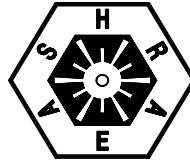


# THE BADGERAIRE

AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS, INC.

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## November Meeting: Facility Manager Presentation

Our November program will cover the following topics of Facility Management:

- *Discussion of ideal collaboration between Owner and Consultant during design process*
- *What items are important to an Owner, including First Cost, Life Cycle Cost, Ease of Maintenance*
- *How should Maintenance and Service Life influence the design*
- *What important items often get overlooked in the design/construction phase*

Our presenter for the afternoon will be Mr. Brian Brantmeier, Supervisor-HVAC Engineering at Kohler Company. Mr. Brantmeier has a BS in Mechanical Engineering from the University of Wisconsin Platteville and is a licensed Professional Engineer in the State of Wisconsin. He has 4 years of experience in HVAC Consulting Engineering, 8 years experience working for a Mechanical Contractor and 7 years experience working at Kohler Company, with the last 2 years as HVAC Supervisor.

**Program Date: Thursday, November 19, 2009**

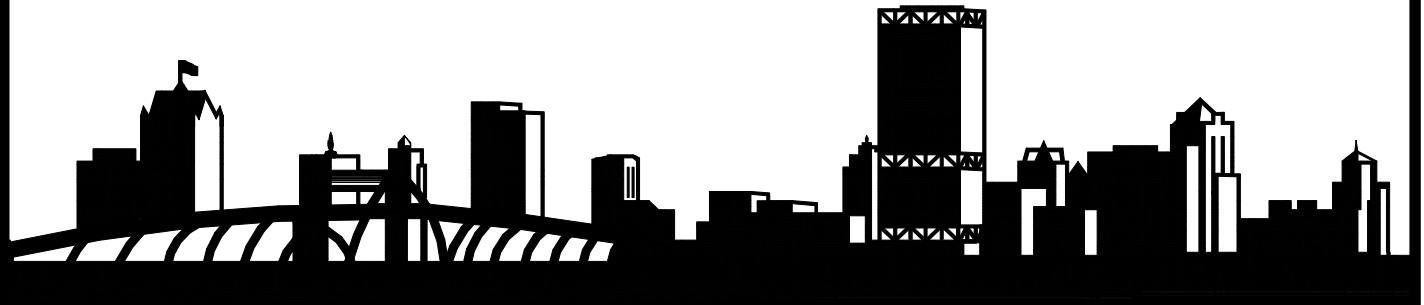
**Program Location: MSOE Todd Wehr Auditorium (1025 N. Broadway)**

**Registration Time: 11:15-11:40 AM**

**Program/Lunch: 11:45 AM - 1:00 PM**

Reservations at [www.ashrae-wi.org](http://www.ashrae-wi.org)

Prices: The program cost is \$20 for non-members. There is no cost for Wisconsin Chapter ASHRAE members. Checks should be made payable to the "Wisconsin Chapter of ASHRAE".



**President's Column:**

Welcome to the unpredictable weather month of November. I hope that everyone enjoyed the warm weather we have had these first few weeks.

Attendance at our October meeting/tour at Johnson Controls was better than expected. I was greatly pleased with the turnout and hope we can keep it up for future meetings. Your Chapter Board of Governors works hard to plan informative and interesting events each month for our chapter members. A big thanks goes out to the staff at Johnson Controls Headquarters for taking time to conduct the tours and share information about their great facility.

Our next chapter meeting will be a presentation by facility management staff from Kohler Company on their operations and maintenance involvement in the design process. Please make an effort to attend this event. It should be an excellent opportunity for many of our members to hear design considerations from a different perspective.

Please feel free to contact me or other Board of Governor members with comments or questions about our Chapter or to volunteer to help out with our many events planned for this year.

*Jason Gerke*  
*President ASHRAE – Wisconsin Chapter*  
[jason.gerke@graef-usa.com](mailto:jason.gerke@graef-usa.com)  
414-266-9238

**Student handbook:**

The ASHRAE Wisconsin Chapter will once again this year help student members with the purchase of an ASHRAE Handbook. The Chapter will reimburse student members for half of the cost of one book. Student members are able to purchase a Handbook for a discounted rate of \$49 as a benefit of their membership.

**U.S. Department of Energy Solar Decathlon**

***Local University Participates in National Decathlon***

For three weeks in October 2009, the U.S. Department of Energy hosted the Solar Decathlon—a competition in which 20 teams of college and university students compete to design, build, and operate the most attractive, effective, and energy-efficient solar-powered house. The Solar Decathlon is also an event to which the public is invited to observe the powerful combination of solar energy, energy efficiency, and the best in home design.

The solar decathlon consists of three major phases. Building the house, moving the house to Washington D.C. and rebuild them onsite, and a competition in 10 categories. The categories included architecture, market viability, engineering, lighting design, communications, comfort zone, hot water, appliances, home entertainment, and net metering.

For more information on the competition results, please visit <http://www.solardecathlon.org/> Or you can visit the team's website at [http://www4.uwm.edu/uwm\\_sd09/](http://www4.uwm.edu/uwm_sd09/) Article information taken from <http://www.solardecathlon.org/>

*Aaron Ting*

**Membership:**

Please help me congratulate Taylor Pangborn, Gregory Pautsch, Gary Mella, and William Miller as our new ASHRAE members. Please help us to make them feel welcome in our organization.

We continue to update the members' information. If your information has changed (for example: emails, work place, address, etc.), please either contact us or you can change it online. To change your information online go to [www.ashrae.org](http://www.ashrae.org), go to the "Members Tab" at the top left, click on "Manage Membership", and finally click "Address Change" in the center of the page. This will lead you to the link and you can update your information. Once again, if you send us your updated information, we are happy to take care of this for you, but we ask that you provide us with your member number, as that accelerates getting things changed.

We are always trying to add new members to keep our chapter growing. Please encourage your work associates to consider joining our chapter if they are not members. Applications for new members can be filled out on line at [www.ashrae.org](http://www.ashrae.org), or I would be happy to email you an application. If you sign up online be sure to select the "Wisconsin" ASHRAE chapter so you are assigned to the correct local chapter. Please contact Jeff Weis at [jweis@mastershvac.com](mailto:jweis@mastershvac.com) if you need an application.

Current Members: 407  
Student Members: 26  
Delinquent Members: 54

*Jeff Weis, LEED®A*  
*Membership Chair*

## **Technical Topics**

### ***Vibration Isolation-A Common Sense Approach***

Though it would take many pages to scratch the surface of the general topic of "Vibration Isolation," here are a few key points to keep in mind.

The first thing to remember is that designing for vibration control is, for the most part, not the same as designing for noise control. This is confusing at times, because a fan or pump can, indeed, induce vibration in a building structure, which shows up as audible noise in the form of vibrating doors, light fixtures, etc. This type of vibration-induced noise should be attacked using proper vibration mountings, flexible connectors and pipe/duct hangers. But radiated noise from a piece of equipment typically cannot be appreciably affected by vibration isolators.

One of the best demonstrations I ever saw involved a big alarm clock. The representative from the isolation company set the clock to ring while sitting on a table. Then he did the same thing with a set of spring mounts between the table and the clock. Guess what? No difference in sound! He then placed the clock under an insulated box and set it off. You could barely hear it. Next he produced an unbalanced little fan driven by a sewing machine motor and set it on the table. The whole table shook. He then placed the fan in the insulated box and started it. The whole table still shook. Finally he put the fan on spring mounts and the vibration level in the table was imperceptible. The whole demonstration took maybe two minutes but was a great tool to remind designers that "**Noise**" is attacked by things like sound path barriers, mass, and enclosures, while "**Vibration**" is attacked by things like proper vibration mountings and flexible connectors. Noise and vibration, then, are two separate issues, that for the most part, must be attacked separately in the design process. So don't expect vibration mounts to keep airborne noise from a screw compressor out of an adjacent office. Proper sound barriers will be required. That said, certain vibration control products, namely floating floors, achieve both sound and noise control through the use of resilient mountings, mass and air gaps in specific applications.

The question often arises, "When do I start to worry that I need to specify higher isolation deflections special, or at least think long and hard about the isolation that I am about to specify?". Here are some simple guidelines.

Probably the most important question is "what is the nature of the occupied space?" Some applications are "no brainers." I recall standing on the roof of a day surgery clinic looking at a 75 ton rooftop unit. The unit was properly isolated with a spring roof curb. In any other application, the vibration level in the building would have been acceptable. But located directly below the rooftop was an eye surgeon attempting to operate on patients' eyeballs thru a microscope mounted on a 4' stand. The tiny vibrations in the floor were "amplified" by the stand and then magnified by the microscope so that the surgeon could not get a clear image of the eye he was about to attack with his scalpel (this was before lasers). The solution was to change to higher deflection springs **and** to have the OBGYN physician change suites with the eye surgeon.

Other factors that could lead you to extra care in vibration isolation selection:

**Low speed rotating equipment**--low frequency vibrations are especially hard to deal with and require higher deflection mounts.

**Large diameter rotating elements**---for a given amount of unbalance, the unbalanced forces generated are proportional to the square of the tip speed. Since the tip speed for an 89" diameter fan is twice that of a 44-1/2" diameter fan rotating at the same RPM, an equal imbalance in the wheel would be four times higher with the larger fan.

**Large power requirements**---equipment requiring large motors tends to require greater attention. Without going into a lot of theory here, just consider forces. Each time a pump blade passes the cutwater of a pump serving a high head piping system, the forces imposed on the pump are greater. Drive belts with a little imbalance or "belt slap" on a 100 HP centrifugal fan will certainly create more vibratory forces than belts on a 25 HP fan.

**The building structure**---lightweight buildings are much easier to "excite" with mechanical vibration than sturdy, robust structures. A given condensing unit on a concrete, brick, and mortar hospital will tend to move the structure much less than if it were mounted on a lightweight steel "spec" building. A big factor is the amount of natural deflection inherent in the roof or floor on which the equipment is mounted. This is typically a result of the building's column spacing and the construction of the floor

Great. So now you know that mounting a cooling tower with a large, slow fan on a metal building with

widely spaced columns and an electron microscope mounted directly underneath the fan requires some extra attention. Also, a 12" roof ventilator rotating at a relatively high speed, mounted on a coal fired power plant is probably not a big deal. But what about all those situations in between---the "real life" applications?

You are in luck because you belong to ASHRAE. The ASHRAE Applications Volume includes a very complete and useful guide to specifying vibration isolation that takes most of these factors into account. It also includes a graph that relates vibration efficiency to disturbing frequency (speed) and the deflection of various mounts. This graph allows you to get an idea of how much you will sacrifice or gain terms of effectiveness should you decide to deviate from the ASHRAE recommendations. The recommendations in this volume are generally recognized as near bullet proof. Use them and they work.

While the ASHRAE recommendations sometimes seem to be overkill, they are based on sound theory and experience. Remember that:

1. Correcting insufficient isolation can be extremely difficult and expensive. Equipment elevations can change, which means that piping and ductwork may then be at the wrong elevation. Cranes may be required to hoist roof mounted units.
2. If you are ever on a witness stand, it is helpful to be able to say that you used the "industry bible" as your information source.

In summary, specifying the right vibration isolation system is not difficult. It is easy to fall into the trap of accepting whatever the equipment manufacturer ships "as standard." System designers should at least be able to appreciate when this approach is likely to work and when a little extra attention is required.

*Bill Armstrong*

### **Mark Your Calendars for These Upcoming Events**

***December 15, 2009, Wisconsin Chapter Christmas Party***---Celebrate with us after work at Moe's Irish Pub for an informal get-together with others from the industry. Appetizers and drinks. More information to follow.

***January 25-27, 2010, National AHR Exposition, Orlando, Florida***

Go to [www.ahrexpo.com](http://www.ahrexpo.com) for all the details

***May 13-15<sup>th</sup>, 2009 ASHRAE Region IV Conference***

Hosted by the Wisconsin Chapter. Mark your calendars. Details and separate website to follow!

### **A Call for the Most Innovative Wisconsin Chapter Projects**

Do you think your latest project is a showcase for the Region or something unique? The ASHRAE Technology Awards program recognizes successful applications of innovative design, which incorporate ASHRAE standards for effective energy management, indoor air quality, and mechanical design management technology. In order to showcase some Wisconsin projects, we are currently looking for the best and most unique projects in the Wisconsin Chapter. Winners will be determined by the Wisconsin Chapter Board of Governors and will be rated within the ASHRAE Technology Awards Rating Categories (new/existing institutional buildings, new/existing commercial buildings, etc.). The winner in each category will be eligible to be submitted to the Region to showcase our Chapter and display the newest projects in and around Milwaukee. So proudly display the latest job you worked that exhibits these characteristics. We look forward to seeing the projects everyone is working on. For official information on the awards program visit [www.ashrae.org/cttc](http://www.ashrae.org/cttc). Please note that performance must be proven through one year's actual, verifiable operating data. Please submit your awards to our Wisconsin Chapter CTTC Chair Aaron Ting. Final submissions for the Wisconsin Chapter must be received by January 31<sup>st</sup>, 2010.

*David Grassl*



*"science for sustainable environments"*

**2009 – 2010 Chapter Goal Progress**

9% of \$8,000 Research Investment

9% of 100 Investors or More

**ASHRAE Research 2010-2015**

The ASHRAE Research Strategic Plan is currently being updated. One of the key inputs to this effort was a survey of the membership.

I found the Draft Goal Topics derived so far to be very interesting. They include:

- Operational energy performance of buildings – actual achievement
- Net-zero energy buildings
- Residential retrofit energy efficiency
- IEQ benefits – quantification
- Energy standards - development
- BIM for high performance buildings
- Load calculation methods for low and net-zero energy buildings
- Natural refrigerants and charge reduction
- HVAC&R component improvement
- Advanced Energy Design Guide support
- Transform education for engineers and architects

The selection seems on target to me. This work is about accelerating our progress in meeting society’s demands on our building industry and business competitiveness.

How might the advancement of industry knowledge and best practice in these areas affect your professional and business success?

You can get plugged in at [ASHRAE Research](#) .

**Chapter Research Investors  
2009-2010 Campaign**

<b>Golden Circle</b> <b>(\$10,000 and above)</b>
<b>ASHRAE Partners</b> <b>(\$5,000 - \$9,999)</b>
<b>ASHRAE Associates</b> <b>(\$2,500 - \$4,999)</b>
<b>Major Donors</b> <b>(\$250 - \$2,499)</b>

<b>Honor Roll Donors</b> <b>(\$100 - \$249 Individual/\$150 - \$249 Business)</b>
Edward Tonn Jr, Butters-Fetting Co Inc. Bernard Radoszewski, Air Technologies, Inc. Justin Patrick, Auer Steel & Heating Supply Tim Pann, Southport Engineered Systems Jason Gerke, GRAEF Jude Anders, Shoreline Concepts, LLC

<b>Research Donors</b>
Alexander Weisheim, Auer Steel & Heating Supply Parmjit S. Jaspal, PSJ Engineering Brant Holeman, GRG Inc

<b>Table Top Participants</b>
HydroFlo Products Fluid Handling Inc.

**ASHRAE Research Investor Recognition**

Chapter Investors in ASHRAE Research 2008 – 2009 will be recognized at our November 19 meeting, MSOE, Todd Wehr Auditorium. See you there . . .

Invest online at:

[ASHRAE RP Online](#)

*Jude Anders, WI Chapter RP Chair*  
[\(jaonthe-shoreline@yahoo.com\)](mailto:jaonthe-shoreline@yahoo.com)

**Upcoming Meetings and Tentative Outline for 2009-10**

<b>Date</b>	<b>Location</b>	<b>Time</b>	<b>Topic</b>	<b>Presenter</b>
November 19, 2009	MSOE	11:30 AM	Building Manager Perspective	Brian Brantmeier, Kohler Co.
December 15th	Moe's Pub, Tosa	After Work	Christmas Party	Everyone!
January 21, 2010	Refrigeration Tour	TBD	Refrigeration	TBD
February 18, 2010	MSOE	TBD	BIM Requirements	TBD
March 18, 2010	MSOE	TBD	Wireless DDC	TBD
April 15, 2010	TBD	TBD	Brewery Tour	TBD
May 13-15	Various	Various	Many	Many
June	Picnic	TBD		