Chapter President

Greetings everyone!

Special thanks to Tim Chinn of Ebco, Inc. for his presentation on air balancing last month. Tim's insight and experience in balancing was interesting to hear and, once again, valuable knowledge for HVAC engineers. As engineers we have to verify our systems are operating at the highest efficiency, and air balancing is one way to ensure this important characteristic of a properly operating building.

This month we have our distinguished lecturer, Mr. Robert

Baker. From ASHRAE.org: The ASHRAE Distinguished Lecturer program provides ASHRAE chapters, student branches, and other organizations with lecturers equipped to speak on relevant subjects of interest to ASHRAE members and guests.

I'm looking forward to hearing Mr. Baker and I hope all that of you reading this will take special interest in attending this month.

Also this month is Research Promotion month. Last year, ASHRAE raised a record amount of money for research and I'm hoping all of you might contribute something to the cause...after all the research is leading the way to a more energy efficient world. Please give what you can by bringing a check this month for Tom Erpenbeck, our RP chair. I've donated \$100, as have all your Chapter Officers.

I'm working on establishing the date for this year's Christmas Party, and I'll send out an email ASAP once we have coordinated with ASME.

It bears repeating: This year we are working hard to **lower the cost** for you to attend Chapter lunches to \$10 for members, \$15 for non-members, and **free lunch** for members of our student contingent who are ASHRAE members. **But to keep prices low, I do need your help.** Please RSVP for lunch to chris@thermaleq.com. It is very important not only to have enough food, but we need to ensure we have the right amount of food.

Enough from me...enjoy the newsletter and see you on November 20th if not sooner!

Grant Page

2009-2010 Program Dates & Topics

Date	Meeting Topic
September 18th	Greening Your Preventative Maintenance Program
October 16 th	HVAC Air Balancing
November 20 th	Standard 180: A New Approach to HVAC System Maintenance, ASHRAE DL
December ??	Christmas Party
January 15 th	Chapter Technology Award Presentation
February 19 th	DDC Controls
March 19 th	Energy Modeling
April 17 th	Chilled Beams
May 15 th	Technical Seminar, ASHRAE DL

2008-2009 Program Themes

Date	Meeting Theme
October 16 th	Student Activities
November 20 th	Research & Membership Promotion
January 15 th	Past Presidents
February 19 th	Membership Promotion
March 19 th	Research Promotion
April 17 th	Student Promotion
May 15 th	Technical Seminar

High Performance Building Workshop

USGBC, AIA and ASHRAE have once again joined forces with the Kentucky Finance & Administration Cabinet to continue our collective efforts to enhance and support implementation of Kentucky's High Performance Building Standards. This workshop is the second in a series to educate those interested in working on state facility projects.

Agenda details and registration here:

<http://guest.cvent.com/EVENTS/Info/Summary.aspx?e=54291604-8447-43c8-acf7-16703b0f529a>

Deadline for advanced registration is November 27, 2009.

Engineers - This program will provide six (6) PDHs (Professional Development Hours) toward continuing education requirements.

Bluegrass Chapter leaves a lasting impression on ASHRAE

by Brian Hafendorfer, 2009-10 Historian

In December of 2008, the Bluegrass Chapter's officers and committee chairs voted unanimously to demonstrate our chapter's commitment to ASHRAE's goals, memorialize our support and leave a lasting testament to our membership in ASHRAE. This was done in part by purchasing a paver to be located at the newly renovated ASHRAE headquarters in Atlanta, GA that was dedicated in October, 2008. We were notified in October, 2009 that the paver has been installed.



The paver's inscription reads, "Bluegrass Chapter, 2008-2009" and is dedicated to the entire chapter's membership; past, present and future. The continuous and enthusiastic service of all of our members is testament to the people that the chapter is comprised of and is what makes ASHRAE successful.

Congratulations!!!!!!!

by Christy McGuire, 2009-10 Student Activities Chair

Student Activities Committee (SAC) would like to congratulate Jake Trimpe, a CMTA intern and University of Kentucky student, for winning the \$50 raffle during the October 16th meeting.

If you know a current engineering student in a surrounding college, please encourage them to attend our ASHRAE chapter meeting on November 20th. STUDENT LUNCHESES are DISCOUNTED.

If you are interested in helping out with the Student Activities Committee, please email Christy at christy.mcguire@trane.com

YEA Leadership Weekend Report

by Michael Rakes, HPBD, LEED AP

I am a mechanical engineer at Mason & Hanger and this past October I attended the YEA Leadership Weekend. The email I received asking me if I would like to attend the event was the first time I had heard of YEA. I reluctantly accepted the invitation providing that the Bluegrass and/or Regional Chapters would pay the cost of attendance. The idea of spending a weekend learning how to become a leader in ASHRAE was not on my bucket list to say the least. The reason I felt this way

was due to a couple of experiences at previous ASHRAE events. The common impressions that young engineers have of ASHRAE Chapters and events are that only old people attend and that it is an intimidating experience. Unfortunately, that was the same impression I had as well so I didn't become involved with any ASHRAE Chapters or attend any events until I accepted the invitation to the YEA Leadership Weekend.

As many of you already know, YEA stands for Young Engineers in ASHRAE. However, I only found out what YEA meant a day or two before heading down to Atlanta for the weekend. I started to feel better about the weekend realizing that there will be a lot of young engineers like me that were attending the event.

My excitement quickly dissipated once everyone was in the conference room acting like typical engineers, standing around not really talking to anybody. I caught myself thinking, what have I gotten myself into? If that wasn't bad enough, then I walked a man, which looked like he was just off the street, telling everyone he was the sessions' leader and to get in a circle. Then he proceeded to have an attendee hand out balloons. That was it, I was bound to have an anxiety filled, boring and useless weekend. I should have known not to attend anything having to do with ASHRAE. The crazy man actually got everybody to relax and have fun with those same balloons. It was amazing! I felt so much better after that one task that I couldn't wait to see what he was going to have us do next.

The crazy man with the balloons, better known as Stephen Gray, is from East Carolina University and has been involved with the YEA Leadership Weekend from the beginning. The weekend involved many events teaching us skills that we had in us but didn't know how to use effectively. Additionally, he taught us how to use the skills of our co-workers to the betterment of the team while still allowing them to feel motivated, important and appreciated. The style of teaching was really cool and got everyone to laugh, talk and have fun while learning. Along with the leadership sessions, the weekend was filled with great entertainment which allowed us to get to know each other on a personal level as well as professionally.

The weekend turned out to be one of the best weekends I have had in a long time and I recommend every young engineer to take advantage of the opportunity and attend the YEA Leadership Weekend. I am so glad I attended an ASHRAE event. The weekend has motivated me to become more involved with ASHRAE and to start attending the Bluegrass Chapter meetings and events.

HFC Phase Out Possible

by Eric Wilson, Harshaw Trane Lexington
(Originally published in YEA Connection Newsletter,
October 2009-edited for length-GP)

As a young sales engineer I have taken a particular interest in all of the politics surrounding the issue of refrigerants used in HVAC industry. The most important observation I have made so far is that refrigerant technology is just as volatile as electronics. In both cases, you can be certain that what we are using today will look very different from what we will be using ten years from now.

Equipment manufactures have been working frantically for the past several years to transition to new refrigerants such as HFC 410a and 134a, but it seems they may soon find themselves trapped in a revolving door as there is already progress on an HFC phase-out. Denmark, Australia, and Switzerland have already banned HFCs completely and the European Union has banned HFCs in moving equipment (automobiles). The reason is that while R-134a's Global Warming Potential (GWP) is slightly better than R-22's, it is still relatively high at 1430.

Currently, HFCs do not have a phase out under the Montréal Protocol because they have no Ozone Depleting Potential (ODP). While the Kyoto Protocol put global pressure on GWP, many countries chose not to participate when negotiations reached a stalemate. The United States is now moving quickly towards its own mitigation of GWP chemicals such as HFCs and CO₂. There has been a lot of talk around "cap and trade" programs that would essentially setup a market to buy and sell carbon offset credits. Such a program gives carbon producers the ability to purchase "the right to pollute" and pays companies that adequately curb their carbon production. Buried in the details of these bills is news of a cap and trade on HFCs in addition to the better known CO₂. If the program is implemented as planned, the price of R-134a is expected to climb as high as \$35.75/kg according to Kostas Kontomaris, Ph.D. of Dupont Fluoroproducts, speaking at the ASHRAE summer conference in Louisville. According to Dr Kontomaris, R-1234yf is the front runner to replace HFCs. R-1234yf has zero ODP and its GWP is only 4. Toxicity is extremely low (500ppm workplace safety) and while it is more flammable than the refrigerants it may replace, tests seem to indicate flammability

concerns will be minor.

The continued challenge for the industry is to find a refrigerant with the lowest ODP, GWP, toxicity, and flammability. Perhaps most importantly, whatever refrigerant is used, it should provide extremely efficient heat transfer so that manufactures can continue to make more efficient and more environmentally friendly HVAC equipment. After all, the most environmentally damaging effects of HVAC equipment is not a direct result of the refrigerant used, but an indirect result of the power plants that provide the electricity to run the HVAC equipment. If cap and trade is passed, the price of electricity will rise rapidly, most predictions are in the range of 10% in 2015 to 35% in 2050. Whatever happens, one thing is certain; energy, technology, and refrigerants will all look very different ten to twenty years from now than they do today.

For more details on one of the cap and trade bills making progress, see HR.2454 "American Clean Energy and Security Act of 2009"

2009-2010 PDHs

by Grant Page, PE, 2009-10 Staff Reporter and Captain

The Chapter offers a 1 hour PDH certificate for Kentucky Professional Engineers. Remember, PEs in Kentucky are required by law to have 30 PDH hours when renewing their license every two years. **Being an ASHRAE member and attending all meetings and technical sessions will get you 10-12 of those hours per year.** (ed. And you also get 1 PDH just for being an officer...yet another reason to volunteer..WOOT!)

WHAT ARE YOU WAITING FOR...Get yourself on over to the meeting!!!!

Advertise Your Business

We have space in our Chapter newsletter and on our web site for advertising your business using one of your business cards.

If you want to advertise in the *newsletter* for a calendar year, send your business card plus a check for \$25 made out the "Bluegrass ASHRAE" to Bruce Bradway, c/o Trane, 1515 Mercer Rd., Lexington, KY 40511.

If you want to advertise in the *newsletter and on the website* for a calendar year, send your business card plus

a check for \$50 made out the “Bluegrass ASHRAE” to Bruce Bradway, c/o Trane, 1515 Mercer Rd., Lexington, KY 40511.

Use your Chapter’s newsletter to get your company name in front of other businesses and members.

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ASHRAE News Releases

ASHRAE Handbook Becomes More Accessible in Online Format

ATLANTA—What was once the turn of a page will now be the click of a mouse. The *ASHRAE Handbook* is now available online to allow for quick and easy access to a vast amount of HVAC&R information.

“The advantages of the ASHRAE Handbook Online are numerous,” Dennis O’Neal, 2009-10 chair of the ASHRAE Handbook Committee, said. “For one, the text is fully searchable and includes live links to figures, tables, footnotes, equations and other Web references. Going online also allows for fast navigation among all four current Handbook volumes, with live cross-reference links.”

Unlike the ASHRAE HandbookCD+ 2006-2009, an ASHRAE Handbook Online subscription provides immediate access to Handbook content, in contrast to the two weeks required for the shipping of the CD; requires

no software installation; eliminates dependency on one computer by allowing for quick and easy access from any computer with an Internet connection; and costs considerably less than the price of purchasing each volume separately, offering a \$331 savings for non-members.

The benefits of the ASHRAE Handbook Online don't stop there. Taking the Handbook online will provide an opportunity for the Society to fulfill its mission of advancing the HVAC&R industry through publishing by making the Handbook more accessible.

"This helps ASHRAE position its publishing program for customer expectations in the digital age," O'Neal said. "Additionally, having the Handbook online opens it to members globally and makes ASHRAE information more readily available."

The *ASHRAE Handbook* is the most widely cited reference source for HVAC&R technology in the world. The hardback version of the Handbook is published in a series of four volumes, one of which is revised each year, ensuring that no volume is older than four years. The ASHRAE Handbook Online, however, allows access to all of the four most recent volumes at once. To subscribe to the ASHRAE Handbook Online, visit <https://handbook.ashrae.org> for immediate access to vast and valuable HVAC&R technology and resources. Additional information may be found at www.ashrae.org/handbookonline.

Winter Conference Technical Program to Focus on Humidity, Indoor Environments

ATLANTA— What better place to learn about the latest developments in humidity control than Florida? The 2010 ASHRAE Winter Conference, which takes place January 23-27, 2010 in Orlando, Fla. will focus on developments that contribute to making indoor environments sustainable in humid climates, while also addressing a myriad of other HVAC&R industry issues. The technical program will be based on the theme *Building Sustainability from the Inside Out*. According to Dennis Wessel, the Orlando Conference chair, "the technical program presents state-of-the-art concepts and design techniques on a wide range of hot topics." "The technical program features a mix of presentations and papers concentrated in 11 tracks, including the impact of ASHRAE standards 90.1 and 62.1, sustainability, and a combined energy conservation and alternative energy solutions track, the largest track," Wessel said.

The technical program focuses on humidity control and the industry's ability to improve comfort for occupants and save energy. Sessions address *Operating Cost*

Implications in Humid Environments, Enhanced Dehumidification Strategies with Energy Recovery in Hot and Humid Climates, Humidity Control Issues and Solutions for High Performing Buildings, Ensuring the Performance of Your UFAD System and Solving Moisture Problems Created by Energy Retrofits.

Current interest programs include building information modeling, design of healthcare facilities, wireless sensing and control networks, commissioning, data centers, LEED and ground source heat pumps. In addition, the professional skills track includes business management sessions on billing and collection practices. The technical plenary will discuss H1N1 and look at the importance of building ventilation as compared to vaccination and quarantine in infection control. The technical plenary will take place Sunday, Jan. 24, 9:45 – 10:45 am.

Additionally, two free contractor-related sessions will be presented in conjunction with the AHR Expo held at the Orange County Convention Center. *Construction Management* will be held Monday, Jan. 25, 2-3 pm and *Cost/Benefit Analysis Methodology and Tools Needed by Owners* will be held Tuesday, Jan. 26, 2-3 pm.

In all, the technical program features more than 90 programs and 300 speakers. The 2010 ASHRAE Winter Conference and will take place at the Rosen Shingle Creek hotel, Orlando, Fla. For complete conference information, including abstracts on all technical program sessions, or to register, visit www.ashrae.org/orlando.

ASHRAE Headquarters Receives Highest LEED Certification

ATLANTA—ASHRAE has always prided itself on providing the gold standard in research, standards writing, publishing and continuing education. However, when it comes to energy efficiency and sustainability, gold just isn't good enough: That's why the ASHRAE Headquarters has gone a step further and has been awarded a LEED Platinum Certification in the New Construction 2.2 rating system.

The Society's office building in Atlanta, Ga., which underwent a major renovation in 2008, is one of only six buildings in the state of Georgia to receive a LEED Platinum rating, the highest certification the program offers. LEED, which stands for Leadership in Energy and Environmental Design, is a program of the United States Green Building Council (USGBC), a non-profit which seeks to promote green building practices.

"While our first objective was to provide a healthy, comfortable and productive environment for our staff, we also wanted to set an example of what can be done to renovate existing buildings," ASHRAE President Gordon Holness said. "Given that 75 to 80 percent of all

existing buildings will still be around in 2030, our greatest opportunity for a sustainable future is through the upgrade and retrofit of these buildings. It is extremely gratifying to achieve the USGBC's highest rating and confirm ASHRAE's leadership and commitment to supporting a sustainable built environment."

"The strength of USGBC has always been the collective strength of our leaders in the building industry," said Rick Fedrizzi, President, CEO & Founding Chair, U.S. Green Building Council. "Given the extraordinary importance of climate protection and the central role of the building industry in that effort, ASHRAE demonstrates their leadership through their LEED Platinum certification of their renovated Headquarters." LEED takes into account five key measurements when evaluating new construction: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. Bonus points may be obtained through innovation in design and regional priority.

In order to qualify for the highly sought-after Platinum certification, ASHRAE took into consideration a number of concerns such as energy use, heat island reduction, water efficient landscaping, material reuse and water use reduction, to name just few.

ASHRAE addressed these issues, among others, by installing a cool, white reflective roof membrane to minimize heat island effects; updating the landscaping and eliminating the need for landscaping irrigation; retaining more than 75 percent of the existing building structure as part of this renovation; and reducing its estimated overall annual water consumption per year by almost 50 percent by utilizing low-flow fixtures throughout building. Additionally, the ASHRAE headquarters received bonus points for innovation and design.

As a leader in energy efficient technology, ASHRAE viewed its headquarters renovation as the perfect way to "walk the talk." The 34,500 ft² office building, built originally in 1965, now acts as a showcase of energy efficiency and sustainability through its living lab—which provides recourses on building, system and equipment performance—and learning center. The LEED Platinum Certification acts as third-party verification of ASHRAE's efforts to create an environmentally friendly, energy-efficient, sustainable workplace.

ASHRAE Seeks Proposals on User's Manual for Green Buildings

ATLANTA—There are many ways to define a green building. Energy-saving measures, water efficiency,

indoor environmental quality, materials and building orientations all play a role, but it is the way that all of these come together that makes a building truly high performing.

Requirements to achieve green buildings will soon be available from ASHRAE, the U.S. Green Building Council and the Illuminating Engineering Society of North America in the form of a standard. Standard 189.1P, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*, will define the minimum requirements for high-performance green buildings.

And to make following those requirements easier, a user's manual also is being developed. ASHRAE is currently accepting research proposals for development of a user's manual for Standard 189.1P. Proposals are due Nov. 9. For more information, visit www.ashrae.org/technology/page/548.

"The manual will provide users with a better understanding of how to apply the standard, as well as serve as a guide for self-education and training about the requirements and appropriate strategies to meet them," Kent Peterson, chair of the Standard 189 committee, said. "It will include worksheets and examples that can be used to determine compliance."

As part of its energy efficiency efforts, ASHRAE also is accepting proposals for a User's Manual for Standard 90.1-2010, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. The 2010 standard, which will be published next year, is being developed with the goal of achieving a 30 percent energy cost savings improvement compared to the 2004 standard. More information on both projects can be found at www.ashrae.org/technology/page/548.

ASHRAE Makes Information on Datacenters More Accessible in CD Form

ATLANTA—It is estimated that \$2 billion is wasted nationally due to data center inefficiencies. That's why the valuable information found in ASHRAE's Datacom Series—which provides guidance on ways to plan, build and monitor datacenters in ways that are both energy efficient and cost effective—has been compiled into one easily searchable CD.

The "Data Center Design and Operation-ASHRAE Datacom Series" CD will allow a user to search across all previous published books in the Datacom Series simultaneously, as well as have the option to either print information directly from the CD or copy or paste into another document.

The need for guidance on data center energy is enormous—in 2006 alone, for every dollar spent

worldwide on new servers, another 50 cents was spent on energy to power and cool them. Datacenters in the United States consume 1.5 percent of all electricity used in the country and with historical trends this consumption is predicted to rise to 2.9 percent by 2011. “ASHRAE Technical Committee 9.9 has taken the lead in the IT and HVAC communities by producing a series of publications that provide the necessary guidance,” Stephen Comstock, ASHRAE publisher, said. “The intent of the CD is to bring these resources together in a format which allows for easy search and quick access. Annual updates will be available so users have the most current information available.”

The ASHRAE Datacom series provides a comprehensive treatment of datacenter cooling, energy efficiency and related subjects, such as structural and vibration guidelines and equipment power trends.

Currently, the titles that make up the new CD include the following, though the CD will be updated as more books are released in the series:

- Thermal Guidelines for Data Processing Environments, Second Edition
- Best Practices for Datacom Facility Energy Efficiency, Second Edition
- High Density Data Centers
- Datacom Equipment Power Trends and Cooling Applications
- Design Considerations for Datacom Equipment Centers, Second Edition
- Liquid Cooling Guidelines for Datacom Equipment Centers
- Structural and Vibration Guidelines for Datacom Equipment Centers
- Particulate and Gaseous Contamination in Datacom Environments

The Datacom CD costs \$235, \$199 for ASHRAE members, and can be purchased through ASHRAE’s online bookstore at www.ashrae.com/bookstore. More information about the entire Datacom Series can be found at www.ashrae.com/datacom.

ASHRAE, UNEP Further Work in Protecting the Ozone

ATLANTA—ASHRAE and the United Nations Environment Programme have launched a joint program of work in order to reduce emissions and encourage energy-efficient refrigeration and air conditioning systems and building designs.

The First Annual Cooperation Work Plan between ASHRAE and UNEP, an organization that promotes the wise use and sustainable development of the global environment, was presented on October 5,

2009 at the Region-at-Large Chapter Regional Conference in Kuwait. The program of work sets goals and timelines for phasing out ozone-depleting refrigerants and the management of ozone-depleting substance refrigerant banks, to name just a few.

One of the ways ASHRAE will support the established goals is by providing Distinguished Lecturers to present the latest achievements in non-Ozone depleting refrigeration technology to both ASHRAE chapters and technical activities organized by UNEP. ASHRAE will also support an ozone literacy course developed by UNEP.

“By partnering with UNEP, ASHRAE can more efficiently respond to the growing demand for new technologies that do not contribute to ozone depletion and are energy efficient,” Gordon Holness, ASHRAE president, said. “Through collaboration, continuing education and provision of experts on the topic, ASHRAE, UNEP and the global community can look forward a healthier environment.”

The program of work is the result of a memorandum of understanding signed between ASHRAE and UNEP in June of 2007.

UNEP was formed in 1972 and acts as “the voice for the environment within the United Nations system.” The Programme works with a wide range of partners to assess global, national and regional environmental conditions and trends; strengthen institutions for the wise management of the environment; and facilitate the transfer of knowledge and technology for sustainable development.