September 2015

# Pile of Bones

Published by the Regina Chapter of ASHRAE

## President's Message

*By Dan Brothers*

Hello and welcome back to another year! I hope you were able to enjoy some holidays this summer and are ready to leave the dog days behind and get back to the normal routine. I am excited to serve as president this year; we have a very strong Board of Governors who are looking forward to giving you a great year. I'd like to thank Janel Walter for her work as president last year. She did a great job too, as we were awarded Most Outstanding Chapter of the year at the annual CRC.

There are some changes to the Board this year, as we lost two veterans in Alana Yip and Greg Fluter. Alana served as research promotion last year and president the year before that. She is well versed in all things ASHRAE and we will miss having her on the Board. You may be tapped for some advice this year, Alana. Greg has served on the Board since the early 1970's, I believe. He was a large contributor to all of our monthly meetings and he leaves some very large shoes to fill. Having said that, we are excited to welcome our new members: Josh Thomas from Cypress Sales, and Brandon Ganne from MacPherson Engineering. Josh will be the Newsletter Editor, and Brandon will be taking on the Student Activities Chair. Natasha Bellows, last year's Newsletter Editor, will be at a new position of Young Engineers in ASHRAE (YEA) Chair. She will be in touch with people under the age of 35 and looking at promoting ASHRAE to members from that age group.

### Meeting Notice

**Wednesday, September 23, 2015**

**Bushwakker Brewpub**
2206 Dewdney Avenue
Regina, SK

5:00 – Beers
5:15 – 7 in 7 Presentation
*Dan Brothers, RJ England Consulting*
5:30 – Supper
– ASHRAE Chapter Meeting
6:30 – Presentation on New Stadium
*Chad Arcand, Modern Niagara*
7:00 – Tour of New Stadium

### Upcoming Events

October 13, 2015
*Chris Mathis – ASHRAE 90.1*

January 12, 2015
*Dan O'Brien-*
*Halton Kitchen Equipment*

### In this Issue

# President's Message - Continued

Janel moves in to Past President & Research Promotion, Jared Larson is taking over CTTC and Vice President, and Jason Danyliw will replace Greg at Membership Promotion.

The meeting this month is on September 23rd at Bushwakker Brewpub for some delicious food and tasty beer. We will then head to the new stadium to tour around to check up on progress and critique everything we would have done differently. Unfortunately, we have to cap the numbers at 50 people only, so be sure to respond ASAP.

I'm looking forward to this meeting and the year, see you next week.

# Committee Chair Reports

## CTTC Message

*By Jared Larson*

In anticipation for the upcoming year I have worked over the summer months to try and get some interesting programs and seminars. My goal for this year is for our chapter to submit more projects for awards. Each year we see many projects receiving awards at the regional level. Our chapter could easily compete against these. Our chapter receives several awards each year at CRC, but I think this is one area we can grow in.

Something new we are doing this year is the 7 in 7 program. Each meeting a young engineer in ASHRAE will do a presentation and hit the highlights of their project in seven minutes. We have this planned for seven meetings (hence 7 in 7). Thank you to all who volunteered to help out. In preparation of the presentations, I have included the following from Garr Reynolds:

**Top Ten Delivery Tips – Garr Reynolds (http://www.garrreynolds.com/preso-tips/deliver/)**

**1. Show your passion**

If I had only one tip to give, it would be to be passionate about your topic and let that enthusiasm come out. Yes, you need great content. Yes, you need professional, well designed visuals. But it is all for naught if you do not have a deep, heartfelt belief in your topic. The biggest item that separates mediocre presenters from world class ones is the ability to connect with an audience in an honest and exciting way. Don't hold back. Be confident. And let your passion for your topic come out for all to see.

**2. Start strong**

You've heard it before: First impressions are powerful. Believe it. The first 2-3 minutes of the presentation are the most important. The audience wants to like you and they will give you a few minutes at the beginning to engage them — don't miss the opportunity. Most presenters fail here because they ramble on too long about superfluous background information or their personal/professional history, etc.

**3. Keep it short**

Humans have short attention spans when it comes to passively sitting and listening to a speaker. Audience attention is greatest at the opening and then again when you say something like "In conclusion…." This is just the human condition, especially so for the busy (often tired) knowledge worker of today. So, if you have 30 minutes for your talk, finish in 25 minutes. It is better to have the audience wanting more (of you) than to feel that they have had more than enough. Professional entertainers know this very well.

**4. Move away from the podium**

Get closer to your audience by moving away from or in front of the podium. The podium is a barrier between you and the audience, but the goal of our presentation is to connect with the audience. Removing physical barriers between you and the audience will help you build rapport and make a connection.

**5. Use a remote-control device**

To advance your slides and builds, use a small, handheld remote. A handheld remote will allow you to move away from the podium. This is an absolute must. Keyspan has two good ones. I highly recommend the Keyspan Presentation Remote. Many people like the Interlink remote as well.

**6. Remember the "B" key**

If you press the "B" key while your PowerPoint or Keynote slide is showing, the screen will go blank. This is useful if you need to digress or move off the topic presented on the slide. By having the slide blank, all the attention can now be placed back on you. When you are ready to move on, just press the "B" key again and the image reappears.

**7. Make good eye contact**

Try looking at individuals rather than scanning the group. Since you are using a computer, you never need to look at the screen behind you — just glance down at the computer screen briefly. One sure way to lose an audience is to turn your back on them. And while you're maintaining great eye contact, don't forget to smile as well. Unless your topic is very grim, a smile can be a very powerful thing.

**8. Keep the lights on**

If you are speaking in a meeting room or a classroom, the temptation is to turn the lights off so that the slides look better. But go for a compromise between a bright screen image and ambient room lighting. Turning the lights off — besides inducing sleep — puts all the focus on the screen. The audience should be looking at you more than the screen. Today's projectors are bright enough to allow you to keep many of the lights on.

**10. At all times: courteous, gracious, & professional**

When audience members ask questions or give comments, you should be gracious and thank them for their input. Even if someone is being difficult, you must keep to the high ground and at all times be a gentleman or lady and courteously deal with such individuals. The true professional can always remain cool and in control. Remember, it is your reputation, so always remain gracious even with the most challenging of audiences.

**ASHRAE Certification**

Also, if you aren't aware, ASHRAE offers professional development in the form of certification. If any of the following topics interest you, you can register online at ASHRAE.org, or let me know and I can get more information.

BEAP - Building Energy Assessment Professional Certification
BEMP - Building Energy Modeling Professional Certification
CPMP - Commissioning Process Management Professional Certification
HFDP - Healthcare Facility Design Professional Certification
HBDP - High-Performance Building Design Professional Certification
OPMP - Operations and Performance Management Professional Certification

**The Value of Certification**

ASHRAE certification programs were founded to meet industry need as identified through market research and today provide value to many important stakeholders. Developed by subject matter experts, including those recruited from allied professional organizations, ASHRAE certification programs benchmark with the ANSI/ISO accreditation standards for personnel certification programs to help ensure quality. For the past 100+ years ASHRAE has worked hard to earn and maintain a worldwide reputation for being the leader in HVAC&R design. ASHRAE certification programs serve to reinforce that reputation.

**Value for Certification Earners**

The decision to pursue a certification – on top of all of their other commitments - is not one lightly made by busy professionals, but the benefits of getting certified are many:

- Greater confidence in competence in critical job knowledge, skills and abilities
- Portable credential recognized and valued by employers
- Competitive edge and respect among peers, in the workplace and among potential clients
- Heightened job satisfaction

**Value for Building Owners**

Building owners want to know who they should hire to design critical building systems that will impact occupant comfort, safety, efficiency and - ultimately – profitability. Hiring a firm that assigns an ASHRAE-certified professional to a project confers the following benefits:

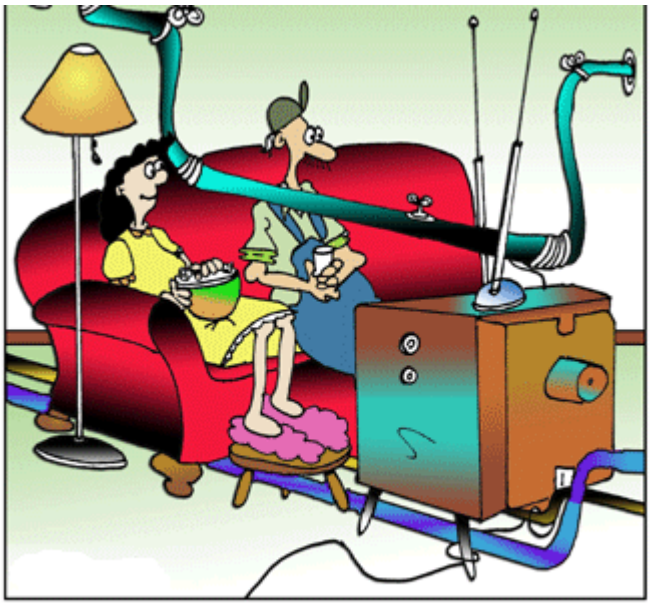
- Increased confidence in critical job knowledge, skills and abilities
- Compliance with applicable regulations
- Confidence in corporate commitment to the professional development of its employees and to providing the best possible resources for projects
- Disciplinary process to follow in case of complaints

**Value for Employers**

Hiring - and retaining - the right employee is an expensive proposition with many unknowns.
Taking ASHRAE certification into consideration during the process – and embracing it in the corporate culture - confers the following benefits to HR, the hiring manager and the employer:

- Recruit the most-qualified professionals
- Elevated reputation and credibility among current and potential customers
- Enhanced compliance
- Greater job satisfaction and resulting lower turnover

Provides clear, value-added professional development path



Why it's a bad idea to decide on location changes of duct work late in a building project.

**COLUMN** HVAC APPLICATIONS



Dan Int-Hout

# Conditioning Challenges: Lobbies and Atriums

BY DAN INT-HOUT, FELLOW ASHRAE

Conditioning spaces with large vertical walls is a challenge for design engineers, especially when it has to be coordinated with an architect's aesthetic concept. As is often the case in lobbies or atriums, these areas are composed of glass and can be anywhere from 12 to 18 ft (3.6 m to 5.4 m) high. While people do not typically occupy the space next to the window for long lengths of time, it is still important that proper air distribution and comfort conditions be maintained.

ASHRAE's thermal comfort standard (Standard 55-2013) states "the *occupied zone* is to be between the floor and 6 ft (1.8 m) above the floor and more than 3.3 ft (1.0 m) from external walls/windows or fixed heating, ventilating, or air-conditioning equipment and 1 ft (0.3 m) from internal walls."

While this implies that the space close to the window is outside the "comfort zone," it does not mean that it may not affect or impact the airflow patterns within the occupied area, nor does it mean that occupants will not pass through or spend shorter durations in the space.

To adequately offset such heating and cooling demands in these applications, one must understand that hot air rises and cold air falls. Surprisingly, this basic notion is largely overlooked by many design engineers. It is not only what allows one to control air delivery, but also take advantage of it. Listed here are a couple of "rules of thumb" that can be used to assist in the understanding of air distribution dynamics and may help save energy in the process.

1. A jet of air delivered by a ceiling diffuser is typically affected by buoyancy and can be described through this simple equation: The throw to 75 fpm (0.37 m/s) is increased or decreased by 1% divided by degree $\Delta T$. ($\Delta T$ being the difference between the thermostat setting, which is the average of the occupied zone temperature and the jet discharge temperature, in °F).

2. The direction of the effect is determined by buoyancy, so cold air that is directed down will travel farther, but hot air will not travel as far. On the other hand, hot air directed along a horizontal surface will travel farther, and a cold jet will travel less distance. A horizontal jet with no adjacent surface will rise or fall at the isothermal 75 fpm (0.37 m/s) throw distance by about 1% divided by °F.

Pretty simple, huh? These rules of thumb work surprisingly well in practice, but there are a couple of other details that need to be considered.

1. The throw to 150 fpm (0.76 m/s) is not measurably affected with less than 25°F (14°C) $\Delta T$.

2. A return slot located at the top of the window will remove the heat that rises from the window and will not have to be included in the room load that the HVAC system must handle. (Of course, the warmer plenum air will likely be returned to the A/C equipment.)

To deliver air to the space without creating any unwanted drafts, it is important to understand the vertical air patterns from overhead. In most manufacturers' catalogs, a downward jet will have published isothermal throw values at 50 fpm and 100 fpm (0.25 m/s and 0.51 m/s) terminal velocities. The 75 fpm (0.38 m/s) terminal velocity will be in between these values.

If a 20°F (11°C) $\Delta T$ cooling is assumed, this value will be increased by 20% because cold air wants to fall. If

Dan Int-Hout is a chief engineer at Krueger in Richardson, Texas. He is a member of SSPC 55, SPC 129 and consultant to SSPC 62.1.

# Tech Talk - Continued

a 20°F (11°C) $\Delta T$ heating is assumed, the throw will be reduced by 20% because hot air wants to rise. This means that there will be a 40% change in downward projection moving from heating to cooling. However, the problem is that the hot air needs to penetrate the occupied zone. Using this design example, the cooling air will likely create drafts by hitting the floor and moving toward the interior. How can this be prevented?

One solution is to reduce the airflow in cooling, but in doing so, it is unlikely that the cooling demand loads will be met. Instead, it is recommended that an array of air outlets be established that extends into the interior zone supplying the required cooling airflow. The interior diffusers should be selected so that they have short throws to prevent excessive jet collisions at maximum design cooling airflow rates, which could produce unacceptable drafts. Interior diffusers are then shut off when heating, using a single duct VAV box, which will increase the air delivered to the perimeter.

It is strongly recommended to keep the heating $\Delta T$ as low as possible to avoid excessive stratification and occupant discomfort. ASHRAE Standard 62.1-2013 states that when discharging warm air from the ceiling at more than 15°F (8.3°C) above room temperature, the ventilation rate must be increased by about 20% (divide the value by 0.8). Standard 62.1 also demands the 150 fpm (0.76 m/s) throw value reach within 4.5 ft (1.4 m) from the floor, or again, increase ventilation.

By understanding the physics of air distribution and following these rules of thumb, a design engineer can successfully design a diffuser layout and provide air quantities and temperatures that are not only able to meet thermal loads, but also deliver the comfort requirements and ventilation needs of the space. ■

# 2015-2016 Meetings and Events

September 23, 2015
Tour of RRI Roughride Stadium
Speaker: Chad Arcand
*Bushwakker Brewpub*

October 13, 2015
ASHRAE 90.1 Seminar
*Double Tree Hotel*
Flyer to Follow

October 13, 2015
Speaker: Chris Mathis – ASHRAE 90.1 Flyover
*Location TBD*

November 10, 2015
Speaker: Dan O'Brien –
Halton Kitchen Equipment
*Location TBD*

December 2015
Christmas Social
*Activity TBD*

January 13, 2016
Speaker: Centralized Hot Water Heating Plants
*Location TBD*

January 25-27, 2016
ASHRAE Winter Conference
Orlando, FL

February 9, 2016
Speaker: David Underwood – Presidential Visit
*Location TBD*

March 9, 2016
Speaker: Greg Scrivener – Refrigeration
*Location TBD*

April 2016
Student Night
*Location TBD*

May 2016
Speaker: TBD
*Location TBD*

June 23, 2016
ASHRAE Research Golf Tournament

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