

Lehigh Valley Insights

JOURNAL OF THE LEHIGH VALLEY CHAPTER OF THE ASHRAE, INC.

VOLUME 47 ISSUE 2

October 2011

2011-2012 LEADERS

OFFICERS

President: Donovan Denlinger
(610) 567-5042

President Elect: OPEN

Vice-President

Ahmad Mahmud, PE
(610) 351-8225

Secretary: Nicholas Kaintz
(610) 694-8020

Treasurer: Gabe Badesso
(484) 223-1730

BOARD OF GOVERNORS

Don Chase (215) 491-1700
Ray Forsthoefel (484) 223-1730
Bryan Sandt (610) 253-9677
Ethan Fick (610) 694-8020

COMMITTEE CHAIRPEOPLE

Membership Promotion: Matt Matsinko (610) 530-2600 ext. 126

Student Activities: Paul Kuhn
(610) 715-5364

CTTC: OPEN

Research Promotion:

Frank Paretti, Jr. (610)-421-8512

Historian:

William Trach (610) 395-3617

Newsletter Editor: Ray Forsthoefel
(484) 223-1730

c/o TRANE
5925 Tilghman St. Suite 70
Allentown, PA 18104
E-mail : rjforsthoefel@trane.com

Webmaster: OPEN

Homepage Editor: Frank Paretti, Jr.

MEETING NOTICE

WWW.LVASHRAE.ORG

Wednesday, October 26, 2011

The Greater Philadelphia Innovation Cluster for Energy Efficient Buildings

Presenter: Jim Freihaut, PhD.
Director of Technology and Operations, GPIC HUB
Penn State University

Mango's Coastal Cuisine
3750 Hamilton Blvd. Allentown, PA 18103
(Route 222 North)

Attendees will receive a certificate for 2 PDH.

| | |
|-------------------------|--|
| 4:30 – 5:30 p.m. | Board of Governors Meeting |
| | (Chapter members are welcome to attend) |
| 5:30 – 6:15 p.m. | Pre-Dinner Session: GPIC HUB Overview |
| 6:15 – 7:00 p.m. | Dinner |
| 7:00 – 8:00 p.m. | Dinner Program: GPIC HUB Overview |

Reservations: Frank Paretti
Email: paretti.frank@gmail.com

Members & Guests \$30.00 for Buffet

Please make your reservations by Noon on Monday, October 24, 2011.

Members can utilize Pay Pal online payment option on our website (www.lvahrae.org) for your RSVP.

President's Message

Ladies and Gentlemen,

We started off the year getting back to the basics with Psychometrics 101. You will not want to miss this chapter meeting where Jim Freihaut, PhD will be presenting our chapter with an overview of the GPIC HUB (Greater Philadelphia Innovation Cluster for Energy Efficient Buildings).

Our chapter is looking for volunteers. Currently open chapter positions include President Elect, CTTC Chair, and Webmaster. Please see me to put your skills to work in one of these opportunities.

Donovan Denlinger
President
Lehigh Valley Chapter - ASHRAE

Jim Freihaut, PhD – Pennsylvania State University

JAMES D. FREIHAUT is an Associate Professor in the Department of Architectural Engineering at the Pennsylvania State University.

Department of Architectural Engineering, Penn State University (Present – 2002)

Director of DOE Mid-Atlantic Clean Energy Application Center (MA-CEAC)

Director of Technology and Operations of the Department of Energy Greater Philadelphia Innovation Cluster for Energy Efficient Buildings at the Philadelphia Navy Yard (GPIC Hub)

Jim's current research interests include energy efficient commercial building designs, combined heat and power system design and implementation; dispersion properties of viable and non-viable indoor particulates with specific activities in the UVGI deactivation of viable aerosols in ducted systems; surface-to-air aerosolization of allergen containing particles; inhalation exposure pathways leading to allergic sensitization and asthma disease development; low allergen, low energy residential building designs.

Prior to joining Penn State University, Jim worked for 22 Years at United Technologies Research Center (UTRC) of United Technologies Corporation. His research and management activities at UTRC included research in low emission coal, natural gas, jet fuel combustion; photo-catalytic oxidation indoor air quality control systems; high effectiveness factors energy recovery ventilation designs; manufacturing site remediation technology; physics based modeling of combustion for low emissions combustion systems; indoor air quality control technology for building and aircraft systems; and high performance building system design.

B.A., Christian Brothers College -
Philosophy/Chemistry

M.Sc., Rensselaer Polytechnic Institute –Natural
Science - Physical Chemistry

Ph.D., Pennsylvania State University - Fuel Scienc.

The Greater Philadelphia Innovation Cluster for Energy Efficient Buildings

Jim Freihaut, PhD
Director of Technology and Operations, GPIC HUB

Associate Professor

Department of Architectural Engineering
The Pennsylvania State University
University Park, PA. 16802

U.S. building systems operations account for approximately 40% of all annual primary energy use by the national economy and 70% of all electrical power generated. Relative to the transportation and industrial manufacturing sectors, the building sector accounts for a disproportionately large fraction of U.S. Greenhouse gases and other airborne pollutants. In the last several decades, again relative to manufacturing and transportation systems, there has been little reduction in the specific fuel consumption indices associated with buildings operations. *Minimizing non-renewable fossil fuel utilization while improving building indoor environment performance metrics are the key sustainable characteristics a new or building retrofit design should realize.*

Issues are discussed that have contributed to the stagnant performance of building systems: the fragmented nature of the building development industry; the diverse nature of technology utilized in building systems; the serial design-build -handoff process and associated profit structures; the performance inertia created by the large stock of existing buildings; the difficulties in establishing either data-based enforceable energy efficiency regulations or incentive programs for improving the existing building stock.

The building sector delivery process is significantly more complex than the vertically integrated manufacturing and transportation product sector industries. Innovations in building design and technologies, business models and value propositions, public policy and public awareness must be made for any significant reductions in building energy efficiency can be realized. Given the nature of the current building development industry and public policy status, relative to manufacturing and transportation industries, these changes will not be readily forthcoming.

The goal of the recently awarded DOE GPIC Hub grant is to “transform the building industry” in the ten county Philadelphia Region into a systems provider of efficient buildings (www.gpichub.org) The program is a 5year project operated in the Philadelphia Navy Yard and consists of a collaborative effort by a

combination of 22 industrial and university members and over 90 partners. The project will address each of above noted issues by executing deep retrofit and new building construction projects at the Philadelphia Navy Yard campus. Due to the imperative of minimizing grid electricity dependency to achieve maximum sustainability characteristics, the project will include demonstrations of District Combined Heat and Power and interactive Smart Grid technologies at the Navy Yard Campus.

Membership Promotion

Wednesday, October 26th is our first Membership Promotion Night of the year. As always, if anyone brings a guest, the LV Chapter will pay for his dinner. This is a great opportunity to get new people involved with ASHRAE. Bring along one of your co-workers and I'm sure they will like it and learn something new also.

Some of the benefits of joining ASHRAE are:

- Network with industry leaders
- Receive continuing education credits – PDH's and CEU's
- Gain access to technological advancements in building systems
- Receive member benefits like the ASHRAE Journal & Handbooks
- Support the industry that provides your livelihood

So I hope to see you at the meeting with a guest.

Matt Matsinko, P.E.
Membership Promotion Chairman

Alternate to ASHRAE Standard 62.1 Ventilation Rate Procedure Proposed

Public comment is being sought on the proposed allowance of an additional default value to the ventilation rate procedure in ASHRAE's indoor air quality standard.

ANSI/ASHRAE Standard 62.1-2010, *Ventilation for Acceptable Indoor Air Quality*, sets minimum ventilation rates and other requirements for commercial and institutional buildings. The ventilation rate procedure provides a prescriptive method for determining minimum ventilation requirements. It accounts for pollutant sources from both the building and its occupants, and allows the designer to account for the efficiency of different ventilation systems when delivering outdoor air to the breathing zone.

Some users of Standard 62.1 believe that the ventilation rate procedure is "too complicated," according to Standard 62.1 chair Roger Hedrick. "While the 62.1 committee disagrees with this in most cases – the basics of the VRP are quite straightforward – the committee agrees that application of the multiple-zone recirculating system equations described in Section 6.2.5 and Appendix A can be complex."

Proposed addendum f, open for public review until Oct. 16, provides an additional default value for V_{pz} .

"Difficulty determining an appropriate value for V_{pz} seems to be a frequent issue with users of the multiple space equations," he said. "The committee decided that supplying a default value would simplify application. However, the default value is necessarily conservative. In a large number of applications, determining the 'lowest zone primary airflow value expected at the design condition analyzed' will result in a value for V_{pz} that is higher than the default, resulting in a reduced outdoor air intake requirement."

Addendum f is open for public review until Oct. 16, 2011, along with proposed addendum h. Also, proposed addendum g to the standard is open for public review until Oct. 31, 2011. For more information, visit www.ashrae.org/publicreviews. The other addenda open for public reviews are:

- Addendum h (until Oct. 16). Table 6.1 in the standard includes ventilation rates for "Sports arena (play area)" and "Gym, stadium (play area)." Both space types have ventilation rates based on floor area only, with a per person rate of zero. Users of the standard have expressed interest in applying demand controlled ventilation to these space types, which is effectively prohibited by the lack of a per person component to the ventilation rate. This proposed addendum replaces both of these space types with "Gym, Sports Arena (play area)," with $R_p = 20$ cfm/person and $R_a = 0.06$ cfm/ft². In most cases, the overall ventilation rate for these spaces

is expected to decrease, possibly significantly, according to Hedrick.

One concern about allowing CO₂-based demand controlled ventilation in these spaces is that the volume per person in these spaces is typically large, which means that CO₂ concentration changes will have longer than usual lag times behind occupancy changes, he noted.

- Addendum g (open until Oct. 31). Currently users are directed that for space types that are not listed in Table 6-1 they should select the space type from the table that is most similar to the space being designed. However, some space types are actually ventilated using the exhaust ventilation requirements of Section 6.5 and Table 6-4. This proposed addendum adds language directing the user to select the space type that is most similar to the space in question from either Table 6-1 or 6-4, and to design the ventilation for the space according to the Section 6.2 or 6.5, as appropriate

Board of Governors Meeting Minutes September 28, 2011

Officers Present:

Donovan Denlinger – President
Nicholas Kaintz – Secretary

Board of Governors Present:

Ethan Fick

Committee Chairs Present:

Matt Matsinko – Membership Promotion
William Trach – Historian
Frank Paretto – RP

1. Call to Order:

Meeting called to order at 4:40 PM; Donovan Denlinger chaired the meeting.

2. Old Business:

Officer/Chair Reports:

1. Membership Promotion

- a. Matt Matsinko distributed lists of delinquent and canceled members as well as a chapter change report.

2. Research Promotion

- a. Frank Paretto announced that the chapter beat last year's donation goal by 3%. The chapter's new goal is \$5500.

New Business:

1. Donovan Denlinger noted that the 2013 CRC will be hosted by the Lehigh Valley Chapter and meeting will be scheduled to begin the planning process.

2. Chapter Meetings

- a. Donovan distributed information on Dr. Kishor Khankari and noted he may be available for April or March.
- b. Paul Kuhn to check into the availability of Tom Watson as well as a tour of Air Products Solar Array.
- c. Ethan Fick suggested BIM as a chapter meeting topic.
- d. Frank Paretto noted that speakers for other regions are available to us so we are not limited to only our region.

3. Open Chapter Positions

- a. Donovan Denlinger announced that the following positions are open President Elect, Webmaster, and CTTC Chair.

**LEHIGH VALLEY CHAPTER OF ASHRAE
2011-2012 MEETING SCHEDULE**

| MONTH | TECHNICAL/DINNER PROGRAM | EVENT | PROGRAM CHAIR |
|-----------------------|---|---------------------------------|----------------------|
| Oct. 26 th | DOE Energy Innovation HUB Dr James Freihaut, PSU | Membership Promotion | Bill Trach |
| Nov. 30 th | | Joint IFMA Meeting (AM Mtg) | |
| Dec. | No Meeting | | |
| Jan 19 th | BIM Modeling | | |
| Feb. 23 rd | | Membership Promotion | |
| Mar. 14 th | Natural Ventilation Systems | Research Promotion | Ahmad Mahmud |
| Apr. 19 th | Dedicated Outdoor Air Webinar | A Path to Balanced Energy & IEQ | |
| May 23 rd | Tour | | |
| June 1st | Annual Golf Outing | Support of Research Promotion | |