



# AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS INC.

LONDON CANADA CHAPTER #116

<http://LondonCanada.AshraeChapters.org>

Mon Sept 26/2016

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### **Newsletter**

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### **Region 2**

### **Assistant Regional Chair**

Ibrahim Simhatl

## **Topic**

## **COOLING TOWERS and LEGIONELLA**

## **Speaker**

### **Ken Mortensen**

**Senior Manager - Research and Development  
SPX Cooling Technologies, Inc.**



## **Meeting - MONDAY SEPT 26/2016**

5:15 Social

6:15 Dinner

7:15 Presentation

## **PLEASE USE**

## **ADVANCED PAYMENT BEFORE MEETING**

**PAYPAL**

see chapter web site to register and pay  
<http://LondonCanada.AshraeChapters.org>

## **Location**

**Ivey Spencer Leadership Centre  
551 Windermere Rd, London, ON**

## President's Message

I would like to welcome you to the 2016-2017 ASHRAE season. I would like to start my introducing myself, my name is Khalid El-Kadri and I'm honoured to serve as the 2016-2017 ASHRAE London Chapter president. The new Board of Governors this year consists of: Phil Cook as the President Elect, James Scudamore as the Secretary, John Freeman as the Treasurer.

The Chapter Board of Governors attended the Moncton CRC this past August, where we met other Board of Governors members from chapters across the region. We also had the pleasure to meet with the Regional team as well as staff from Society. We had a total of 6 members from the London Chapter Board of Governors attend in addition to London chapter members attending as regional representatives. We learnt more about ASHRAE, had many good discussions and exchanged great ideas with other Board of Governors across the region. Our chapter received the "Regional Communication Award" as well as many "Chapter Service Awards" for individuals who have been serving our chapters for years. Awards will be presented at the Past Presidents' Night that we are planning to hold in early 2017.

This year's Board of Governors has been working hard over the last couple of months to put together a program for the year. We are close to finalizing it and we hope that you will enjoy it. We have variety of topics and themes, distinguished lecturers and a technical tour. Please visit the Chapter website for more details. The website will be updated as soon as the program is finalized. If you are interested in helping out, please do not hesitate to contact any of the chapter committee chairs or the Board of Governors. Contacts can be found on the website.

September meeting will be a Student's night. I would encourage those attending to engage the students and make them feel welcome as they are the future of our society. We also encourage any individuals or businesses interested in contributing to help the chapter offset the costs of subsidising student attendance at the chapter meetings to contact one of the chapter executive to make arrangements.

Finally, I would like to thank last year's Board of Governors for their efforts and continuous help in making last year a success. I would like to thank Jordan Foster, 2015-2016 president, for spearheading the chapter. I would also like to congratulate him for winning the "Presidential Award of Excellence".

Best Regards,  
Khalid El-Kadri  
Chapter President 2016-2017  
ASHRAE London Canada Chapter

## Upcoming Meetings

(check chapter web site for latest information)

Mon Oct 24/2016 (<<< note date change due to Halloween)

Mon Nov 28/2016

Mon Jan 23/2017 (<<< note date change due to Society Conf)

Mon Feb 27/2017

Mon Mar 27/2017

Mon June 5/2017 - Golf Tournament

## Other Meetings

Jan 28 to Feb 1, 2017 = ASHRAE Winter Conference - Las Vegas, NV

Jan 30 to Feb 1, 2017 = AHR Expo - Las Vegas, NV ([ahrexpo.com](http://ahrexpo.com))

June 24 to 28, 2017 = ASHRAE Annual Conference - Long Beach, CA - 2018 -

Jan 20 to 24, 2018 = ASHRAE Winter Conference - Chicago, IL

Jan 22 to 24, 2018 = AHR Expo - Chicago, IL

June 23-27, 2018 = ASHRAE Annual Conference - Houston, TX



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Topic

## **Cooling Tower and Legionella**

What is Legionella, How is it acquired, How to treat along with recommendations.

Speaker

### **Kenneth P. Mortensen**

Ken is Senior Manager Research and Development for SPX Cooling Technologies. Has managed several engineering and operations departments responsible for water quality, material selection, and physical application criteria for cooling towers and components, as well as design, manufacture and servicing of water treatment equipment and installations. Ken has been with SPX/Marley for 38 years.

Ken graduated in 1977 with a Bachelor of Science Degree in Chemical Engineering from Massachusetts Institute of Technology and completed an MBA at Rockhurst University in Kansas City, Missouri in 2000.

Ken is the author of a number technical papers on subjects including "Use of Low Clog Film Fill in Cooling Towers", "Use of Recycled Water in Cooling Towers", "Cooling Tower Technology for Geothermal Application", and "Use of Ozone Water Treatment for Cooling Water". Ken holds Patents for Fire-resistant Fiberglass Cooling Tower Design, Low-Fouling Cooling Tower Film Fills, and plastic joining techniques. He is a Registered engineer in the State of Kansas.

## **Resource Promotion**

It was a privilege to serve as the Chapter President last year, and I would like to thank the membership and Board of Governors for making the year a success. I definitely enjoyed my summer off from ASHRAE! This past weekend I attended centralized training for Resource Promotion. There are definitely some exciting ideas out there and I am excited to be Resource Promotion chair for the upcoming year. Together we can make this year successful. You will undoubtedly be hearing from me over the course of the year at meetings and over the phone or through email. I have some new ideas that I think will aid in us making this year a success. Looking forward to the year!

Jordan Foster  
 Resource Promotion Chair 2016-2017  
 ASHRAE London Canada Chapter

## **From the Chapter History Chair...**

Earlier this summer I was contacted by Charles Clemance who has been a long time ASHRAE Chapter member, and a former Board Executive member - to say that he had found some old chapter correspondence and newsletters from the 1985 - 1987 years that he thought we might want to have.

It is very interesting to see how much has changed, and what is still the same. If you would like to review our chapter history as documented, you can follow the link below to see our on-line archive...

<http://londoncanada.ashraechapters.org/history.html>

The history records for the chapter are fairly complete - with only a year or two where we have some holes in the retained records.

If anyone has, or knows of old chapter records or photos that they would like to share, please contact anyone on the chapter executive, and we would be happy to receive them.

Here's to wishing everyone a successful fall season...

Eric W. Shaw  
 History Chair 2016-2017  
 ASHRAE London Canada Chapter



[www.somersep.com](http://www.somersep.com)

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## **CONNECT-A-COLLEAGUE**

Informing colleagues about ASHRAE takes less than 1 minute now with Connect-a-Colleague. During #MarchIntoMembership contest you could win a \$500 American Express gift card when your colleagues join ASHRAE through your customized email referral. Connect-a-Colleague simply creates an automated email on your behalf and the more people you invite during the month of March, the more chances you have to win.

ASHRAE member referrals continue to be the top reason new members join. As an ASHRAE member, your referral is a very powerful tool that can benefit your colleagues, your Society, and the HVAC&R industry. Please take a minute to Connect-a-Colleague today.

Get started now: Connect-a-Colleague  
[ashrae.org/connect](http://ashrae.org/connect)

## **ASHRAE JOB BOARD**

Having trouble finding the time to search through all of the available jobs on ASHRAE Job Board? Let ASHRAE do the work for you! Create a personal job alert and new jobs that match your search criteria will be emailed directly to you.

Our Job Alerts will: match jobs to your customized criteria; notify you when potential opportunities become available; allow you to focus on other career-building activities, such as networking

Sign up for job alerts today on ASHRAE Job Board and you will be notified as soon as the jobs you want are posted!



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## **Data Center Standard Published by ASHRAE**

ATLANTA – A newly published energy standard for data centers features a performance based approach that is more flexible and accommodating of innovative changes that rapidly occur in design, construction and operations in that industry. ANSI/ASHRAE Standard 90.4-2016, Energy Standard for Data Centers, establishes the minimum energy efficiency requirements of data centers for design and construction, for creation of a plan for operation and maintenance and for utilization of on-site or off-site renewable energy resources.

“We worked very hard to craft this standard in a manner that does not stifle innovation in the data center industry while simultaneously offering criteria to help ensure energy savings,” Ron Jarnagin, chair of the 90.4 committee, said. “It is important to keep in mind that data centers are mission critical facilities where risk management is the primary concern.”

Jarnagin noted that high plug loads and rapidly advancing IT technology make data center applications significantly different from their commercial building counterparts. Standard 90.4 specifically addresses the unique energy requirements of data centers. Standard 90.4 is a performance-based design standard that offers the design components for mechanical load (MLC) and electrical loss (ELC). Calculations of the MLC and ELC are made and then compared to the maximum allowable values shown in the standard based on climate zones. Compliance with Standard 90.4 is achieved when the calculated values do not exceed the values contained in the standard. An alternative compliance path is provided that allows tradeoffs between the MLC and ELC.

“The committee initially pursued a Green Grid power use effectiveness-like (PUE) process for setting the criteria in the standard but the Green Grid’s PUE metric is actually based on measured energy use data rather than design criteria calculations,” Jarnagin said. “We realized that the design calculations contained in Standard 90.4 would not likely match up with the actual energy use data so this approach was amended. We feel that we’ve recommended the requirements for 90.4 based on a justifiable 80/20 rule where only the lower performing systems will be affected.”

The Standards Committee, which has oversight of all ASHRAE standards, will work together with the chairs of Standard 90.4 and ANSI/ASHRAE/IES Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings, to remove data centers from Standard 90.1. Standard 90.4 already refers users to Standard 90.1 for requirements on lighting, service water heating and the building envelope.

Other requirements in Standard 90.4 include: a sample compliance checklist; diagrams to illustrate compliance; sample calculations

Jarnagin noted that industry input is vital as the standard moves forward. The standard now is under a continuous maintenance process that allows changes to the standard to be made on a continuous basis through the mechanism of addenda to the standard. This process will allow for frequent changes to the standard as needed to keep pace with the rapidly changing technologies in the industry, he said.

The cost of Standard 90.4-2016, Energy Standard for Data Centers, is \$89, ASHRAE members (\$105, 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.

#### A Winning Hand: ASHRAE 2017 Winter Conference, AHR Expo in Las Vegas

ATLANTA – When it comes to opportunities for professional development, networking and access to the latest technology, ASHRAE has stacked the deck in favor of its 2017 Winter Conference and AHR Expo taking place in Las Vegas.

The Conference dates are Jan. 28-Feb. 1 at Caesars Palace with the Expo being held Jan. 30-Feb. 1 at the Las Vegas Convention Center. The two events are expected to draw thousands of industry professionals from around the world, drawing on the record breaking attendance from the 2011 Conference and Expo held in Las Vegas for the first time.

To register for the Conference, which includes free access to the Expo, visit [www.ashrae.org/lasvegas](http://www.ashrae.org/lasvegas).

The Conference offers some 200 Professional Developed Hours recognized by most U.S. states, AIA LUs and LEED AP credits through ASHRAE Learning Institute course and Technical Program sessions.

ASHRAE's Technical Program raises the stakes in addressing the challenges faced today and in the future by industry professionals. Via eight tracks, the program attempts to bridge the gap between the design decisions made today that will impact the future. New tracks that address changes in technology include Water-Energy Nexus, Advances in Mission Critical Design and Operation, Climate Change and Its Effects on HVAC&R Design and Technologies, and Energy Efficiency Industrial Buildings and Life Safety. The full program will be available later this month.

Twenty Professional Development Seminars and Short courses are offered by the ASHRAE Learning Institute. New courses include Cogeneration from the Basics through Construction and Operation, Complying with Standard 90.1-2016, Complying with the Requirements of Standard 62.1-2016, New ASHRAE-Classified Refrigerants to Meet Society's Changing Needs, Variable Refrigerant Flow System Design and Application, Complying with Standard 90.1-2016 Appendix G, and Design of Affordable and Efficient Ground Source Heat Pumps.

Additionally, ASHRAE is offering two administrations of its six certification program exams, including its new Building Commissioning Professional (BCxP) certification developed with the goal of achieving U.S. Department of Energy (DOE) recognition by summer 2017. The other certifications are the ANSI-accredited Building Energy Assessment Professional (BEAP), Building Energy Modeling Professional (BEMP) and High-Performance Building Design Professional (HBDP) as well as the Healthcare Facility Design Professional (HFDP), and Operations & Performance Management Professional (OPMP).

The keynote speaker at the opening Plenary Session is Adam Steltzner, team lead and chief engineer for NASA's Mars Rover, Curiosity. For 10 years, Steltzner led a team of engineers inventing, designing and testing the revolutionary "sky crane" landing system that successfully placed the rover on the Martian surface in 2012. Five times heavier than its predecessors, Curiosity required an entirely new landing system for the 7-minute phase when the one-ton rover—entering Martian atmosphere at 13,000 mph—must stop fully on the surface. To inspire attendees, Steltzner discusses the power of human curiosity and the importance of fostering a culture of collaborative innovation.



[Register Now for the 2017 ASHRAE Winter Conference and AHR Expo](#)

The largest gathering of HVAC&R professionals in the world is taking place January 28 – February 1 in Las Vegas. Join us at Caesars Palace and the Las Vegas Convention Center to learn the latest in technology, earn PDH's, and help guide the industry by taking part in a standards or technical committee meeting.

8 Conference Tracks | 2000+ AHR Exhibitors | 20+ ASHRAE Learning Institute Courses | Social Events | Tours | 600+ Technical Meetings

#### ASHRAExCHANGE

Want to stay updated with ASHRAE instantly? Log onto to ASHRAExCHANGE to ask questions, discuss industry news and connect with other engineers!

British Columbia, California, Florida and Regina Teams Top Winners in ASHRAE Student Design Competitions

ATLANTA – Students from eight countries put their engineering skills to the test to design and select systems for a government building in China, as well as for a competition requiring them to “think globally, act locally.” Both competitions are held by ASHRAE.

The 2016 Student Design Competition focused on a new 2-story municipal government building in Beijing, China. The Applied Engineering Challenge for 2015-2016 required students to plan, develop and enact solutions to sustainability issues in their local or regional areas. Forty-eight teams entered the competitions.

First place in the HVAC Design Calculations category is awarded to the University of British Columbia. Team members are Alexander Brosky, Samarth Joshi, Aubrey McNeill, Silvia Odaya, Cheng Yang and Ziran Yu, all from the Department of Mechanical Engineering, University of British Columbia. Faculty advisors are Nima Atabaki, Ph.D., P.Eng., and Steven Rogak, Ph.D., P.Eng., while the industry advisor is Ali Nazari, P.Eng., BEMP, principal, Integral Group.

The total system peak loads are 1,095 MBh for cooling and 398.9 MBh for heating. The team designed air cooled chillers with ice storage and natural gas boilers to serve three air handling units that feed variable air volume terminal boxes. Students selected the design based on life cycle cost analysis. The system allows a cooling plant to be downsized while taking advantage of cheaper off-peak energy costs

An independent computer room air conditioner maintains server room environmental requirements. Photovoltaic and solar thermal panels have been sized and selected as energy conservation measures.

First place in the System Selection category is awarded to California State Polytechnic University, Pomona. Team members are Miro Zaroukian, mechanical engineer, California Energy Designs Inc., La Canada, Calif.; Asped Khachatoorian, mechanical designer, California Energy Designs Inc., La Canada, Calif.; Christian Garcia, Fontana, Calif.; Sevan Hovsepian, mechanical engineer, Integrated Engineering, Consulting Engineers Inc., Los Angeles, Calif.; and Tade Mirzakhanyan, mechanical engineer, RBM Conveyor Systems Inc., Pomona, Calif. Advisors are Henry Xue, Ph.D., and Richard L. Gilbert, P.E., California Energy Designs Inc.

After comparing several options, the team chose a hybrid variable refrigerant flow with outdoor heat recovery unit. They determined it is safe, reliable and efficient, and able to maintain the building at optimum conditions at all times.

In addition to the main building, a server room split system with a dedicated outdoor air system was designed to meet cooling loads. The system also generates potable hot water. An automatic ventilation system operates fans and mechanical louvers in the garage to ensure toxic gases are removed.

First place in the category of Integrated Sustainable Building Design is awarded to a team from the University of Central Florida. Team members are Logan G. Harrell, nuclear engineer, NAVSEA, Norfolk Naval Shipyard, Portsmouth, Va.; Gerald Hornik, applications engineer, Addison HVAC, Orlando, Fla.; Austin B. Christianson, Melbourne, Fla.; Travis Kalikaparsaud, mechanical engineer, Thermotech Enterprises, Tampa, Fla.; and Jeremy Palavecino, associate engineer, NextEra Energy, Miami, Fla. The faculty advisor is Muthusamy V. Swami, Ph.D., and the technical advisor is Nathaniel B. Boyd, P.E., CPMP.

The owner provided a set of floor plans to which the building must be designed around, including compliance with ASHRAE/IES/USGBC/ICC Standard 189.1, Standard for the Design of High Performance Green Buildings, a budget of \$200 per square foot, a life cycle of 50 years and inclusion of all the rooms specified and designed to specify indoor environmental conditions and building schedule.

The team chose a water source variable refrigerant flow system with an optimized geothermal water loop. The system was chosen based on its part load performance with high performance variable speed compressors in the main condensing modules.

For the Applied Engineering Challenge, recipients are from the University of Regina, Saskatchewan – Bradley E.R. Lulik, mechanical engineering-in-training, MacPherson Engineering Inc., Regina, Saskatchewan; Eva Rennie, pursuing a diploma in business administration, University of Regina; and Brent Yeske, gradworks contactor, system integrity and standards, TransGas Limited, Regina, Saskatchewan. Their faculty advisor is Adisorn Aroonwilas, Ph.D.

The students conducted an energy audit and mechanical system redesign for Little Souls Daycare at Souls Harbour Rescue Mission. The facility had concerns about building ventilation and safety of occupants (ages 10 and under), specifically that there currently is no ventilation in the summer months, which results in a stale and humid environment. Souls Harbour wanted to improve the inefficiencies at the lowest possible cost while improving the health and safety of the building, making it habitable for the occupants.

The students provided a list of recommendations to be implemented over 10 years, including high efficiency HVAC systems for the daycare, administrative offices and the gym area, skylights and insulation, and windows.

The projects will be shared at the ASHRAE 2017 Winter Conference, Jan. 28-Feb. 1, Las Vegas, Nev. Held in conjunction with the Winter Conference is the ASHRAE co-sponsored International Air-Conditioning, Heating, Refrigerating Exposition, Jan. 30-Feb. 1, at the Las Vegas Convention Center.





#### ASHRAE LowDown Showdown Modeling Challenge Teams Recognized

ATLANTA – Eight teams in the second annual ASHRAE Lowdown Showdown worked to find the right dose of designing and modeling to get a health care facility to net zero or below.

The ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference took place Aug. 10-12 in Salt Lake City, Utah. Some 250 people attended the event, which featured more than 100 speakers presenting practical applications of tools, case studies and papers on simulation, research and a deeper dive into current technology.

Held in conjunction with the Conference was the 2016 ASHRAE LowDown Showdown modeling challenge with eight teams and some 80 team members. The teams used currently available software to create their models for the baseline building, a 50,000 square foot, three-story outpatient health care facility in Omaha, Neb.

"The LowDown Showdown challenged teams to take their models to net zero," Dru Crawley, a member of the Conference Steering Committee, said. "This building was particularly challenging because of its 24-hour-a-day operation and plug loads. But the teams were tremendously creative, resourceful and committed to drawing upon their team members' strengths to create realistic solutions to the challenge."

A list of participants and a summary of their projects can be found at [www.ashrae.org/simbuild2016#lowdown](http://www.ashrae.org/simbuild2016#lowdown).

Each team was required to present their results at the Conference. Recognition awards were presented to

- Most Practical – Energy Derailment
- Most Creative – The EUI Evangelists
- Best Teamwork – Quest for Zero
- Most Innovative Workflow – Insane Energy Savers
- Best Energy Use – The DeeBees

Other participating teams were:

- The BEM Bang Theory
- Outpatient Zero
- Newbie Energizers

"The ASHRAE LowDown Showdown seeks to broaden the industry's ability to engage architects, engineers, designers and energy modelers to create an effective workflow and an outstanding design," Dennis Knight, Conference chair, said. "The teams demonstrated beyond a doubt that better build models can be created more efficiently when drawing upon the experience and creativity of the various professionals working together."

The larger challenge for the Showdown is to communicate these experiences to the industry at large so others can learn and improve their professional development, he said. Each team was required to produce a results spreadsheet, a poster and a one-page narrative. These items are posted on the challenge's Webpage along with the names of the team members.

In addition to the Lowdown Showdown, the Conference itself featured some 100 presentations, which are available in the on-demand Virtual Conference. To register for the Virtual Conference, visit <https://www.ashrae.org/virtualconferences>. The cost is \$129, ASHRAE members (\$179, non-members).

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).

IBPSA-USA is the United States regional affiliate of the International Building Performance Simulation Association (IBPSA). The mission of IBPSA-USA is to advance and promote the science of building simulation in order to improve the design, construction, operation and maintenance of new and existing buildings in the United States.



## ASHRAE FALL COURSES

### Commissioning

Commissioning Process in New & Existing Buildings

Part 1 - Mon, October 24, 2016, 1:00 pm to 4:00 pm, EDT

Part 2 - Wed, October 26, 2016, 1:00 pm to 4:00 pm, EDT

Instructor: Rick Casault, P.E., Member ASHRAE

### Environmental Quality

Updated! Troubleshooting Humidity Control Problems (IAQ Practices)

Tues, October 25, 2016, 1:00 pm to 4:00 pm, EDT

Instructor: Lew Harriman, P.E., Member ASHRAE, HBDP, LEED® AP

### Energy Efficiency

Basics of Combined Heat & Power (ES Practices)

Wed, October 19, 2016, 1:00 pm to 4:00 pm, EDT

Instructors: Lucas Hyman, P.E., Member ASHRAE, LEED®

Combined Heat & Power: Creating Efficiency through Design & Operations (ES Practices)

Thurs, October 20, 2016, 1:00 pm to 4:00 pm, EDT

Instructors: Lucas Hyman, P.E., Member ASHRAE, LEED® AP

### HVAC Applications

Updated! Design of Commercial Ground Source Heat Pumps

Mon, November 7, 2016, 1:00 pm to 4:00 pm, EST

Instructor: Steve Kavanaugh, Member ASHRAE

Designing High-Performance Healthcare HVAC Systems

Tues, October 4, 2016, 1:00 pm to 4:00 pm, EDT

Instructor: Dan Koenigshofer, P.E., Member ASHRAE, HFDP

Laboratory Design: The Basics and Beyond

Thurs, October 13, 2016, 1:00 pm to 4:00 pm, EDT

Instructor: John Varley, P.E., Member ASHRAE, HBDP, LEED® AP

Understanding and Designing Dedicated Outdoor Air Systems (DOAS)

Tues, October 11, 2016, 1:00 pm to 4:00 pm, EDT

Instructor: Stanley Mumma, Ph.D., P.E., Fellow/Life Member ASHRAE

### Standards & Guidelines

Complying with Standard 90.1-2013: HVAC/Mechanical (ES Practices)

Mon, September 26, 2016, 1:00 pm to 4:00 pm, EDT

Instructors: McHenry Wallace, P.E., Member ASHRAE, LEED® AP

Fundamentals and Applications of Standard 55 (IAQ Practices)

Tues, September 20, 2016, 1:00 pm to 4:00 pm, EDT

Instructors: Peter Alspach, P.E., Member ASHRAE, LEED® AP, Robert Bean, R.E.T., Member ASHRAE and Lawrence Schoen, P.E., Fellow ASHRAE

NEW! Fundamental Requirements of Standard 62.1-2016 (IAQ Practices)

Wed, November 9, 2016, 1:00 pm to 4:00 pm, EST

Instructor: Hoy Bohanon, P.E., Member ASHRAE, BEAP, LEED® AP

Understanding Standard 189.1-2014 for High-Performance Green Buildings (ES Practices)

Wed, October 12, 2016, 1:00 pm to 4:00 pm, EDT

Instructor: Tom Lawrence, Ph.D., P.E., Member ASHRAE, LEED® AP