



THERMOGRAM



The New Jersey Chapter of ASHRAE Newsletter

www.njashrae.com

December 2008

reply@njashrae.com

CHAPTER OFFICERS

President

Mark Richter, P.E.
212-354-5656

President - Elect

Janet Shipton
732-839-4916

Vice-President

Chris Phelan
973-777-6700

Treasurer

Chris Phelan
973-777-6700

Secretary

Roger Shults
973-396-4152

Board of Governors

Linda Carolan
908-418-4950

Robert Daly, P.E.
212-566-5764

Jori Fahrenfeld
609-520-1600

Peter Frangiskou, P.E.
201-385-9999

Russ Graham
908-418-4949

Jim Sarno
732-938-2666

Committees

Attendance/ Reception

Roger Shults
973-396-4152

Audit

Jori Fahrenfeld
609-520-1600

Budget

Chris Phelan
973-777-6700

Chapter Bylaws

Linda Carolan
908-418-4949

ASHRAE
Engineering
for
Sustainability

NJ Chapter of ASHRAE Meeting
Joint Meeting with Mechanical Contractors Association
Wednesday, January 7, 2009
at
Hilton Woodbridge
120 Wood Avenue South, Iselin, NJ

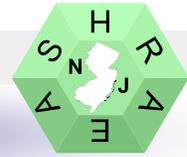
HVAC Seismic Design Applications IBC
presented by
Mr. Douglas Valerio
Mason East, Inc.

Cost: **\$65.00 Members or Guests**
\$ 5.00 Students

RSVP: **REPLY@NJASHRAE.COM** or call **732-218-7463**
No Later Than January 2nd, 2009

Cocktails: 5:30—6:30 pm
Speaker and Dinner: 6:30 pm

Best wishes for a happy and safe Holiday Season for you and your family



COMMITTEES
(continued)

CTTC — TEGA

John Tellefsen
973-565-7622

Historian

Bob Daly, P.E.
212-566-5764

Honors & Awards

Jeffrey Grant
732-590-1527

Membership

Russ Graham
908-418-4949

Newsletter Ads

Open

Newsletter Editor

Jori Fahrenfeld
609-520-1600

Nominating

Peter Frangiskou, P.E.
201-385-9999

Programs

Janet Shipton
732-839-4916

Refrigeration

John Tellefsen
973-565-7622

Research/Promotion

Chris Phelan
973-777-6700

Scholarships

Russ Graham
908-418-4949

Seminars

Mark Richter, P.E.
212-354-5656

Special Events/ Golf Outing

Chris Phelan
973-777-6700

Student Activities

Peter Frangiskou, P.E.
201-35-9999

Technical Sessions

Mark Richter, P.E.
212-354-5656

Web Page Editor

Linda Carolan
908-418-4949

www.njashrae.com
WWW.REPLY@NJASHRAE.COM

ASHRAE Society
Toll Free Number
1-800-527-4723

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Calendar of Upcoming Meetings

FEBRUARY 3, 2009: Research and Promotion Night

Dinner Session: "Maintain to Sustain" **

presented by Mr. Bill Harrison, President ASHRAE

**Additional information on page 6

MARCH 3, 2009: Speaker & Topic TBA

APRIL 7, 2009: Student Night

Dinner Session: Erv Bales, PhD, Research Professor, NJ, *presenting about Sustainability, exact title to be announced*

MAY 5, 2009

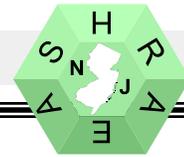
Scholarship Award Night & Installation of Officers

Dinner Session: "Win-Win Negotiating Skills"

presented by Mr. Barry Benator P.E., CEM, Benetech Inc., ASHRAE Distinguished Lecturer

JUNE 2, 2009 Spouses Night—Event TBA

Do you have a topic of interest that you would like to present at a NJ ASHRAE meeting? Presentations of a non-commercial nature are always welcomed. Contact any chapter officer or committee chairperson for more information.



President's Message

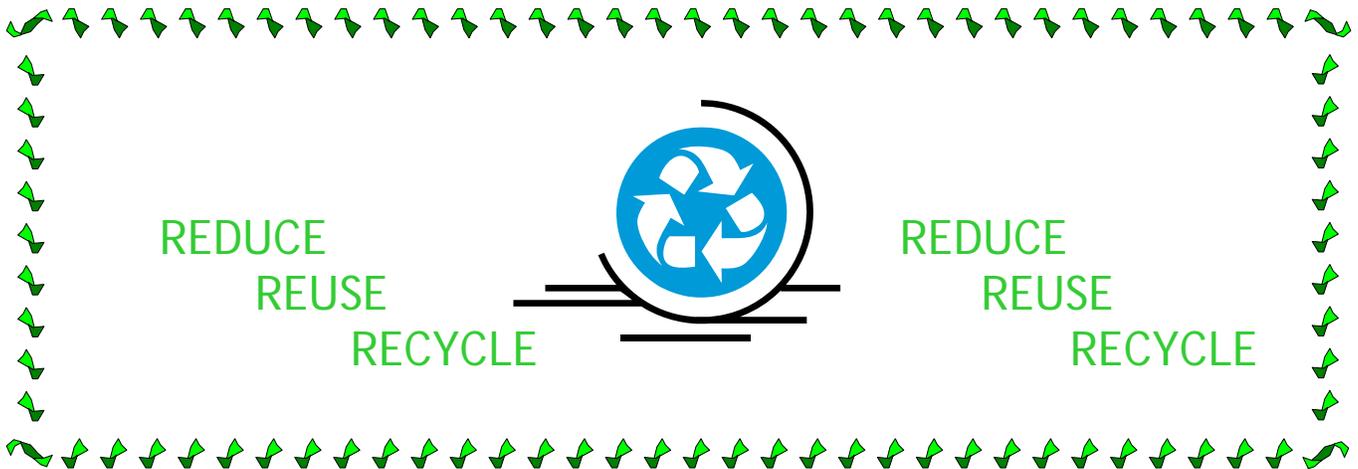
Dear Chapter Members

The December dinner presentation was presented by Mr. Drury Crawley of the Department of Energy. Drury provided overall synopsis on ASHRAE's Advanced Energy Guidelines (AEDGs) for various project types and summarized the anticipated revisions anticipated in the near future to make overall energy reduction measures greater than current AEDG guidelines.

I would like to wish each of you a wonderful, safe holiday season and a happy New Year. Thank you for your continued support of ASHRAE and our New Jersey Chapter.

I look forward to seeing you at the Joint Meeting with the N.J. MCA on January 7th of the New Year.

Mark



2008-2009 Presidential Award of Excellence (PAOE) Summary

Chapter #	Chapter Name	Chapter Members/ students	Member Promotion	Student Activities	Research Promotion	CTTC	History	Chapter Operations	Chapter PAOE Totals
007	N.J.	787	250	425	200	365	100	420	1760

January Dinner Menu

Visit the NJ Mechanical Contractors Association
Website at
<http://www.mcanj.org/Home/Home.php>
for
Additional Meeting
and
Dinner Menu
Information



Speaker Bio : Douglas Valerio, Mason East, Inc.

Mr. Valerio is the Owner/ President of Mason East Inc., representatives of Mason Industries which manufacture noise and vibration control products. Doug is a graduate of SUNY Maritime with a Bachelor of Engineering. He is licensed by the U.S. Coast Guard as a 3rd Engineer Unlimited Horsepower Steam/Diesel. He began his career at Mason and worked as an Engineer/ Sales Manager under Norman Mason from 1984 to 1995. He is a past Chairman of ASHRAE's committee for Seismic Restraint Design (1993—1995). He is also a member of the Society of Naval Architects and Marine Engineers.

Seismic Presentation Information will include discussion of the following topics:

- Earthquake Tectonic Theory, hypocenter, epicenter, Richter and Marcalli scales
- Practical considerations - design parameters
- Snubber application—based on static / dynamic analysis

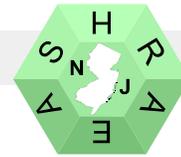


Region I Dinner at the Winter Meeting

Join Region I members at the "Beef 'n Brandy" restaurant, 127 State St., Chicago, IL for dinner on Sunday, January 25th, 2009, at 6:00 pm. Visit their website to see their dinner offerings:

<http://www.beefbrandy.com/>.

Please RSVP to Lee Loomis (contact info on p.11) to confirm your plans to attend and participate in this annual tradition in Region I.



Engineering tomorrow...today 2009 ASHRAE Winter Conference

January 24-28

ASHRAE 09 CHICAGO, IL



Chicago, with one of the most recognizable skylines in the United States is the perfect backdrop to support this year's Winter Conference theme of Sustainable Urban Design: Engineering tomorrow...today

Why Should You Attend? WHAT MEMBERS ARE SAYING

"The ASHRAE meeting in Chicago will attract the leading practitioners in high performance building design, operation and maintenance. I can't afford not to be there.

ASHRAE meetings allow me to network with my colleagues, learn about the latest technologies, and have a great time to boot."

"Attending the ASHRAE meetings allows me to build networking relationships with the leaders in my industry that are writing codes and standards and conducting research that directly affects how I design buildings."

"I attend the ASHRAE meeting to interact with the best and brightest building professionals in our industry so I can stay current with recent developments."

KEY NOTE SPEAKER

Plenary Session
Saturday, Jan. 24
CHRIS LEUBKEMAN
Speaks on ...
Sustainable Urbanization



Hear about current global efforts to design and adapt cities to the new era of dwindling resources.

Wednesday Welcome
Wednesday, Jan. 28



\$99 for 4 PDHs
ASHRAE joins forces with the AHR Expo to bring its conference program to McCormick Place.

Technical Session **KEY NOTE SPEAKER**
Sunday, Jan. 25
ADRIAN BEJAN
Speaks on ...
Constructal Theory



Hear from the man who developed the theory – which he says can predict how everything flows through time and space.

Meeting Registration
DON'T MISS OUT!

Register online for the conference, tours and social events.
Register online until December 31. After this date, you can register for the conference in Chicago.



ASHRAE Society President to Visit NJ Chapter Meeting in February



William Harrison will be visiting the February NJ ASHRAE chapter meeting and discussing his presidential theme, *Maintain to Sustain – Delivering ASHRAE’s Sustainability Promise*. This focuses on operating buildings to deliver the energy efficiency inherent in their design, including effective commissioning, improved documentation, and programs to educate and certify building operators.

William Harrison is president, Trane Arkansas, Little Rock, Ark. As ASHRAE’s president, Harrison directs the Society’s Board of Directors and oversees the Executive Committee.

He says, “If the studies are accurate, we have a no-regrets method to reduce energy use in buildings by 10 to 40 percent, solely by improving building operations,” Harrison said. “All we have to do is communicate and educate more effectively. It is our duty. We are pledged to deliver ASHRAE’s promise of sustainability, and to do that we must maintain to sustain, we must train to sustain, and we must influence the operation of our buildings to conserve energy. “

He also is chair of the Headquarters Building Renovation Committee. He has served as president-elect, treasurer, vice president, Region VIII director and regional chair, chair of Member Council, Technology Council and the Finance Committee, a member of the Nominating Committee, and vice chair of the Refrigeration Committee and the Society Rules Committee. Harrison was president of the Shreveport Chapter and has received the Distinguished Service Award. Harrison received a Bachelor of Science in industrial engineering from the University of Arkansas.

**Join us for the February meeting which will be held in our usual venue of the Woodbridge Hotel & Conference Center (formerly Sheraton at Woodbridge)
515 route 1 South & Gill Lane, Iselin, NJ 08830 Hotel Ph: 732-634-3600
<http://www.hotelwoodbridge.com/>**



Did you know? When you pay your ASHRAE Society Dues, there is a separate line item for your NJ Chapter dues. Please be sure to check off the chapter dues box and include payment for your NJ dues. These dues provide the operating budget for the Chapter.



Green ASHRAE News: ASHRAE Hosts Conference on Net-Zero Buildings

To help drive the building industry toward market-viable net-zero-energy buildings, ASHRAE is hosting a specialty conference on the topic in March in San Francisco.

"We have reached a time when the building industry is being called to shift to a new level of performance that will reduce our energy and carbon footprint," Bill Harrison, ASHRAE president, said. "It is time to advance net-zero-energy building knowledge."

ASHRAE's *Countdown to a Sustainable Energy Future...Net-Zero and Beyond* conference takes place March 29-31 at Hyatt at Fisherman's Wharf in San Francisco. The conference will provide a forum to discuss the role of policy and regulatory involvement in addition to providing application knowledge for the various aspects of net-zero-energy buildings for both residential and non-residential buildings. It will include building science, energy efficiency in HVAC, lighting and appliances, and renewable energy sources applied to buildings.

To register or for more information, visit www.ashrae.org/netzeroconference.

ASHRAE defines net-zero-energy buildings as those which, on an annual basis, use no more energy from the utility grid than is provided by on-site renewable energy sources. These buildings use 50 to 70 percent less energy than comparable traditional buildings, and the remaining energy use comes from renewable sources, like solar panels or wind turbines incorporated into the facility itself, according to Harrison.

He noted that the state of California recently announced its goal of new residential developments being net-zero-energy by 2020 and new commercial developments being net-zero by 2030.

ASHRAE College of Fellows Celebrates 10th Anniversary

Founded to enhance the Society's technical image internally and in the community at large, the ASHRAE College of Fellows is celebrating its 10th anniversary.

"The College serves as an ambassador supporting ASHRAE through many different pathways," said Presidential Member Richard Rooley, FEng, ASHRAE Fellow, who currently serves as president of the College of Fellows. "Our Fellows are leaders in their fields who support ASHRAE at the highest levels through activities such as transferring ASHRAE technology and knowledge; mentoring students, engineers and educators; and communicating ASHRAE-recommended practices to resolve industry issues."

Membership in the College of Fellows, founded in 1998, is open to anyone holding ASHRAE Fellow member grade. Fellow ASHRAE honors distinction in the arts and sciences of HVAC&R and is earned through achievement as a researcher, designer, educator or engineering executive. Approximately 500 of ASHRAE's 50,000 members are Fellows.

Among the projects undertaken by the College is review of the annual ASHRAE Handbook volume. Members of the College also served as resources in the U.S. Department of Energy's 2007 Solar Decathlon, of which ASHRAE served as a title sponsor. The group asked technical questions submitted by the student teams who participated.

For more information, visit www.ashraecof.org



Supermarket Refrigeration System Design as a Green Initiative

Guest Writer: Joe Sigg, Refrigeration Systems Designer, Emerson Climate Technologies,
Clive Samuels & Associates, Inc.

In this trying time in a world where everyone hears the term “global warming” at least three or four times a week, there are many people who are asking, “What can I do to help?” This is an open-ended question, as there are many different avenues which can be taken to achieve a more “green” way of life. On a personal level, my profession has helped me to contribute to the cause in saving the environment. I am currently employed in the MEP/R engineering business, primarily performing refrigeration engineering designs for the food service industry.

Refrigeration system designs have received more attention in the last 10 or so years. The reason being is because the typical refrigeration system can consume anywhere from 50 - 60% of the energy required by supermarkets to operate! Any way in which a refrigeration system can be controlled more tightly to match the required load will assist in energy reduction. Electronic controls for refrigeration systems have been around for approximately 30 years, but in the past ten or so years great strides have been made to better control the equipment in a refrigeration system.

There are two major components of design which permit refrigeration systems to become more efficient and more environmentally friendly: lowered energy consumption and reduced use of primary atmosphere harming refrigerants. Energy consumption can be reduced through the use of many energy saving design technique, using alternate refrigerants will reduce the use of ozone depleting and global warming refrigerants.

The application of variable frequency drives (VFDs) allows a motor (be it a compressor, pump, or fan) to more closely accommodate the respective load requirements. The basic principle used by a VFD is to vary the frequency of its output, which, in turn, varies the speed of the motor. Fan and pump motors greatly benefit from the “power cubed” law; which states that since power is proportional to torque multiplied by speed, power is proportional to the cube of speed. This design is used to greatly reduce the average amperage requirements for many components of a refrigeration system, including the condenser and compressor. The condenser rejects the heat absorbed from the refrigerated spaces to the atmosphere; compressors convert electricity into mechanical work to compress and flow the refrigerant throughout the system.

Refrigerated display cases can also be efficiently designed for lowered energy consumption and are currently available with a variety of low energy consumption options. Lighting consumes a major part in the energy consumption of a refrigerated display case, as most refrigerated product is best marketed when displayed in a properly lit environment. LED lighting has recently become available from most case manufacturers. LED refrigerated display case lighting also saves energy by reducing the heat within the refrigerated space. For example, on a 5-door low temperature case, this additional energy savings, reducing the refrigeration load, can reach 70 watts vs. T8 fluorescent fixtures, 134 watts vs. HO fluorescent fixtures, and 330 watts vs. VHO fluorescent fixtures. The higher the quantity of lights in the case, the larger the realized savings. Energy efficient case evaporator fans will also contribute to lower energy consumption.

Secondary Refrigerants

Now that we have reviewed some general energy saving design techniques, let's focus a bit more on saving the environment in a different way. The use of secondary refrigerants offers many benefits to supermarket owners, both short term and long term. Care must be taken when selecting secondary refrigerants, as there are factors such as burst and freeze protection that need consideration. Toxicity must also be considered, as the secondary fluid will be in close proximity to marketable, edible products.

For medium temperature (+20dF to +25dF) applications, there are a wide variety of fluids available having the appropriate properties for use as a refrigerant. Some options include ice slurries, propylene glycol/water, ethylene glycol/water, potassium formate/water, sodium chloride/water, and calcium chloride/water. All of these “natural” secondary heat transfer fluids are widely available and are cheaper pound- for-pound over costs associated with HFC refrigerants. Unfortunately, one main issue with these mixtures is that many of these fluids are toxic. (cont'd next page)



CTTC—Refrigeration (continued)

Propylene glycol is unique among the different secondary refrigerants in that it's very low toxicity permits it to be used throughout a food service facility such as a supermarket. There are grades intended for industrial use and those intended for applications that may be used in the food service industry. In common with the other glycols, propylene glycol is odorless and colorless and has a wide range of solvency for organic materials, plus it is completely water soluble.

Propylene glycol solution lends itself to more efficient heat transfer at the evaporators when compared with a direct expansion HFC system. This is primarily due to the coil being "flooded" with this liquid heat transfer medium. This flooded coil process maximizes coil surface heat transfer, as opposed to direct expansion systems, in which a liquid HFC refrigerant is boiled off to a gaseous state through the heat absorption process. There still some disadvantages to secondary heat transfer fluids. There are penalties in parts of a secondary heat transfer fluid system design that must be heavily considered, such as the requirement for glycol pumps (more energy consumption) and primary/secondary fluid heat exchanger efficiency losses.

For low temperature (-25dF to 0dF) applications, the above listed fluids are not applicable due to their higher freeze points. Instead, mixed phase CO₂ can be used as a secondary fluid. CO₂ is a good secondary coolant choice, being that the global warming potential of CO₂ is a factor of 1. The global warming potential factor of all direct expansion refrigerants is based on the global warming potential of CO₂, which is 1. This bodes well for the environment, as a leak of CO₂ versus the same size leak of an HFC refrigerant will have significantly less of an affect on the atmosphere.

The same type of technology is used for both medium and low temperature applications, regardless of the secondary fluid, in which a refrigeration system has a primary refrigerant and a secondary refrigerant. The primary refrigerant cycle, which contains a given HFC refrigerant, is mostly contained in the machine room. The secondary coolant system is looped throughout a store, providing refrigeration to the display cases and walk-in boxes. If this technology is combined with the use of water cooled condensing, then a typical commercial refrigeration system for a supermarket could require no greater than 100 pounds of HFC refrigerant. This pales in comparison with a conventionally piped, direct expansion refrigeration system which utilizes roughly 1000 lbs. of HFC refrigerant.

There is support available from government agencies, such as the GreenChill program (<http://www.epa.gov/greenchill>). This program is aimed at supporting the supermarket industry in their strive to promote advanced technologies, strategies and practices which will reduce refrigerant charges and leak potential for ozone-depleting substances and greenhouse gases. Don't be surprised if you walk into your local supermarket over the next few years and see these new technologies applied. These new technologies have major support from the entire refrigeration brain trust in not only the U.S., but throughout the world.

PUT THIS ON YOUR CALENDAR:

IAQ Satellite Broadcast/Webcast April 22, 2009, 1pm – 4pm EDT

On Wednesday, April 22, 2009, ASHRAE's Chapter Technology Transfer Committee (CTTC) will present a satellite broadcast and simultaneous webcast on "**Clean, Lean and Green – IAQ for Sustainable Buildings.**"

Online registration for site coordinators and webcast viewers begins March 2nd at www.ashrae.org/iaqbroadcast. Registration for satellite viewers begins March 16th. Information about the program and speakers is available at www.ashrae.org/iaqbroadcast.

Three PDH credits may be granted to those who view the program and then complete the Participant Reaction Form on our webpage following the broadcast.

Please watch for updates via ASHRAE Insights and www.ashrae.org.

If you have questions, call (678) 539-1206 or email ashrae-SatelliteBroadcast@ashrae.org.

If you would like to submit project or technical articles for the *THERMOGRAM*, please contact Jori Fahrenfeld @ 609-520-1600 or via email Jori.Fahrenfeld@Emerson.com for further details



New Report Provides Roadmap for Energy Policy and Strategies in the New Administration

Focus on building energy use

As the federal government prepares for the presidential transition in January, it will face challenges in dealing with increasingly complex issues and new directives from the Obama administration and the new Congress, especially concerning energy issues. A new report from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) provides a potential roadmap for addressing the nation's dependence on foreign energy sources and its greenhouse gas emissions while growing the economy.

"Buildings are often overlooked as an opportunity to reduce energy consumption and offer an excellent opportunity to achieve national energy goals," says ASHRAE President Bill Harrison. Buildings are responsible for 40 percent of the United States' energy consumption—more than transportation and industry — and represent 38 percent of the U.S.'s greenhouse gas (GHG) emissions.

Our citizens spend approximately 90 percent of their time indoors—many of them in schools and office buildings. The entire U.S. construction industry employs an estimated 10 million people including manufacturing, and with increased focus on improving energy efficiency within buildings, that number can be expected to rise.

ASHRAE's report provides detailed recommendations on shaping energy policy. Some of the suggested provisions include:

Energy Policy and Climate Change: Require annual measurements of building energy use, and provide funding and direction for data collection and analysis regarding energy use in buildings. ASHRAE has recently launched an effort to develop a domestic building energy labeling program that will provide owners, operators and occupants information on their buildings' energy consumption.

Federal Incentives: The report offers ideas for government incentives for energy-related activities, particularly commissioning, re-commissioning and retro-commissioning; education and training for operations and maintenance personnel; realistic depreciation schedules; and long-term tax deductions.

Research and Development: ASHRAE recommends increased research and development efforts in the built environment, particularly for on- and off-site renewable energy, net-zero-energy building technologies, and increased governmental support for private-sector R&D.

Federal Agency Activities: ASHRAE recommends providing adequate financial and technical resources to federal agencies to meet new energy requirements, and promote the use of tools such as building information modeling and integrated design for federal construction projects.

Education: The report stresses the importance of supporting educational programs focused on student competence in STEM fields, and providing funding for "green-collar" job training programs.

To receive a copy of the report or to learn more about ASHRAE's government affairs efforts including the High-Performance Building Congressional Caucus, a bipartisan effort to bring policy-relevant expertise from across the buildings community to policy-makers, please e-mail Wendy Angel at wangel@ashrae.org.





REGION 1 Officers 2008 – 2009

DRC - Director & Regional Chair

Garry N. Myers
Flack + Kurtz Inc.
73 Bonnie Way Allendale, NJ 07401
212-951-2815
Garry.Myers@wspfk.com

ARC - Assistant Regional Chair & Treasurer

Spencer Morasch
Jersey Central Power & Light
331 Newman Springs Road Red Bank, NJ 07701
732-212-4133
smorasch@firstenergycorp.com

Nominating Committee Member

Emery Otruba, P.E.
262 Johnson Hill Rd Hoosick Falls, NY 12090
518.686.4436
eotruba@verizon.net

Nominating Committee Alternate

Cliff Konitz
4 Dennis Road Wappingers Falls, NY 12590
845-297-5864
c.konitz@verizon.net

RVC Membership Promotion

Joseph Furman
Belimo Americas
43 Old Ridgebury Road Danbury, CT 06810
203-749-3163
joe.furman@us.belimo.com

RVC Research Promotion

Ron Swarthout
921 Forest Road Endwell, NY 13790
607-754-7590
rswarthou@cs.com

RVC Chapter Technology Transfer

Lee Loomis
Center for Environmental Information
55 St. Paul St. Rochester, New York 14604
585-738-307
leeloom@aol.com

RVC Student Activities

Richard Vehlow
NYS Office of General Services
33rd floor Corning Tower GNARESP
Albany, NY 12242
518-486-1510
Rev1969@gmail.com

Regional Chapter Programs Chair

Peter Oppelt
R.F. Peck Co.
889 Atlantic Ave. Rochester, NY 14609
585-697-0836 x103
poppelt@rfpeck.com

Regional Refrigeration Chair

(Position Vacant)

Regional Historian

Phil Knowlton
Knowlton Associates
191 Middle Haddam Road Portland, CT 06480
860-642-3970
pbknowlton@comcast.net

Regional Electronics Communication Chair, & Newsletter Judge

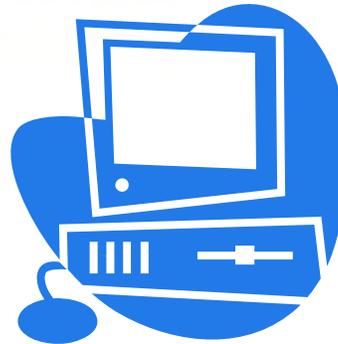
Heather L. Nowakowski, P.E.
Roswell Park Cancer Institute
Elm & Carlton Streets Buffalo, NY 14263
716.845.8144
Heather.nowakowskie@roswellpark.org

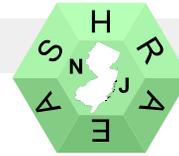
Director of Member Services

Carolyn Kettering, ASHRAE
1791 Tullie Circle, N.E. Atlanta, GA 30329
404-636-8400
ckettering@ashrae.org

Director of Communications and Publications

Jodi Dunlop, ASHRAE
1791 Tullie Circle, N.E. Atlanta, GA 30329
404-636-8400
jdunlop@ashrae.org





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Peter@DolphinEquipment.com Mobile 201-970-8824



1501 BROADWAY
SUITE 700
NEW YORK, NY 10036
TEL 212.354.5656
FAX 212.354.5668
WWW.AKFGROUP.COM

MARK J. RICHTER, PE, LEED® AP
PARTNER
DIR 646.720.9839 • CELL 917.608.4419
MRIGHTER@AKFGROUP.COM

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www.DolphinEquipment.com

Andrew Cirillo

130 Pleasant Street Tel 201-385-9999
Haworth, NJ 07641 Fax 201-385-9916
Andrew@DolphinEquipment.com Mobile 201-312-4634



Jori Fahrenfeld

CSA Consulting Engineers
One Independence Way
Princeton, NJ 08540

T 609 520 1600 x132
D 609 627 7936
M 609 937 0279
F 609 520 0974
Jori.Fahrenfeld@Emerson.com



CHRISTOPHER G. PHELAN
Senior Sales Engineer

228 Scoles Ave. • Clifton • NJ 07012
(973) 777-6700 • Fax: 777-1540
Mobile: (973) 454-2177
chrishphelan@thermcoreps.com
Manufacturers Representatives

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