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# ASHRAE LONDON CANADA CHAPTER #116

**TOPIC**

## Transforming an Existing Building into a High Performing Facility

**SPEAKER**

### Jim Newman, OPMP, BEAP

ASHRAE Distinguished Lecturer

Owner/Managing Partner - Newman Consulting Group, LLC  
Farmington Hills, MI

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## MONDAY MAR 25/2019

5:15PM – SOCIAL

6:15PM – DINNER

7:15PM – PRESENTATION

### RESEARCH PROMOTION NIGHT

**MEETING LOCATION**

## Ivey Spencer Leadership Centre

551 Windermere Rd, London

PLEASE USE PALPAL – ADVANCED PAYMENT BEFORE MEETING

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

\$60 for MEMEBERS (before Friday 12:00noon)

**\$70 for Members after 12:00noon**

\$10 for STUDENTS

Consider Sponsoring a Student Meal

USE PAYPAL on the Chapter Web Site

**Please register before Thu March 21 on the web site if you will be attending.**

## **TOPIC**

# **Transforming an Existing Building into a High Performing Facility**

GBCI Approved | 1.5 CE Hours | 0920010401  
AIA Approved | 1.5 LU/HSW | NEWMAN02

Most buildings, new or old, do not perform anywhere near their most efficient potential. HVAC systems deteriorate with time. Find out what to look for relative to improving the efficiency of the HVAC and lighting systems in a building, learn how to do it at minimum cost by taking advantage of incentives and rebates, and learn how to keep it performing at its potential to save your owner operating and utility costs.

## **SPEAKER**

### **Jim Newman, OPMP, BEAP**

**ASHRAE Distinguished Lecturer**

**Owner/Managing Partner - Newman Consulting Group, LLC, Farmington Hills, MI**



Jim Newman is an active member of many technical societies, a member of the Construction and Design Committee and of the Speakers Bureau of the Engineering Society of Detroit (ESD), and ESD's spokesperson on energy and environmental issues. He is a Fellow of the ESD.

Jim is a trainer for ASHRAE Energy Standard 90.1 and has trained hundreds of architects, engineers, code officials, and contractors on the use of the Standard. He has been active in several ASHRAE TCs, was Vice-chair of the Industrial Air Conditioning TC in the 1970s, chaired many symposia and was responsible for the rewrite of 10 chapters in the Applications Guide and Data Book during that time. He has also been active on TC 5.5, Air-to-Air Energy Recovery, for the past 12 years. He was a member of the committee that developed ASHRAE's Energy Policy Document for 2008 and a Provisional Energy Auditor for the pilot program of the ASHRAE Building Energy Quotient (bEQ).

He is a member of the Energy and Environment Committee of BOMA International, Chair of the Sustainability Committee of the Detroit BOMA chapter, a past Board member of the Detroit Regional Chapter (DRC) of the U.S. Green Building Council (USGBC) and of the Detroit ASHRAE chapter. Jim is Past Chair of the Public Policy Committee of USGBC-Detroit Regional Chapter (DRC), and makes presentations to municipalities on how they can Green their cities and attract Green development.

Jim lectures at area colleges and universities, is a frequent speaker on radio and television programs, and provides webcasts and podcasts to varied audiences on Indoor Air Quality, Energy, Sustainable Buildings and Proper Operating and Maintenance Techniques.

Jim has published numerous papers on Indoor Air Quality, Energy Conservation and USGBC and LEED, and is an internationally recognized speaker on these issues and on Green Design and Efficient Operating and Maintenance practices. His most recent book, co-authored with two attorneys, Current Critical Issues in Environmental Law – Green Buildings and Sustainable Development, was published by Lexis Nexis in June 2008.

He writes a periodic column for the monthly Newsletter of the Detroit ASHRAE Chapter on LEED and Sustainable Design and is LEED Project Administrator for many LEED-certified buildings in the United States as well as elsewhere in the world, with certifications ranging from Certified to Platinum in many different categories

## Chapter President's Message

Thank you to our membership for showing a great vote of support for our incoming president of ASHRAE Society Darryl Boyce at our February meeting. A true testament to how much of an impact Darryl has had on our community and ASHRAE as a whole. Thank you Darryl for adding humble London Ontario to your list of hundreds of cities you will be visiting this year. Please be safe and have fun in your travels in 2019!

We are already into March and the warm weather is already showing signs of sticking around so please celebrate with some friends at our March meeting on the 25th at the Marienbad. Jim Newman, our speaker, is yet another DL in our program and he will be sharing knowledge on how to transform existing buildings into high performing buildings.

Hope to see you there!

Thanks for your continued support and look forward to seeing you all on Monday.

**John Freeman**  
ASHRAE London Canada Chapter  
Chapter President 2018/2019

## ASHRAE Membership

If you know a colleague that may benefit from an ASHRAE membership, please let me know.

**Rajan Deenath**  
ASHRAE London Canada Chapter  
Chapter Membership Promotion Chair 2018/2019

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## **Feb Chapter Meeting Summary**

The ASHRAE London Chapter welcomed back Darryl Boyce, P.ENG, ASHRAE President-Elect. Darryl presented an overview of his long history with ASHRAE including his past involvement with ASHRAE London. Darryl becomes the Society president at the summer Annual Conference Kansas City, MO June 22–26, 2019

Darryl also did a presentation on Approaching Energy Reduction on University Campuses. Discussion involved some difference energy measurement programs (Green Globe, LEED, ASHRAE bEQ). Darryl Boyce was involved in several projects and buildings at Carleton University.

## **Professional Development**

Need hours for your professional development requirements? Be sure to attend a meeting. Professional Engineers Ontario requires members to have yearly professional development training recorded through the Practice Evaluation and Knowledge (PEAK) program. Other groups also require continuing education.

## **Chapter Upcoming Meetings**

**Thur April 18/2019 – webcast: THE FUTURE OF REFRIGERANTS  
UNITARY AND VRF SYSTEMS**

**Mon June 3/2019 – Annual Golf Tournament  
Forest City National Golf Club**

**\*\*\* be sure to check web site for latest information \*\*\***

<http://LondonCanada.AshraeChapters.org>

### **ASHRAE Toronto & Hamilton Chapter Joint Event**

April 1st, 2019 5:00pm to 9:00pm

**How to Design a Healthier, More Profitable Building with Better  
Coordination with Owners and their Team**

ASHRAE Toronto Chapter invites you to the upcoming dinner meeting of 2019!

Where: Oakville Convention Centre, 2515 Wyecroft Rd, Oakville, ON L6L 6P8

<http://torontoashrae.com/event-3313974>



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## ASHRAE HVAC COURSES

<https://www.ashrae.org/professional-development>

Learning Portal, ASHRAE Certification, Job Board, Educator Resources

### NEARBY TRAINING

#### HVAC Design: Level I - ESSENTIALS

**MAY 20-22, 2019 – TORONTO, ONT**

**Essentials** provides intensive, practical training ideal for recent technical or engineering school graduates, engineers new to the HVAC field, those who need a refresher in new technologies, and facility managers, sales representatives and others who want to gain a better understanding of HVAC fundamentals, equipment and systems.

#### HVAC Design: Level II- APPLICATIONS

**MAY 23-24, 2019 – TORONTO, ONT**

**Applications** provides instruction in HVAC system design for experienced HVAC engineers and those who have completed the HVAC Design: Level I – Essentials. The training covers the technical aspects of design and allows participants an opportunity to expand their exposure to HVAC systems applications to increase energy savings and improve indoor environmental quality.

**Online Courses** Also see: [www.ashrae.org/onlinecourses](http://www.ashrae.org/onlinecourses)

#### Air-to-Air Energy Recovery Application: Best Practices

Tues, March 19, 2019, 1:00 pm to 4:00 pm, EDT

#### Designing and Operating High-Performing Healthcare HVAC Systems

Tues, April 2, 2019, 1:00 pm to 4:00 pm, EDT

#### NEW! Choosing the Right Energy Code for Your Project: IECC 2018 or ASHRAE Standard 90.1-2016

Part 1 - Tues, April 16, 2019, 1:00 pm to 4:00 pm, EDT

Part 2 - Thursday, April 18, 2019, 1:00 pm to 4:00 pm, EST

(Registrants must attend both parts in order to receive credits)

And several others



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### JOB POSTINGS

See web site for more information: <http://londoncanada.ashraechapters.org>



**ASHRAE RESEARCH** [www.ashrae.org/donate](http://www.ashrae.org/donate)

Hello All,

If you are receiving this newsletter then I trust you are members of the ASHRAE London chapter and as such must recognize one of the most consistent leading indicators of spring – our research promotion drive for donations. Every year with the consistency of the arrival of the Blue Jays in Florida, we ask that you revisit your previous generosity in support of ASHRAE Canada Research.

As you well know ASHRAE research takes place in every Region and 10 Countries. Contributions have historically been put to use in the development of 11 Advanced Energy Design Guides, 130 Standards, & 100s of Publications! 100% of your investment goes toward Research, nothing else – overhead and all the expenses associated with it come from ASHRAE's general fund, the proceeds from ad sales in the Journal, the AHR show, etc. How many other non-profits can say that?

100% of your investment stays in Region II!

Currently, hundreds of thousands of dollars are being spent in Region III!

So, please when a member of the Board of Governors contacts you please be as generous as you have been in the past and contribute to this very important cause.

If you wish to contribute by cheque, please make your contributions out to ASHRAE Society. There is a website contribution page here [www.ashrae.org/donate](http://www.ashrae.org/donate) which is very convenient. If you wish to drop off cheques in person then please feel free to drop them in to the staff at EH Price at 2351 Huron St #6, London, ON N5V 0A8 or call me at 226 984 8637 for pick up.

Please let me know if you have any questions. Thanks!

**Phil Cook**  
**ASHRAE London Canada**  
**Research Promotion Chair 2018/2019**

**Donor List (as of March 12/2019)**

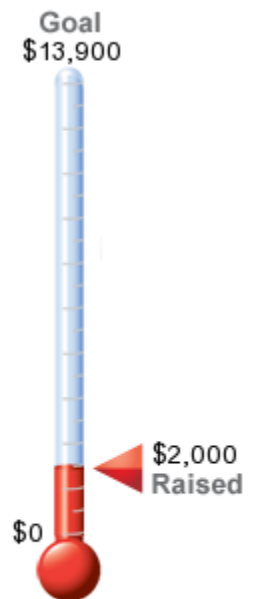
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Thank You to all those that have contributed





**ASHRAE NEWS**

**Delivery Information for the 2019 ASHRAE Handbook – HVAC Applications**

The 2019 ASHRAE Handbook – HVAC Applications will ship the first of June, 2019 to full dues paying Members and Associates who elect to receive the printed Handbook. These members should verify the mailing address ASHRAE has on file before May 1, 2019 to ensure the Handbook is delivered to the correct address.

How to verify/update your address:

Log in to [ashrae.org](http://ashrae.org) to verify and if needed, update your address

OR email your correct address directly to Tewana at [tparris@ashrae.org](mailto:tparris@ashrae.org), one of our Customer Contact Specialist who would be happy to assist you.

**PDF Handbook** in Technology Portal

Who gets it: Participants in the Developing Economy Program, members who elected to receive a PDF only version, everyone who also receives the printed copy of the Handbook, or those who purchase the printed Handbook.

An email will be sent in June 2019 as a reminder to sign in to the Technology Portal to access the PDF version of the 2019 ASHRAE Handbook. At that time, simply use your ASHRAE member login information to sign in and download the entire volume or individual chapters. (You will not be able to access the 2019 ASHRAE Handbook before June 2019).

Thank you for being an ASHRAE member and please contact [ashrae@ashrae.org](mailto:ashrae@ashrae.org) with any questions.

**ASHRAE.ORG**

One year ago, ASHRAE launched its newly redesigned website!

Check out some of the new and updated pages available on [ashrae.org](http://ashrae.org):

90.1 Portal

Building EQ Portal

eLearning Corporate Program

Scheduled Courses

ASHRAE Presidents Scholarship

Certified HVAC Designer (CHD) Certification

Planned Giving

Supplier-Provided Learning

Updated and Improved

ASHRAE Technology Portal

Government Affairs

Standards Review Database

Free Resources

Marketing Central

ALSO, engage with ASHRAE year-round:

Download **ASHRAE 365** (it's free!)



### **ASHRAE's Advanced Energy Design Guides**

At this point, you've heard of ASHRAE's Advanced Energy Design Guides. But did you know?

- The AEDGs are developed through a partnership between ASHRAE, AIA, IES, and USGBC with funding and support from DOE.
- In 2018, ASHRAE released the groundbreaking Advanced Energy Design Guide for K-12 School Buildings: Achieving Zero Energy, and is working to develop more Zero Energy guides.
- The AEDGs provide a path for earning LEED® New Construction EA points.
- They're FREE to everyone.

There are three series of AEDGs. Each guide addresses a specific building type, perfect if you design facilities for:

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### **Certified HVAC Designer (CHD)**

Application for the new Certified HVAC Designer (CHD) certification is now open. Computer-based testing begins worldwide on June 3. The Certified HVAC Designer (CHD) certification validates competency of the HVAC Designer, working under the responsible charge of an engineer, to do the following:

Design HVAC systems to meet building/project requirements, including load calculations, equipment selection and sizing, mechanical equipment room design, duct and piping design, and layout for the development of HVAC plans for permit and construction.

In the last month alone, over 900 HVAC Designers and employers have downloaded a **CHD Candidate Guidebook**, which details the CHD examination blueprint and application eligibility requirements. Mark Fly, P.E., Fellow ASHRAE, and Chair of the CHD Exam Subcommittee, says: "launching a new certification program is a commitment, but ASHRAE is confident this is an investment from which Members and their employees will benefit."

<https://www.ashrae.org/professional-development/ashrae-certification/certification-types/chd-certified-hvac-designer>

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### **2019 ASHRAE Annual Conference**

**Kansas City, MO June 22–26, 2019**

ASHRAE is headed to Kansas City, MO for the 2019 Annual Conference! Join us June 22-26, as we welcome new Society Officers, kick back at social events, and explore solutions to the demands of our ever-changing industry.

Register before April 28 for the best rates.

<https://www.ashrae.org/conferences/annual-conference>

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### **HRAI Symposium 2019 HRAI Symposium - Transitioning to a Low Carbon Economy**

**April 23, 2019**

Canada's planned transition to a low-carbon economy presents both a significant opportunity and an enormous challenge for the HVACR industry to ensure policy decisions will benefit Canadians and industry stakeholders alike.

<https://www.hrai.ca/news-event/hrai-symposium-transitioning-to-a-low-carbon-economy>



# ASHRAE 90.1-2016 – The Next Wave of Energy Standards

## HVAC-Related Changes

ASHRAE Standard 90.1 has been the basis of many energy codes as it pertains to building envelope loads, minimum energy requirements for HVAC equipment/systems, lighting, water usage, and the controls that bring it all together. The path that standards take to eventually become code is always changing but if history tells us anything, it's that the code enacting authorities have consistently relied on ASHRAE to identify the areas that have the maximum potential for energy and energy cost savings.

The 2016 edition of the standard includes numerous energy-saving measures that were a direct result of feedback and proposals that were put forth by the public and volunteers from the 90.1 committee. In total, there were more than 125 addenda added to the 2013 (previous) revision. Among the biggest changes was a reformatting of the document to make it more suitable for digital use. Some of the main HVAC-related changes are as follows:

***Note: This is by no means a full list of the 90.1-2016 changes. The intent of this article is to provide reference to some of the updated standard sections that would be of high interest to the HVAC Engineering/Contracting community. The full list of addenda can be viewed in Appendix H 'Addenda to ANSI/ASHRAE/IES Standard 90.1-2013'.***

1. **5.1.4.2** - Updated climate zone classification - 90.1-2016 updated to the classifications published in ASHRAE Standard 169-2013. These changes may affect design criteria in multiple areas, particularly where the classification dictates requirements for building material considerations (insulation, glazing).

### **Mandatory Section (6.4) Changes**

2. **6.4** - Replacement HVAC equipment is now required to meet most 'Section 6' requirements. Previously "like for like" equipment was exempt from meeting current requirements for new HVAC equipment (other than min. efficiency). This new version states replacement equipment is now obliged to meet several mandatory requirements. Including but not limited to: DCV for single zone systems, off-hour scheduling, and set point controls.
3. **Table 6.8.1-15** - DOAS Equipment minimum efficiency guidelines. With increasing industry interest in dedicated outdoor air packaged rooftop equipment, a new class has been added ('DOAS'). The section directly references a recently created AHRI920 standard, which reflects different operating conditions an outdoor air unit can expect to see and rates it accordingly. The basis of comparison for these units is detailed as moisture removal efficiency (MRE) and ISMRE for off-design rating.
4. **Table 6.8.1-14** - Pool dehumidifiers and CRAC units have been added to the scope of 90.1 minimum efficiency requirements.
5. **Table 6.8.1-9** - VRF equipment – 90.1-2016 changes some of the part-load requirements detailed in the 2013 version. Part in reason due to new test procedures as well as improvement in stringency.
6. **6.4.3.12** - Economizer fault detection mandatory on packaged unitary DX air conditioning units. The intent of this area is to identify when equipment is not economizing properly when conditions allow due to whatever reason (sensors/controls not functioning as intended). This has been required in California for a number of years already.

7. **6.4.3.11** - Chiller-plant monitoring requirements to have efficiency and energy use measurement and reporting based on climate zone and plant size. This section also indicates for the data to be recorded and trended every 15 minutes while maintaining at least 3 years of data.

#### **Prescriptive Section (6.5) Changes**

8. **6.5** - Replacement equipment prescriptive paths (in addition to mandatory requirements in 6.4)
9. **6.5.3.2.4** – Return and relief fan control. Compliance requires that the return/relief fan control must maintain the building pressure directly or alternatively indirectly through supply-return airflow tracking. Building pressurization is critical for conserving energy, as well as maintaining the health of the building.
10. **6.5.3.3** – All multiple-zone VAV systems must use ventilation optimization unless their exhaust is too high (>70%) relative to the OA% that is being brought in to the building.
11. **6.5.4.2** – Updated requirements for pump VFD control. The result of the evaluation of pump control by climate zone prompted a new table of VFD requirements for heating-water pumps in these various areas.
12. **6.5.4.4** – Alternative to pump-pressure reset based on critical valve position. Introduces the ability for a reset chilled-water control strategy to keep one valve nearly-wide open opposed to pump-pressure optimization.
13. **6.5.4.7** – Chilled water cooling coils should be selected for at least a 15F delta T with at least 57F leaving coil water temperature. There are exceptions to this but an extensive analysis submitted to 90.1 showed that system (fan(s), pump(s), tower(s), chiller(s)) energy consumption and first costs are reduced when chilled-water coils are selected for higher water temperature differentials and lower flow rates.

*Jeff Armstrong, BESC*  
*Account Manager at Trane London*

The information presented in this article is for informational purposes only and does not constitute design advice – the sections are directly sourced from 90.1 and believed to be factual. Final design and application decisions are the responsibility of the designer.

#### **References:**

American Society of Heating, Refrigerating, and Air-Conditioning Engineers. 2016. ANSI/ ASHRAE/IESNA Standard 90.1-2016: Energy Standard for Buildings Except Low-Rise Residential Buildings. Atlanta, GA: ASHRAE.

Trane ENL Volume 47-2. 2018. ASHRAE Standard 90.1-2016. ADM-APN066-EN. La Crosse, WI: Trane, A business of Ingersoll Rand

ASHRAE Standard 90.1-2016 User's Manual. Atlanta, GA: ASHRAE. Available at [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore).