

ASHRAE Ottawa Valley Chapter

Chapter Meeting #1 – 17 Sep 2013

Meeting Date:	17 Sep 2013
Location:	Mill Street Brew Pub
Attendance:	Total: 64
	Members: 58 Guests:3 Students: 3
Theme:	Research
Tour:	None
Tech Session:	Indoor Air Quality Measurements and Programs During and After Construction, presented by Lan Chi Nguyen Weekes
Table Top:	None
Program:	NRC Study About Occupant's Experience of Green Buildings
Speaker:	Guy Newsham
Prepared by:	Abbey Saunders

Social (17:30 – 18:30)

Business Session (18:30 –18:45)

- President Rod Potter introduced the Board of Governors and Executive.
- Georges Maamari introduced the guests for the evening.
- Chris Fudge discussed the tech session, which was well attended.
- Adam Moons introduced the new members that joined over the summer.
- Steve Moons mentioned that the Stroke Play ASHRAE Golf Tournament was cancelled due to poor weather but an email about rescheduling the date should be sent out very soon to all those previously registered.
- DW introduced his committee members for Research Promotion for the coming year as well as dedicated this year's campaign in memory of the late Paul Baker. Christine Kemp and Cathy Godin ran Beer Pong, with all proceeds going to Research. Colin Berry was the winner of the ASHRAE Research 50/50 Draw, winning a total of \$125.
- Rod Potter presented Jay Jayaraman with his distinguished service award from society.

Dinner (18:45 – 20:00)

Evening Program (20:00 – 20:50)

- Following dinner, the main program event took place. Speaker Guy Newsham presentation topic was the findings of a NRC study concerning occupant experiences with green buildings, namely are green buildings as green as we thought they were? The simple answer: Yes, but...
- The NRC study was conducted over several years and had two main components associated with it which are considered good metrics for green building performance. A comparison of perceived occupant performance/comfort parameters and energy analysis for Green v. Conventional Buildings.
- For the study all green buildings were paired with a twin conventional building which closely matched the size, occupancy and location of the green buildings. For the

occupant performance portion of the study there were 24 buildings examined and for the energy portion of the study a total of 100 buildings were examined. The building study group consisted of buildings constructed from 1956 – 2009 located all across select areas of Canada and the Northern US.

- The sources of data for the occupant performance analysis included review of literature on previous similar studies, online questionnaires, on-site measurements and interviews with building managers.
- The literature review of previous studies showed that in general green buildings are perceived as having improved indoor air quality, similar lighting characteristics and worse acoustics than conventional buildings.
- In addition to the occupant parameters identified in previous studies, indoor air quality, lighting and acoustics, the following parameters were part of the online questionnaire for the NRC study: job satisfaction, health, organizational productivity, thermal comfort, sleep at night, and environmental attitudes. Using the Wilcoxon Method to analyze the data for the matched pairs and various parameters it became apparent that for overall environmental satisfaction the green buildings outperformed the conventional buildings. The overall parameter analysis resulted in green buildings scoring more highly than conventional buildings in the following categories: overall environmental satisfaction, satisfaction with ventilation and temperature, noise from HVAC equipment, workplace image, positive mood, visual and physical discomfort and sleep quality at night.
- On-site measurements conducted at the facilities included measurements of temperature, humidity, air speed, airborne particulate matter, VOCs and noise at both seated and standing heights. Very few differences in the measurement data obtained for the green and conventional buildings were established. Green buildings performed slightly better on lower air speeds and fewer airborne particulate matter, however worse for acoustics, in particular speech privacy.
- Based on review of previous literature and data analysis of the online questionnaires, on-site measurements and interviews with building management staff it became apparent that parameters that lead to good buildings, in terms of occupant comfort, regardless of whether they are green or not, are: improved speech privacy, higher lighting levels, more access to windows, lower number of airborne particulate matter and better thermal comfort.
- The energy analysis portion of the study involved the re-analysis of previously LEED certified buildings (green buildings) with twinned conventional buildings. On average the analysis indicated that the LEED buildings used 25% less energy than their conventional counterparts, however about 1/3 of the buildings used more than energy. The analysis also revealed that there was no strong correlation between obtaining higher energy credits from the ranking system (LEED in this case) and the actual energy savings. Based on these findings it may be worth further evaluation and possible reorganization of the energy credit ranking system.
- Feedback from the type of study conducted can be utilized for the constant improvement of codes and standards for energy performance and green buildings.

- In summary, the study results indicated on average green building have superior performance over conventional buildings, as well as lower energy use. In addition, the study also allowed researchers to acquire more knowledge about key physical features of green buildings that affect the occupants.
- President Rod Potter thanked Guy Newsham.
- Meeting adjourned 20:50.