

ASHRAE Ottawa Valley Chapter

Chapter Meeting #6 – 18 Mar 2014

Meeting Date:	18 Mar 2014
Location:	Restaurant International, Algonquin College
Attendance:	Total: 42
	Members: 37 Guests:5 Students: 0
Theme:	Students
Tour:	None
Tech Session:	None
Table Top:	Armstrong Pumps & Laars MagnaTherm Boilers - Walmar
Program:	Pump Selection: Meeting and Exceeding ASHRAE Standard 90.1
Speakers:	Andrew Moore
Prepared by:	Abbey Saunders

Social (17:30 – 18:35)

Business Session (18:35 –18:45)

- President Rod Potter introduced the Board of Governors and Executive.
- Abbey Saunders introduced the guests for the evening.
- Adam Moons welcomed new members.
- Adrienne Mitani provided a quick wrap up on the Career Fair which took place prior to the evening program.
- Walmar Table Top display of Laars MagnaTherm Boilers was introduced by Rene and the Armstrong Pumps by Andrew Moore.
- Stephen Lynch reminded everyone of the upcoming nomination requirements.
- Senators tickets were donated by Airton and Clemant-Marchand and raffled off raising \$250 for ASHRAE Research with Adam Moons of Walmar and Jean Traynor of Smith & Andersen winning the tickets.
- Steve Moons also indicated to members that all those who donate to research prior to March 29 will be eligible to win a package of 4 tickets for the March 30 game donated by Engineered Air.

Dinner (18:45 – 20:00)

Evening Program (20:00 – 20:55)

- Next the evening program presentation commenced with Mr. Moore introducing his presentation outline for ASHRAE Standard 90.1, As It Applies to Pumping.
- The presentation started with Mr. Moore introducing the two (2) main points of ASHRAE Standard 90.1 associated with pumping:
 - o Systems shall have a control valve to reduce system flow to 50% design day flow.
 - o Systems shall have controls to reduce pump energy to 70% at 50% design day flow.
- Next the objectives of the presentation were established: pump sizing, and various strategies for control.

- Due to the fact that design conditions occur for only a fraction of the year and most often pumping system operate at part load. Typical HVAC applications have pumps operating the majority of the time under part load conditions.
- Next we reviewed the typical procedures to follow when selecting an appropriate constant speed pump for a particular application. Factors to be considered during selection of an appropriate constant speed pump include:
 - o Determine flow.
 - o Calculate head.
 - o Select pump based on design point efficiency on the pump curves.
 - o Select a non-overloading motor to protect from run out.
 - o Select the best available efficiency point.
 - o Trim the impeller to duty point.
- The programming of variable speed pumps provides the overload protection, as the program will not allow the pumps to operate outside their allowable limits.
- The cost savings associated with decreasing BHP were reviewed next to help establish why variable speed pumping is attractive from an energy management standpoint.
- Through the use of various pump curve comparison scenarios control strategies for pumps were reviewed, but first we reviewed the pump affinity laws:

$\text{Flow} \propto \text{Speed}$	$\text{Head} \propto \text{Speed}^2$	$\text{BHP} \propto \text{Speed}^3$
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- Finally Mr. Moore went through the evolution of pump control:
 - o 3-way valves.
 - o Throttling valves.
 - o Variable speed drive with no DP sensor.
 - o Variable speed drive with DP sensor.
 - o Variable speed drive with optimized DP sensor placement. In order to maximize energy savings associated with the use of variable speed pumping and DP sensor control, the position of the sensor is critical.
 - o Variable speed drive with sensorless control. Mr. Moore described sensorless control as basically a more intelligent variable speed control that is only applicable for applications that typically only require a single DP sensor for control.
- After a brief question and answer period President Rod Potter thanked Mr. Moore and the meeting was adjourned at 20:55.