



Northeast Chapter

# Thermal Briefs

NOVEMBER 2016

## A Time for Giving

### Inside This Issue:

#### **A Time for Giving**

Page 1

#### **November Chapter Meeting**

Page 2

#### **Messages From The Officers**

Pages 3—8

#### **Society News**

Page 9—10

#### **Featured Member White Paper**

Page 10

#### **E-Week 2017**

Page 11\*

#### **PAOE Points & Chapter Officers**

Page 12

#### **Employment Opportunities & Business Cards**

Page 13

#### **Appendices**

Page 14—26

As we kick off our 2016-2017 campaign year for ASHRAE Research, it is important to recognize those whom have made contributions to help make ASHRAE become what it is today. I would like to take this moment to look back and acknowledge companies and individuals whom made a difference with their contributions to ASHRAE Research for the 2015-2016 year.

The following Companies are being recognized for their contributions:

#### **Bronze Level (exceeding \$500)**

*Laars Heating Systems*

*Northeast HVAC Solutions*

*Novus Engineering PC*

The following Companies and Individuals are being recognized for their contributions:

*Adam Feather*

*Christopher Schmidt*

*Daniel Williams*

*Evan Walden*

*George Frost*

*Gerard Marciano*

*David Houle*

*Mark Cambria*

*Raymond Hickey*

*Richard Vehlow*

*Stanley Westhoff*

*Trevor Gensch*

*R P Fedder Corporation*

*W.M. Jacobs & Sons*

*Technology Plus*

*Victaulic*

As the RP Chair for the Northeast Chapter of ASHRAE, I would like to thank everyone who has donated to ASHRAE Research. Your donations help ASHRAE to flourish and become a beacon as a leader in the promotion and advancement of the HVAC&R industry.

Sincerely,

*Kevin Houghtaling*, EIT, BEAP

2016-17 Research Promotion Chair

[ashrae.ne.rp@gmail.com](mailto:ashrae.ne.rp@gmail.com)

# November Chapter Meeting

Our November meeting will be held on **Tuesday, November 15<sup>th</sup>**, beginning at 12:00 at the Italian Community Center. The topic for this month's meeting is *Hot Water Boiler Efficiency Drivers, Applications, and Longevity*. Below you will find a further description of the presentation, and the speaker bio.

.....

## **Hot Water Boiler Efficiency Drivers, Applications, and Longevity**

Approved for 1 PDH Credit

**Synopsis:** *In depth comparison of mid and high efficiency heating plants, taking into account heating degree day BIN data and other metrics.*

**Speaker:** Mike Rogers of Sweeney-Rogers

**Speaker Bio:** *Mike Rogers, Owner/Sr. VP of Commercial Sales, Mike is a 1983 graduate of the Massachusetts Maritime Academy with a B.S. in Marine Engineering. After graduation he worked for Stone & Webster at Millstone Nuclear Power Plant in Connecticut and United Engineers and Contractors at Seabrook Nuclear Power Station in New Hampshire before shipping out to sea with the Masters Mates & Pilots Union. Mike entered the HVAC Industry in 1989 working as an Application Engineer for a large Boiler Manufacturer before moving into commercial sales. He spent a short time working for a manufacturer's rep before partnering with Peter Sweeney In 1997 to form Sweeney Rogers Corporation. Mike is responsible for managing key commercial accounts and Engineering relationships in the Eastern MA area and all aspects of SRGI's commercial/specified sale effort. Mike resides in Walpole, MA with his wife Stephanie.*

.....

Register on our website <http://northeast.ashraechapters.org/> and pay via PayPal, or, RSVP via email to Tim Houle ([thoule@advancedcomfortsys.com](mailto:thoule@advancedcomfortsys.com)) to pay with cash, credit card, or check the day of the meeting.

## Upcoming Meeting Dates and Speakers

Month	Speaker	Topic
12/20/2016	Greg Kaufman	Mechanical Rooms and Gas Detection in Commercial Applications
1/17/2017	TBD	TBD
2/21/2017	Tom Gorman	
3/21/2017	Gordon Sharp	Making Buildings Smarter to Maintain their Energy Efficiency Entitlement
4/18/2017	TBD	TBD
5/16/2017	Khaled Yousef	

## Message from the President

Tim Wentz, current ASHRAE society President, stated “Together we can create our future by adapting our resources, investments and technology to shape a more sustainable world.” I believe that adaption in our community is vital to the continued success of ASHRAE.

Together we all can achieve more and I feel that our best days are yet to come. ASHRAE continues to be a guiding force for our collective industry and the actions of the Northeast Chapter are impactful, purposeful and meaningful. Our focus continues to be on membership growth and participation and I challenge all members new and seasoned to reach out to those that may not be exposed to the wealth of opportunity ASHRAE provides and invite them to become a member. The resources available, all the way through society, will only benefit the member and help to proliferate ASHRAE for years to come.

I encourage everyone to renew and reinvigorate their participation in ASHRAE. We have exciting committee opportunities for those looking to network and be part of such a great organization. Chair positions are also available and any volunteers would be welcome. I thank you all for the continued support and I look forward to engaging and thriving together.

Sincerely,

*David Houle*

2016-2017 Northeast Chapter President

---

## Message from the Newsletter Editor

We welcome any newsletter submissions you may have. Have you recently published a white paper or had an article featured in one of our industry publications? Please share it with us and we will include it in our monthly publication. Also, we offer free advertisements for job openings; if you'd like to have your firms' opening included, please send me the description and appropriate contact information. Any submission can be emailed to [Kendra.Potasiewicz@jci.com](mailto:Kendra.Potasiewicz@jci.com).

If you have any suggestions on newsletter content, we welcome those as well.

Sincerely,

*Kendra Potasiewicz*

2016-2017 VP & Newsletter Editor

# Message from the Chapter Historian

## Northeast Chapter History 2015-2016

### 2015-2016 Chapter Officers

Chapter President:	Dan Williams
President Elect/CTTC/Program Chair:	David Houle
Vice President/ Newsletter Editor:	Adam Feather
Treasurer:	Kendra Potasiewicz
Secretary:	Trevor Gensch
Board of Governors:	Douglas Belokopitsky
Board of Governors:	Russ Danforth
Board of Governors:	John Thomas
Board of Governors:	Tim Houle
Board of Governors:	Gregg Kirkpatrick
Membership Chair:	Liesl Hammer
Honors and Awards:	Kristin Gustafson
Student Activities Chair:	Dave Ricci
Research Promotion Chair:	Chris Schmidt
Refrigeration Chair	Ray Hickey
Historian:	Stanley Westhoff
Webmaster/Home Page Editor/ CECC:	Erik Olson
Young Engineers In ASHRAE (YEA):	Taylor Bastow

The Northeast Chapter of ASHRAE started off the year with a successful CRC in Syracuse, NY.

### The following awards and certificates were presented:

*Doug Belokopitsky* received the **Presidential Award of Excellence**

*Stan Westhoff* received a **History Gold Ribbon** for a history of Doug Belokopitsky

*Chris Schmidt* received a Gold Certificate for **achieving Goal as the Chapter Research Promotion Chair**

Golf/Steak Roast at Airway Meadows Golf Club was a success. The October meeting had Khaled Yousef presenting the program on "Introduction to properly sized Advanced HELE wood pellet based biomass boiler heating systems and the renewable heat New York Governor's Initiative" and November had Kevin Diehl present on "What is PID Control".

*Continued on next page*

December was Past Presidents Night with a presentation by Gordon Sharp on "Building a Net Zero Lab in the United Arab Emirates – Mission Impossible?", January had Ray Hickey present a "One of a Kind HVAC&R System", February had Laurel Christensen present on "Air Movement for Energy Efficient Comfort in Conditioned Spaces", March had Joseph Samuell present on "Solving Dirt, Air and Hydraulic Separation Problems", April was a joint meeting with AEE and NY-GEO with Dennis Landsberg, PhD, Fellow presenting "ASHRAE 100-2015 Energy Efficiency in Existing Buildings", The May was an invitation to Life members with introduction by Kendra Potasiewicz, YEA member and current Northeast Chapter Treasurer. Life Members in attendance were: Ray Albrecht, Mark Bagdon, Peter Otavio and Evan Walden. Roul Gautreau of Trane presented on Hybrid Water Source Heat Pump Systems. A Tour of Unilux Advanced Manufacturing was held in June.

#### **Past Presidents attending the December Meeting:**

Gus Ziamandanis (1974-75)  
Stan Westhoff (1985-86)  
Gerard Marciano (1992-93)  
Evan Walden (1993-94)  
Bradley Fisher (1994-95)  
Rich Vehlow (2005-06)  
Khaled Yousef (2007-08)  
Mark Cambria (2010-11)  
Mike Carr (2011-12)  
Doug Belokopitsky (2014-15)

#### **2016 ASHRAE Fellows, Northeast Chapter**

The Northeast Chapter had **two members awarded ASHRAE Fellow status** this year at the Winter Meeting of ASHRAE in Orlando, FL. They were:

*William D. Gerstler, PhD* (Chapter President 2008-09)  
*Dennis Landsberg, PhD*

*Continued on next page*

Election of Chapter BOG and Officers took place in April by ballot with the following slate being approved for the 2016-2017 year:

David Houle – President  
Adam Feather – President-Elect  
Kendra Potasiewicz – Vice President  
Trevor Gensch – Treasurer  
Kristin Gustafson – Secretary  
Timothy Houle – BOG  
John Thomas – BOG  
Russ Danforth – BOG  
Todd Turcotte – BOG  
Greg Kirkpatrick – BOG  
Dan Williams – BOG/Past President

There was a Superbowl pool and 50/50 raffles throughout the year with proceeds going to ASHRAE Research.

Submitted by Chapter Historian,  
*Stan Westhoff*

# Message from Membership Promotion

## Look Who's Moving Up in ASHRAE!

The following members have made the move recently from **AFFILITE** to **ASSOCIATE**:

Mr Chris David Muller	ARCADIS
Mr Erik Allen Olson	M+W Group
Mr Matthew Russell	M & W Group

The following members have now advanced from **ASSOCIATE** to **MEMBER**. Participation within ASHRAE as an Officer or Technical Committee Chair on a Regional or Society level requires 3-5 years as a Member, depending on position.

Mr Stuart Aldridge	M+W U.S., Inc.	Mr Charles J Kabrehl, Jr	R J Murray Co
Mr Andrew P Aubin	Crawford & Associates	Mr David Layton, PE	Sage Engineering
Mr Richard J Barcori	State Univ.Constr. Fund	Mr James R Maguire	
Mr Peter S Beisel	Encon Services & Sply	Mr Joseph J Mara	R F Peck Co Inc
Mr Denis M Boyce	L.J. Early Co., Inc.	Mr Brian E Martz,CEM	L&S Energy
Mr Damian Brewka		Mrs Heather L Maxwell	Trane
Mr Daniel F Cappelli	M/E Engineering	Mr Robert L McRae	Nys Dormitory Authority
Mr Mark J Cappello	College of Saint Rose	Mr David Nasner	Maincare Energy Serv.
Mr Michael L Carr		Mr Kalyan Nishtala	Novus Engineering P.C.
Mr Daniel Alain Coutin		Ms Kendra Potasiewicz	Johnson Controls
Mr Christopher V Cursi	CDM Smith	Mr Frank N Primard	Honeywell Bldg Sol.'s
Mr Bradley Demery	Watchtower	Mr Kyle R. Redner	Engineered Solutions
Mr Joseph DiSanto, PE	The Weidt Group	Mr Michael R Reitano	R F Peck
Mr Mark T Durant	Siemens Building Tech.	Ms Priscilla J Richards	NYSERDA
Mr Ramy R. GIRGIS	Novus Engineering	Mr Anthony J Rossello, Jr	CHA Companies
Mr Glenn R Godell	Trojan Energy System	Ms Brittany Rowlison	GLOBAL FOUNDRIES
Mr John W Golden, Jr	Eastern Heating & Clg	Mr Ronald B Slosberg	
Mr David Charles Graham	R K Chase Co Inc	Mr Todd E Somerset	SMRT, Inc
Mr Kenneth C Green		Mr Peter T Sternberg	Solar Pro LLC
Mr Ronald E Greene	C.R. Bard	Mr Geoff Stim	Smartwatt Energy, Inc.
Mr Eric E Gregoire	Trojan Energy Systems	Mr Scot A Tetreault	Wm Jacobs & Sons Inc
Mr James B Hall	CHA Tech Services	Mr David D Watson	R K Chase Co Inc
Mr Gregory C Harden	CHA Inc	Mr Frederick A Wilson	Quantum Engineering Mr Robert P V
Ms Christine L Harvey, PE	Erdman Anthony	Mr Jerry R Young	
Mr Eugene R Hickok	National Grid - UNY	Mrs Bena Zeng	
Mr David Hodgson	Union College	Mr Curt Benedetto, Jr,	
Mr Kevin M Houghtaling	EME Group		
Mr Kevin Anthony Jones	WPS Consulting Eng		

Please note: this list was cut & pasted from the Society's database (with just a few company names abbreviated for fit to this page), so if your company information is missing, please update your bio online! Give me a call if you have any questions or trouble, I'm here to help!

*Continued on next page*



## ***So Current Associates, Are you Ready to Advance too?***

### **Here's how to count your Professional Credits for Advancement (a la tax form style):**

Years of Post HS Education at a College or University:	1. _____
If it was accredited enter 1.5, otherwise enter 1.0	2. _____
Multiply line 1 by line 2 and enter the total on line 3	3. _____
Years of experience working in our industry	4. _____
Enter 3 if you have your PE License, otherwise enter 0	5. _____
Add lines 3 through 5 and <b>Enter the Total on line 6</b>	6. _____

**IF YOUR TOTAL IS GREATER THAN 12 and YOUR ASHRAE GRADE IS STILL "ASSOCIATE"** Call or shoot a quick email to [Liesl.Hammer@gmail.com](mailto:Liesl.Hammer@gmail.com) and/or [membership@ashrae.org](mailto:membership@ashrae.org) with your total years of experience. ***Let's get you Promoted!!***

## **Message from the Refrigeration Committee**

Several years ago TURBOCOR developed a new style of centrifugal compressor that was oil-less and had magnetic bearings. Magnetic bearing aren't new and have been used for years by the US Navy. But putting them in a chassis that would be able to develop 100 ton of refrigeration for water cooled chillers was a big step in our industry. And throwing in the fact that they used 40% less kW than existing compressors, was a breakthrough.

This compressor weighed in at less than 250 lbs when compared to 2,500 lbs for a typical 100 ton compressor. It was small, quiet, used environmentally friendly refrigerant, had a built in VFD, was very efficient, and scads of detailed operating information and trending capabilities.

I remember when a friend asked when they were going to make them in a smaller size to bring these advantages to the commercial and residential markets. Well, that has not happened....BUT....

On the residential and light commercial refrigerator- freezer side, EMBRACO has developed a small compressor that has some of these features. 649 Twh are consumed worldwide by domestic home refrigerators, with an annual individual usage of 450 kWh. These new compressors consumes 40% less than the typical refrigerator compressor, will be using even more friendly refrigerants, VFD is built in, and special ceramic bearings allow them to be oil-free. Near zero ODP and GWP. Woo Woo!

Submitted by Refrigeration Committee Chair,

*Ray Hickey*



# Society News

## ASHRAE/IES Publish 2016 Energy Efficiency Standard

For Release: Oct. 26, 2016 | Contact: Jodi Scott, Public Relations | 678-539-1140 [jscott@ashrae.org](mailto:jscott@ashrae.org)

**ATLANTA** – Numerous energy savings measures resulting from industry input are contained in the newly published energy efficiency standard from ASHRAE and IES.

ANSI/ASHRAE/IES Standard 90.1-2016, *Energy Efficiency Standard for Buildings Except Low-Rise Residential Buildings*, contains 125 addenda published since the 2013 standard. The 2013 standard currently serves as the commercial building reference standard for state building energy codes.

This 2016 version is the 10<sup>th</sup> edition published since the original standard was first published in 1975 during the energy crisis of the United States.

"It is the overall goal of each version to create a consensus standard that saves energy and is technically feasible and cost effective," Drake Erbe, chair of the Standard 90.1 committee, said. "In addition, as a result of a strategic initiative begun in the 2013 cycle, the 2016 version has a new format that we believe will be easier for users, a new way of incorporation of reference material from other standards starting with climate data, and a performance path for compliance that rewards designs for achieving energy cost levels above the standard minimum."

### Formatting

The standard has made significant formatting changes to improve its use. These include a one-column format for easier reading; exceptions separated and indented, set apart with a smaller font size; all defined terms are italicized; and alternating coloring scheme for table rows.

The most significant technical changes included are as follows:

### Building Envelope:

The mandatory provisions include the addition of envelope verification in support of reduced air infiltration and increased requirements for air leakage to overhead coiling doors.

The prescriptive requirements include increased stringency requirements for metal building roofs and walls, fenestration, and opaque doors. Requirements for Climate Zone 0 have been added.

Improved clarity of the standard ranged from defining exterior walls to building orientation to clarity around the effective R-value of air spaces

### Lighting:

Modified control requirements that make the application of advanced lighting controls easier for increased energy savings

Modification of exterior and interior lighting power densities that reflect the efficiency gains from LED technology in specific applications where they are proven to be effective

Added minimum requirements for lighting in dwelling units to set limits on light source efficacy

Added additional control for lighting in parking areas based on occupancy to reduce energy use

### Mechanical:

Chilled water plant metering – For the first time, the standard is requiring large electric driven chilled water plants to be monitored for electric energy use and efficiency.

DOAS requirements – Dedicated outdoor air systems were introduced over 25 years ago but there were no rating or efficiency requirements with which to comply. For the first time, this product class does have both efficiency and rating requirements with which they have to comply.

Elevator efficiency –Introduces requirements for designs to include both usage category and efficiency class. While a minimum threshold is not listed, it is the first step toward including minimum elevator efficiency requirement in a future standard. The standard referenced is an ISO standard since this the current industry standard for efficiency.

Economizer diagnostics – The standard is implementing requirements that air cooled DX cooling unit with economizers have a monitoring system to determine that the air economizer is properly working.

*Continued on next page*

**Energy Cost Budget (ECB) and Modeling.** A significant change to the application of Appendix G as follows: Appendix G now can be used as a path for compliance with the standard. Previously Appendix G was used only to rate “beyond code” performance of buildings. This new version of Appendix G can show compliance with the 2016 version of the standard in the following manner:

The proposed building design requires a new metric the Performance Cost Index (PCI) and demonstration that it is less than that shown in Table 4.2.1.1 based on building type and climate zone.

Another change is that the baseline design is now fixed at a certain level of performance, the stringency or baseline of which is expected not to change with subsequent versions of the standard. By this, a building of any era can be rated using the same method.

Other modifications to Appendix G include: elevator, motor, and refrigeration baselines; changes to the baseline for existing building projects; as well as specific opaque assemblies for the baseline envelope model. Modeling rule changes were also made to heat pump auxiliary heat, economizer shutoff, lighting controls, humidification systems, cooling towers, and the simulation of preheat coils.

Additional **structural changes** include:

Reference Standard Reproduction Annex 1 at the end of the document. This annex is designed to contain extracts from other references that are published with Standard 90.1 for the convenience of users. At present, the only standard this pertains to is ANSI/ASHRAE Standard 169, *Climatic Data for Building Design Standards*. Section 5.1.4 now cites this standard as the source for climatic data therefore extractions of tables and figures from Standard 169-2013 are included in Annex 1 Addition of 2 weather zones 0 A/B in all prescriptive requirements tables to correspond with Standard 169.

The cost of is \$119, ASHRAE members (\$140, non-members). To order, visit [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore) or contact ASHRAE Customer Contact Center at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide) or fax 678-539-2129. ASHRAE, founded in 1894, is a global society advancing human well-being through sustainable technology for the built environment. The Society and its more than 56,000 members worldwide focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability. Through research, standards writing, publishing, certification and continuing education, ASHRAE shapes tomorrow’s built environment today. More information can be found at [www.ashrae.org/news](http://www.ashrae.org/news).

## Member Featured White Paper

At our October Meeting we saw a presentation from Rich Bruno on *Venting Heating Appliances*. Coincidentally, our chapter member Doug Page, PE—DASNY, has also recently published an article on *Venting Systems Fuel Fired Appliances Standard*. Below is the synopsis of Doug’s article, and the remainder can be found in the appendices.

[Venting Systems of Fuel Fired Appliances - Standards and Testing | Doug Page PE, MPA, LEED AP BD&C, CEM, CPD](#)

Energy Codes are driving the installation of boilers and domestic hot water heaters to be high efficiency condensing Category IV appliances. Venting of these appliances tends to be factory-built corrosion resistant steel or PVC, CPVC, PP Plastic. The below discusses two critical issues. First, there is no nationally recognized standard for plastic venting in the US. Second, there are no nationally recognized test criteria or standard for field testing installations of factory-built or plastic venting. This will discuss these problems and propose solutions. *Article Continued on page 15...*

Have you recently published an article or white paper? Do you want to see it featured in our monthly newsletter? Please send to [Kendra.Potasiewicz@jci.com](mailto:Kendra.Potasiewicz@jci.com).

# E-Week 2017

The Capital District e-week committee is accepting seminar applications for E-week 2017, with a **due date of Friday, November 4<sup>th</sup>**. This is a great opportunity to network with local engineers. If interested in presenting, please contact Kristin Gustafson at [KristinG@twgi.com](mailto:KristinG@twgi.com).

## The Capital District's Celebration of National Engineers Week

February 16-17, 2017 | Albany Marriott, 189 Wolf Rd., Albany, NY 12205

**5 PDHs each day**; seminars are from 8:00am-4:00pm

**65 seminars** offered in the two-day event covering all disciplines

Exhibitors & Lunches each day | High School Bridge Competition | Future City display  
Capital District Robotics Team | **Over 800 in attendance**

**We are currently Calling for Seminars for this event!**

One hour Seminar presentations are being sought for all engineering disciplines including: Bridges, Buildings, Chemical, Civil, Concrete, Education, Energy, Ethics, Geotechnical, Sustainability, Nanotech, Electrical, Environmental, Mechanical, Structural and Transportation. Topics of general interest to the profession will be considered. **Seminars MUST be technical not a sales pitch!**

Deadline for Seminar form: **Nov. 4, 2016** (Send as a Word Document NOT a PDF)

Deadline for Seminar Materials (presentation, assessment of learning & speaker bio/resume): **Dec. 2, 2016**

\*\*\*Please see the word document forms at the end of the newsletter\*\*

***Exhibitor space will be available on both days, but limited booth space is available. It will Sell Out so get your form in early.***

\*\*Review exhibitor form and information that is attached to the end of the newsletter\*\*

You also have the opportunity to advertise in our **Program Book** – View the details on the website: [www.CapitalDistrictEweek.org](http://www.CapitalDistrictEweek.org)

We also have **Sponsorship Opportunities** available, this is an excellent opportunity for branding and exposure. View the details on the website: [www.CapitalDistrictEweek.org](http://www.CapitalDistrictEweek.org)

**NEW Sponsorship**: We are looking for a sponsor for the attendee's lanyards & name badges. If you are interested in this sponsorship, please contact me no later than **Oct. 12<sup>th</sup>**.

***Your involvement is important to us and a valuable way for your organization to reach the engineering community.***

Visit our website for more information: [www.CapitalDistrictEweek.org](http://www.CapitalDistrictEweek.org) Feel free to spread the word! If you have any questions please let me know!

*This event is supported by The Foundation for Engineering Education, Inc. (FEE) and by volunteers in associations in the Capital District.*

# Current PAOE Chapter Summary

PAOE stands for the Presidential Award of Excellence and is a point system used within ASHRAE to **evaluate the success of each chapter**. Officers and grassroots chairs have the opportunity to earn PAOE points based on achievements and accomplishments designated by the ASHRAE Society President. Example activities for earning PAOE points include starting a new student chapter, holding at least eight regular chapter meetings in a year, and educating non-members about ASHRAE technologies and goals.

Membership Promotion	Student Activities	Research Promotion	Historical	Chapter Operations	Chapter Technology Transfer	Chapter Grassroots Government Activities	Chapter PAOE Point Totals
-	-	-	-	-	-	-	-

## Northeast Chapter Officers and Board of Governors 2016-17

Chapter President:	David Houle
President Elect/CTTC/Program Chair:	Adam Feather
Vice President/ Newsletter Editor:	Kendra Potasiewicz
Treasurer:	Trevor Gensch
Secretary:	Kristin Gustafson
Board of Governors Past President:	Dan Williams
Board of Governors	Russ Danforth
Board of Governors:	Gregory Kirkpatrick
Board of Governors:	Todd Turcotte
Board of Governors:	John Thomas
Board of Governors:	Tim Houle
Membership Chair:	Liesl Hammer
Student Activities Chair:	Dave Ricci
Research Promotion Chair:	Kevin Houghtaling
Refrigeration Chair	Ray Hickey
Historian:	Stanley Westhoff
YEA:	Open
Webmaster/Home Page Editor/ CECC:	Erik Olsen

## Employment Opportunities

**We are currently accepting employment opportunity advertisements** for this year's newsletters.

There is no cost to submit these postings, however, we do sincerely appreciate any donations that may be made to Research Promotion, in an attempt to reach out monthly RP goals.

If you would like to place a job posting advertisement, please contact me at [Kendra.Potasiewicz@jci.com](mailto:Kendra.Potasiewicz@jci.com).

---

## Business Card Ads

**We are currently accepting business card advertisements** for this year's newsletters. The cost of a business card ad is \$10.00 per month (this money goes directly to Research Promotion; it is not income for our chapter operations).

If you would like to place a Business Card in the newsletter, please contact me at [Kendra.Potasiewicz@jci.com](mailto:Kendra.Potasiewicz@jci.com).

# Appendices

**Pages 15—16 ..... E-Week Registration Materials**

**Pages 17—26 ..... Venting Systems of Fuel Fired Appliances**

Seminars are approved by:



NYS Approved Sponsor under PIE



# Capital District's 37<sup>th</sup> Celebration of NATIONAL ENGINEERS WEEK

**February 16 & 17, 2017 – Albany Marriott, Wolf Road, Albany, NY**

Seminar Application Form - Due by: **November 4, 2016**

All Required Supporting Materials Due by: December 2, 2016

Name & designation: \_\_\_\_\_ Phone: \_\_\_\_\_ Company/Org.: \_\_\_\_\_

Address: \_\_\_\_\_ Date/Location: **Feb. 16 or 17, 2017 – Albany Marriott, Albany**

E-mail (s): \_\_\_\_\_

Seminar Title \_\_\_\_\_

Seminar Already approved with PIE? No need to send materials below. Enter your approval # \_\_\_\_\_

Description of seminar for Program Book & Advertising: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Required Supporting Material** Presentation Duration (minutes): **1 Hour (50 to 60 mins)**

**Due: NO later than December 2, 2016, please email materials requested below to: [jamiller@nysspe.org](mailto:jamiller@nysspe.org).**

- 1. A resume or bio is attached for each speaker (to demonstrate the speaker's qualifications to speak on the topic).
- 2. A copy of the power point and/or handouts or other course materials. ***You can send this as a PDF file with 6 slides to a sheet (Preferred).***
- 3. Assessment of learning (Embed 5 questions on slides at the appropriate locations within your presentation which you can ask your audience to highlight the key points of your talk. Then this can be followed by a slide with your preferred answer or Q&A can be added at the end of your presentation)

**NOTE: We want TECHNICAL seminars, NOT a Sales Pitch. Your company logo can be on the first two slides and the last two slides. Make sure you add your questions to your presentation before submitting it. You MUST have 50-60 mins, nothing shorter.**

<b>Program Area:</b>	Buildings <input type="checkbox"/>	Bridge <input type="checkbox"/>	Civil <input type="checkbox"/>	Chemical <input type="checkbox"/>	Concrete <input type="checkbox"/>
	Electrical <input type="checkbox"/>	Energy <input type="checkbox"/>	Environmental <input type="checkbox"/>	Ethics <input type="checkbox"/>	Geotechnical <input type="checkbox"/>
	Mechanical <input type="checkbox"/>	Structural <input type="checkbox"/>	Transportation <input type="checkbox"/>	Other (describe) <input type="checkbox"/>	

<input type="checkbox"/> <b>Introductory</b> = New to the engineering field, with little or no experience such as students.	<input type="checkbox"/> <b>Intermediate</b> = A few years of experience in the field of engineering with a desire to build on it.	<input type="checkbox"/> <b>Advanced</b> = A "seasoned" engineering profession with many years experience.
---	--	--

**Submit this form with supporting materials to:** Jennifer Miller, Coordinator at [jamiller@nysspe.org](mailto:jamiller@nysspe.org)

**Seminar Approval Information:** This seminar will **ONLY be approved by NYSSPE for the E-Week Event ONLY**. If you want to offer this seminar again, please contact Jen Miller at NYSSPE, Phone: 518-577-1132 or email: [jamiller@nysspe.org](mailto:jamiller@nysspe.org) for more information.





**The Capital District's Celebration  
Of National Engineers Week**

**February 16-17, 2017  
Albany Marriott, 189 Wolf Rd., Albany**

**Exhibitor Registration – DUE BY: January 13, 2017**

**Exhibitor Space is limited– They fill up fast so please get your form in early, a confirmation email will be sent when received**

**Step 1** Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Email: \_\_\_\_\_

Individual(s) at Booth \_\_\_\_\_

**Step 2 Booth Space:** One - 6 ft Skirted table with 2 chairs in the Foyer of the Albany Marriott. You can choose to have a booth on Thursday or Friday or have a booth on both days. **You get ONE (1) FREE lunch ticket for each day you have an exhibit.**

(Company/Firm = for-profit)

(Associations = not-for-profit – 501(c)

**Booth Options:**

Thursday, February 16th  
Friday, February 17th

**Company/Firm by Jan 13<sup>th</sup>**

# \_\_\_\_ @ \$350.00  
# \_\_\_\_ @ \$350.00

**After Jan 13<sup>th</sup>**

# \_\_\_\_ @ \$400.00  
# \_\_\_\_ @ \$400.00

**Association by Jan 13<sup>th</sup>**

# \_\_\_\_ @ \$200.00  
# \_\_\_\_ @ \$200.00

**After Jan 13<sup>th</sup>**

# \_\_\_\_ @ \$250.00  
# \_\_\_\_ @ \$250.00

**TOTAL**

= \$ \_\_\_\_  
= \$ \_\_\_\_

**BOTH DAYS:**

Thursday & Friday

# \_\_\_\_ @ \$450.00

# \_\_\_\_ @ \$500.00

# \_\_\_\_ @ \$300.00

# \_\_\_\_ @ \$350.0

= \$ \_\_\_\_

**For additional lunch tickets: Thursday, Feb. 16<sup>th</sup> # \_\_\_\_ @ \$25.00 each = \$ \_\_\_\_ and/or Friday, Feb. 17<sup>th</sup> # \_\_\_\_ \$25.00 each = \$ \_\_\_\_**

Special Requirements for Booth/Additional Space/table: \_\_\_\_\_ (A charge may apply)

**Step 3 Payment Information:** Check enclosed for a total of: \_\_\_\_\_ Payable to: The Foundation for Engineering Education (FEE)

Please charge to my **VISA, Mastercard, A/E, Discover** (complete information below) **Mail to: Foundation for Engineering Education, 6 Airline Dr., Ste 114, Albany, NY 12205**

Card holder's Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Card holder's Address: \_\_\_\_\_ Zip: \_\_\_\_\_

Email Receipt to (if different from above): \_\_\_\_\_

Card# \_\_\_\_\_ 3Digit (4 for A/E) Security code \_\_\_\_\_ Exp: \_\_\_\_/\_\_\_\_

**CANCELLATION POLICY:** refunds will only be made if cancelled by **January 13, 2017, Payment must be received by January 31, 2017 or no booth**

## Venting Systems of Fuel Fired Appliances - Standards and Testing

[Doug Page PE, MPA, LEED AP BD&C, CEM, CPD](#)



Energy Codes are driving the installation of boilers and domestic hot water heaters to be high efficiency condensing Category IV appliances. Venting of these appliances tends to be factory-built corrosion resistant steel or PVC, CPVC, PP Plastic. The below discusses two critical issues.

First, there is no nationally recognized standard for plastic venting in the US. Second, there are no nationally recognized test criteria or standard for field testing installations of factory-built or plastic venting. This will discuss these problems and propose solutions.

### ***Materials***

First, a brief summary of basic definitions is in order. From the International Code Council (ICC), a **Chimney** is: “a primarily vertical structure containing one or more flues, for the purpose of carrying gaseous products of combustion and air from a fuel-burning appliance to the outdoor atmosphere.”

A chimney can be Factory-Built (listed and labeled chimney composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing), Masonry Chimney, or Metal Chimney (similar to an unlisted NFPA 211 compliant smoke stack).

A **Vent** is: “a pipe or other conduit composed of factory-made components, containing a passageway for conveying combustion products and air to the atmosphere, listed and labeled for use with a specific type or class of appliance.”

The 2015 International Mechanical Code (IMC) Commentary states, “In Code terminology, vents are distinguished from chimneys and are usually constructed of factory-made listed and labeled components intended to function as a system... Some appliances are designed for use with corrosion-resistant vents, such as those made of plastic pipe and special alloys of stainless steel.”

So what is the plastic pipe that conveys combustion by-products from the appliance to the exterior? It certainly is not a chimney. The IMC Commentary indicates it is a Vent, however, it also indicates a Vent is Listed, is Labeled, and is a System.

Forgiving our friends at the ICC for the deviation from UL's definition of "Labeling", exactly what standards are we listing and labeling to? In 2012, UL provided a 'white paper entitled "Venting Gas-fired Appliances" to help provide some clarity. Among others, they mention the following:

*UL 103 Standard for Factory-Built Chimneys for Residential Type and Building Heating Appliances*

*UL 959 Standard for Medium Heat Appliance Factory-Built Chimneys*

*UL 1738 Standard for Venting Systems for Gas-Burning Appliances, Categories II, III, and IV*

These are some of the standards that vents (and chimneys) are tested to. UL indicates that "... US codes permit Category IV gas-fired appliances to be vented using unlisted plastic vents where such vents are tested and covered under the specific appliance listing." By definition, an unlisted plastic vent is not a Vent, at least applied to non-gas fired appliances defined in the IMC.

We should consider section 501.14 of the International Fuel Gas Code (IFGC) which states, "The design, sizing and installation of vents for Category II, III and IV appliances shall be in accordance with the appliance manufacturer's instructions." Additionally, 502.1 of the IFGC states, "...Plastic vents for Category IV appliances shall not be required to be listed and labeled where such vents are as specified by the appliance manufacturer and are installed in accordance with the appliance manufacturer's instructions."

Does this language absolve plastic pipe manufacturers of liability in cases where unlisted plastic pipe venting fails? This is unclear, and no doubt the US courts will provide a response to

this. What is clear is the appliance manufacturers are required by code to provide information to design, size, and install venting for their appliances.

Let's explore one well known and respected Category IV appliance manufacturer's installation instructions. Their table of materials includes:

Item	Material	Standard
Vent pipe and fittings	PVC schedule 40, 80	ANSI/ASTM D1785
	CPVC schedule 40/80	ANSI/ASTM F441
	Polypropylene	ULC-S636
	Stainless steel AL29-4C	UL 1738

ASTM D1785 is Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120. ASTM D1785's Abstract states that "This specification covers poly(vinyl chloride) (PVC) plastic pipe, schedules 40, 80, and 120 for use with the distribution of pressurized liquids only. " Additionally, Section 1.2 Note 2 of the Scope states, "This standard specifies dimensional, performance and test requirements for plumbing and fluid handling applications only. It does not include provisions for the use of these products for venting of combustion gases. UL 1738 is a standard that does include specific testing and marking requirements for flue gas venting products, including PVC." ASTM F441 also explicitly states the standard is for "...pressurized liquids only".

ULC-S636 is a Canadian Standard that provides some hope for a template of a US or International standard. It is noted that the temperature ratings listed in ULC-S636 exceeds the working temperature ratings of many plastic pipe manufacturers.

The factory-built steel venting generally conforms to UL 1738. On a side note, 502.1 of the IFGC require Category II (which may not exist in the market place) and Category III Appliance venting to be tested to UL 1738.

Nowhere does this appliance manufacturer provide a conformance standard for plastic fittings. There is no support spacing listed by the appliance manufacturer. Plastic pipe manufacturers publishing hanger spacing generally based on the pipe being filled with liquid. Table 305.4 of the IMC lists the horizontal hanger spacing at 4 feet on center. Something as simple as vent support is not being provided by appliance manufacturers.

Included in the installation instructions is, "Installation of a PVC/CPVC vent system should adhere to the PVC/CPVC vent manufacturer's installation instructions supplied with the vent system." The US plastic pipe manufacturers I spoke with discourage using their products for appliance venting. It is unclear exactly what vent manufacturer instruction need to be complied with regarding plastic venting. I was able to have a dialog with a Canadian plastic pipe manufacturer that has instructions to conform to ULC-S636. In general, appliance manufacturers are not providing instructions for venting systems.

*Materials Summary* –The industry has applied drainage pipe to venting fuel fired appliances. The vent system has not been fully tested and is certainly not listed and labeled. Appliance manufacturers are now being held responsible for the venting design, sizing and installation. Their installation instructions are generally incomplete from not addressing fittings to support spacing. The standards cited explicitly limit the standard to liquid applications.

What would improve the safety of plastic venting? The vent and appliance manufacturers need to develop/agree on testing protocols. Appliance manufacturers need to explicitly test and list the venting to their appliance. Manufacturers need to provide complete installation instructions. Appliance manufacturers need to place temperature limiting devices on the appliances that can only be changed by factory authorized personnel. This will avoid operators overriding supply water temperature and hence maximum temperatures plastic venting is

exposed to. Finally, contractors need to be trained to install plastic and steel venting by the vent manufacturers.

### *Appliance Vent Testing*

So, how do we test plumbing sanitary piping? If we decide to conform to the International Plumbing Code (IPC), we might fill the pipe with at least 10 feet of water, fill with 5 psig of air, or fill with smoke and see if it leaks. Plastic pipe manufacturers prohibit testing their pipe with air. In the 2012 IPC, air was prohibited as a test fluid for plastic piping.

Of the pipe manufacturers I spoke with, all of them espouse the need for safety and work place protections which would prohibit the use of air for testing. It appears that litigation, and the fear of law suits, have driven pipe manufacturers from permitting plastic piping being tested with air. This leaves folks in cold climates to test with water and antifreeze, waiting for temporary heat or Spring, or to choose materials other than plastic. Oddly enough, the TSSA of Ontario Canada issued a 2007 Advisory permitting the use of air on plastic venting.

How do we test ductwork? We might have the Engineer specify the duct Seal Class, Leakage Class, and Pressure Class to provide the parameters to construct it. Then we might require compliance with a standard such as the Sheet Metal and Air Conditioning Contractors National Association, Inc.'s (SMACNA) HVAC Air Duct Leakage Test Manual. In short, we blow air into the duct at specified pressure and see how much it leaks. Not all that much different from a smoke test of sanitary piping.

Appliance venting carries products of combustion that can, and in unfortunate conditions does, kill humans. What do the IPC, IMC, IFGC, NFPA 211, most vent manufacturers (including plastic pipe), and appliance manufacturers say about testing installed appliance venting? Well, virtually nothing. However, NFPA 211 does require smoke testing of masonry chimneys, and the New York City Mechanical Code requires smoke testing of chimneys. The NYC MC smoke test



requires "a pressure equivalent to 1/2-inch (13mm) column of water...". This violates the plastic pipe manufacturers' recommendations and the Code prohibition of testing with air.

Until 2016, I have heard of no manufacturer of factory-built metal venting agreeing to pressure testing of their installations. We have tested drain, waste, and vent piping for many decades; and ductwork to improve energy efficiency/leakage; but we do no field testing of the system that can cause deaths. This appears to be a problem.

This certainly is not a technical problem and we have the skill set to test appliance vents. There may be many root causes - from manufacturers of piping (venting) and appliances not wanting to be placed at a competitive disadvantage, to raw liability for individual manufacturers. One solution is for existing organizations to step up to the plate and drive consensus on a test standard. Some organizations that could facilitate resolution are the Plastic Pipe Institute (PPI), ASPE, ASHRAE, NFPA, UL, ICC and a host of others.

In an effort to address this life-safety issue, I identify core activities to help. First, manufacturers need to train the installers of factory-built chimneys and other systems. Training the folks that actually install the materials can only help reduce failures. We have pre-installation conferences for roofing and fire-smoke dampers. Why not for venting? This appears to solve the immediate short term need. In the long run, manufacturers may need to certify their installers.

Second, we need to test the installed vent. Visual observation coupled with the human sniff test does not equate to testing. Almost all AL-294C and other steel vent systems I observed post construction has leaked. You may want to inspect yours when you are done reading this.

Finally, we need to have the manufacturers take responsibility of their product and certify in writing that the installation conforms to their installation instructions. If we can do it with kitchen floor assemblies, we can certainly do it with venting.

Working with Pathfinder Engineers (<http://www.pathfinder-ea.com>) and Precision Vent (a vent distributor - <http://precisionvent.com>), we arrived at consensus language to achieve the above. This language is:

## **"FABRICATION**

1. *Prior to the installation of AL 29-4C double wall flues, there shall be an onsite pre-installation training conference. The flue manufacturer shall send a factory representative to the site to review installation procedures with the contractor and the owner's field representative prior to commencement of installation.*
2. *The representative shall be from the manufacturer's factory, not the local sales representative.*
3. *JOINING OF MATERIALS*
4. *PITCHING PIPE*
5. *HANGER SYSTEMS*
6. *DRAINING CONDENSATE FROM LOW POINTS*
7. *REPAIR AND REPLACEMENT OF UNSATISFACTORY AND LEAKING JOINTS.*
8. *DRY FITTING THE FLUE COMPONENTS WITHOUT O-RINGS INSTALLED PRIOR TO FINAL ASSEMBLY*
9. *Topics to be covered at the pre-installation meeting shall include:*
10. *The manufacturer shall provide a written certification of the chimney installation once it is complete.*

**Testing of flues for CO leakage:** *The contractor shall provide an independent testing agency to "sniff test" the joints of each flue assembly for CO leakage while operating the boilers and water heaters. Defective joints and assembly shall be repair, replaced and re-tested."*

To date, we have included this on multiple projects. It has been limited to AL 29-4C venting, but certainly could be expanded for other materials. The concentration limit of Carbon Monoxide is not yet defined. OSHA 1910.1000 requires a maximum exposure of 50 PPM for General Industry. Bluntly, if the vent is leaking it should be fixed.

Additionally, a 'sniff' test cannot be readily used for the vent assembly prior to the appliances being on site. In a tight construction schedule, it is common for the factory-built chimney (or plastic) to be installed and enclosed with brick prior to appliances being energized. As an alternate for testing the vertical vent, the NYC smoke test could be used with the manufacturer's approval. We have done so with a pressure of not more than 2.0" of water column.

The message here is to test the appliance vents. You may want to 'retro-test' your vents in the immediate future.

ASHRAE, founded in 1894, is a building technology society with more than 50,000 members worldwide. The Society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability. Through research, standards writing, publishing, certification and continuing education, ASHRAE shapes tomorrow's built environment today.

