

ASHRAE Ottawa Valley Chapter

Chapter Meeting #7 – 16 April 2019

Meeting Date:	16 April 2019
Location:	Centurion Conference & Event Center, 170 Colonnade Rd, Ottawa, ON
Attendance:	Total:
	Members: 49 Guests: 17 Students: 10
Theme:	CTTC
Tour:	None
Tech Session:	None
Table Top:	
Program:	Radiant Heating and Cooling
Speakers:	Bjarne Oleson
Prepared by:	Adrienne Mitani

Tech Session (16:30-17:30)

Social (17:30 – 18:20)

Business Session (18:20 –18:45)

- President Daniel Redmond welcomed everyone and gave the call to order.
- President Daniel Redmond introduced the Board of Governors and the Executive,
- Secretary Adrienne Mitani introduced the guests.
- Membership Promotion Chair Andrew Brown introduced the new members to the Ottawa chapter. He also welcomed the membership promotion RVC Genevieve Lussier who spoke about how to attract more members to create community, as well as the membership crush hashtag.
- President Elect Aaron Dobson spoke about ASHRAE research, tonight's raffle is four tickets at club level to the Ottawa Red Blacks versus the Hamilton Tigercats on June 1st. All money goes to ASHRAE research, this year we have raised \$26,800 which is 70% of our goal. We have \$800,000 in research funding currently being used within our region.
- President Daniel a Redmond spoke about our new student scholarship, which we fully funded last June, which is managed by ASHRAE society. It is a society level scholarship funded by our chapter. The award with \$3,000 was presented to Matthew Woods from Carleton University, currently in his 3rd year of Sustainable and Renewable Energy engineering.
- The Ottawa regional science fair was attended by a President Daniel Redmond, Secretary Adrienne Mitani and Jayson Bursill attended and awarded three awards to student projects. The projects were on Passive House design, Green Roofs, and HVAC filtration.
- Co-chair Steve Moons spoke about nominations. He closed nominations motion made by Adam Moons and seconded by Adrienne Mitani. He announced the Chair positions for 2019-2020. The President will be Aaron Dobson, President Elect Adam Moons, Treasurer Adrienne Mitani, and Secretary Ryan Dickinson. Board of Governors will be Jacob Hough, Celine Baribeau, Peter Shaw Wood, Joe Della Valle, and Mike Swayne. Installation will be at the May chapter meeting.

- Secretary Adrienne Mitani spoke about the upcoming YEA event for the Batl Axe throwing, which has been moved to May 10th.
- James Pady spoke about the past seminar and tomorrow's seminar presented by Bjarne Oleson.
- TotalHVAC tabletop is presented by Steve Moons, who spoke about Twa radiant heating and cooling panels.
- Andrew Douma shared sad news that Ed Cassidy passed away earlier this morning. He was a cofounder of TotalHVAC and will be greatly missed by the community.

Business Session Finished at 18:35 pm

Dinner (18:35 – 19:35)

- Dinner served at 18:35 pm
- Dinner was an assorted buffet.
- Dessert was cake served with a choice of coffee or tea.

Evening Program (19:35- 20:50)

- Evening program started at 19:35pm
- Tickets were raffled off for research promotion, with \$695.05 was raised. Tickets were chosen by Bjarne and tickets were won by Pierre De Gagne.
- President Daniel Redmond introduced past ASHRAE president Bjarne Oleson.
- Bjarne has been working in thermal comfort for over 45 years including his PHD.
- In Korea 90% of buildings use radiant floor heating to provide thermal comfort.
- Radiant heating and cooling use large surfaces to exchange heat to their environment, and since the low heating and high cooling temperatures are closer to room temperature, they are more efficient and comfortable. They are more efficient because they transfer 100% of their energy to the environment.
- One type of radiant is thin plastic piping in capillarity tubes on gypsum board, another is to embed piping in the floor or ceiling.
- If it is embedded then measures must be taken to insulate it from the main structure to ensure all of the energy goes towards the occupied spaces. The other option is to suspend the panels above occupants.
- If the pipes are embedded in the slab, then the concrete can also act as a storage to preheat or cook the space and to reduce peak loads.
- Types of surfaces are floor, ceiling and wall, where in heating floor is the most efficient and ceiling is the least. In cooling ceiling is the most efficient while floor is the least.
- Surface temperatures are limited by comfort since people dislike warm heads and cold feet, and prefer warmer feet and cooler at head height.
- Cooling minimum temperature is also limited by the air dew point.
- Finite Element Analysis (FEA) can be used to calculate the build up of heat or cooling in structural slabs over time and determine capacities.
- Radiant heating and cooling work well with DOAS (direct outdoor air supply) systems which can also take care of some of the space cooling.
- Radiant cooling requires careful monitoring of the relative humidity and dew point in the space to maintain the cooling supply water temperature above the dew point and prevent condensation.

- These hydronic systems tend to be slow reacting since they use thermal mass, they will not react quickly to changes in the internal loads. Therefore preheating of cooling a space can help moderate temperature swings.
- Typical operating ranges are 22 to 25 degC, if it is too low then the spaces will just end up being reheated.
- For a building in Bangkok radiant floors were used at low level and the air was allowed to stratify at high level, with supply air at a moderate 18degC. Condensation was mitigated through tight dew point control, dehumidification of the outdoor air and putting the radiant manifolds within the supply diffusers.
- In India there was a direct comparison of VAV with radiant cooling, published in the ASHRAE journal, both buildings were identical except for the HVAC systems. The radiant building used 30% less energy. They also used the radiant panels in daylighting and sun shading strategies.
- Tokyo won an ASHRAE award with radiant heating and cooling with radiant panels in the interior and chilled beams at the perimeter with underfloor return air.
- There are limitations of radiant design, including too much glazing and sun load into the building, acoustics because of the exposed slabs and latent load control required for condensation control.
- President Daniel Redmond thanked speaker and presenting a gift of a commemorative coin to Bjarne Oleson
- The attendees were reminded of the survey which will be emailed after the meeting, and a reminder that there was no meeting next month.
- The next meeting is May 21st at the Centurion Conference and Event Center with a presentation on Center Block Rehabilitation.

Meeting adjourned 21:10 pm