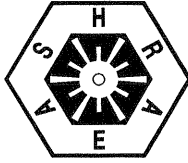


# THE BADGERAIRE

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

Jason Gerke  
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Refrigeration  
Research Promotion  
Membership/Director  
Editor

## October Meeting—JCI Glendale Corporate Tour

**Date:** Thursday, 10/22/2010

**Time:** 11:30 A.M.

**Address:**

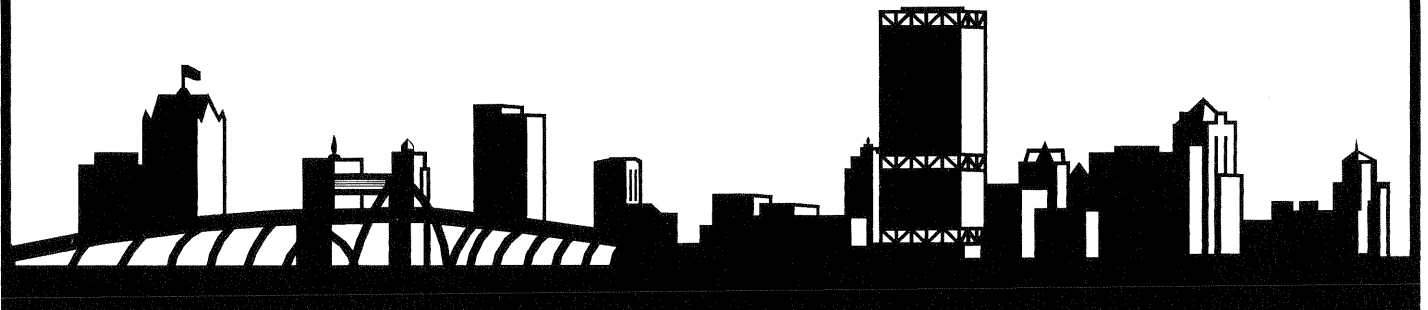
5757 N. Green Bay Ave,  
Glendale, WI 53209

This month's meeting promises to be extremely interesting, as the chapter takes advantage of the opportunity to tour the recently remodeled and expanded Johnson Controls Corporate Office Building. This building was designed to be the first LEED Platinum facility in the state. In addition to their geothermal HVAC system, guests will see the latest in *solar PV (photovoltaic) and solar thermal systems technology, including the largest single PV array in the state.*

**IMPORTANT NOTES:**

1. Johnson will need a list of attendees well in advance, so if you plan to attend, please go online ([www.ashrae-wi.org](http://www.ashrae-wi.org)) to register by end of day 10/19/2010.
2. Parking is extremely limited, so please make every effort to carpool with another member

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



**President's Column:**

I hope everyone is getting used to the cold mornings lately. The weather has changed with a blast of air from the north testing the building systems we design and construct each day.

Our first chapter meeting of the year was a big success with over 35 people attending the event. Meeting attendees heard a great presentation on the future of refrigerants in the HVAC and refrigeration industries. A very appreciative thank you goes out to Stephan Niles with Gustave A. Larson Company for the discussion. The slides from the presentation will be available on our chapter website listed under the "Items of Interest" section in the near future.

In an effort to increase the usefulness of our monthly chapter newsletter, we are looking for members to contribute articles of interest. These columns could be on new technologies, learning and tutorial guides or just explaining a way to stay out of trouble on a design or construction project. We will also accept articles summarizing recent local projects. Please contact myself or any of the Board of Governor's members if you are interested in contributing.

Our next chapter meeting will be a tour of the Johnson Controls Headquarters facility in Glendale. Please make an effort to attend this great opportunity to view a recently completed energy efficient facility.

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.

**Table Top Presentations:**

At select chapter meetings in the upcoming year we will offer individuals wishing to display a product or service the opportunity to do so during the reception and cocktail time. Upcoming table top presentations will be advertised in the Badgeraire if a write-up is available in time for newsletter publishing. The presenter will be allowed space on one 8' conference type table. The fee for the table top display is \$175 with checks made out to ASHRAE Research Promotion. Spots are available on a first come, first served basis. Please contact Jason Gerke with questions or to reserve your spot.

**Membership:**

We are continuing to update the member's 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.

### **Chapters Regional Conference Slated for Milwaukee, May 13-15, 2010**

The Wisconsin Chapter will host the regional conference for the organization next spring. Dates have been set for May 13-15 and a group of dedicated individuals headed by Mike Jahner (Marquette University) has been hard at work organizing this important event. Mike's committee hopes that 300 ASHRAE members from surrounding states will descend upon Milwaukee during the weekend for technical sessions relating to three technical tracks:

*Green Today---What is tomorrow?*  
*Old Dog Experience---New Product Tricks*  
*Business Leadership and Management*

In addition, chapter officers will attend sessions relating to chapter growth and management. A small trade show will also be part of the mix.

Mike's committee is finalizing opportunities for sponsorship and a separate mailer will follow shortly to let you know of sponsorship levels and opportunities.

For now, please set aside these dates on your calendars and watch for the separate CRC Milwaukee Website, now in its final stages of preparation by our own *Joe Lucchesi*.

### **Technical Topic:**

#### ***Why is My Motor Running Hot?***

Many owners or installers question why the motor on a new pump or fan runs "too hot to touch." This article explains why some perfectly operating motors *do* run too hot to touch, while others do not.

Most motors used for HVAC applications utilize either NEMA<sup>1</sup> Class B or Class F insulation systems. Insulation systems consist of several components, including:

- ❑ Coatings to insulate the wires within coils from each other
- ❑ Polyester sheets installed in stator slots to provide phase-to-ground insulation
- ❑ Insulating varnish into which the stator is dipped to provide moisture protection and improved overall insulating performance

High motor winding temperatures rapidly degrade the motor insulation system. Per NEMA standards, motors utilizing Class B insulation may operate with stator winding temperatures as high as 130 deg-C (266 deg-F). Motors with Class F insulation may operate with stator winding temperatures as high as 155 deg-C (311 deg-F). These are maximums, and most manufacturers design for slightly lower temperatures to allow for inevitable winding "hot spots." (Hot spots occur because it is impractical to achieve uniform temperatures throughout the windings).

While the motor *surface* temperature will always be less than the *stator* temperature, ***it is normal for fully loaded motors to run with surface temperatures of 175-210 deg. F. This is literally too hot to touch.***

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<sup>1</sup> NEMA is the National Electrical Manufacturers Association. NEMA establishes standard for a wide range of equipment, including motors.

“But,” you might say, “I have touched many motors that are nowhere near 210 degrees F. What’s up?”

Several factors affect the actual surface temperature of a motor. One of the biggest factors is the load demanded by the driven equipment. For a given motor, the quantity of heat generated in the windings is roughly proportional to the square of the load imposed upon the motor. For example, a 15 HP motor drawing 15 BHP will generate about four times as much heat as the same motor used in an application requiring only 7.5 BHP. Obviously the skin temperature will be much higher with a fully loaded motor than with a lightly loaded motor of the same design. Other factors affecting surface temperature include:

- ❑ The housing design (is the motor ribbed or flat?)
- ❑ The amount of air circulated by the integral cooling fan (premium efficiency motors sometimes use smaller cooling fans to reduce power lost to the fan)
- ❑ The enclosure type
- ❑ The frequency of start/stop cycles

Therefore, the surface temperature of the motor is not a good indicator of whether the motor is running properly. Current readings from a clamp-style ammeter provide a much better check of whether an electrical problem exists. Abnormal noises indicate mechanical problems.

To ensure proper motor life in HVAC applications:

- ❑ The equipment room should be well-ventilated and designed with motor ambient temperature in mind. Motor manufacturers design to an ambient condition of 40 deg-C (104deg.-F). Ambient temperatures in excess of this result in higher stator temperatures, which reduce insulation life. Factors resulting in high ambient motor temperatures include everything from

improper room ventilation to locating motors close to heat-emitting equipment such as large steam traps.

- ❑ Avoid selecting motors at their maximum nameplate ratings. Motor load affects stator temperature and stator temperature affects insulation life (it is estimated that a 10 deg-C rise in stator temperature can cut the motor insulation life in half). So allow a little “room” in the selection. Keep in mind that jobsite voltage imbalances result in increased winding temperatures, as do low voltage and sustained high voltage. With all factors considered, it is good practice to select motors at up to 80% or so of full power rating. Motors with a published service factor may theoretically be selected at a higher percentage of full load.

In conclusion, checking the health of a motor by touch will generally yield little, if any, useful information, for even a properly operating motor may run with surface temperatures that are too hot to touch. Selecting motors a bit below their maximum power ratings and installing them in well-ventilated areas away from heat sources ensures proper motor winding life.

*Submitted by  
Bill Armstrong*



*“science for sustainable environments”*

## 2009 – 2010 Chapter Goal

**\$8,000** Research Investment

**100** Investors or More

Our Chapter goals are a major step for us in tough economic conditions. But there is also great opportunity for those professionals and companies who are actively involved in the dramatic changes underway in the building industry today.

Participation in ASHRAE, its certifications, training sessions, meetings, networking opportunities; and, staying current with its publications and research, can make a difference in your preparation and your company’s success as we all change the way our world works.

So I am again proposing ‘participation’ as a critical objective for our Research Promotion Campaign. Here is the Plan so far:

1. **RP Visibility**, an Investor Recognition Night at the November 19 Chapter Meeting; RP Minute at every meeting, and this column
2. **All Call Campaign**, contact all members, recognize all investors of **\$20** or more in the Badgeraire by name and company
3. **Table Top Investor**, their \$175 investment sent directly to ASHRAE Research enabling recognition in the October Journal issue
4. **Corporate Image Campaign**, contact local companies about the value of recognition for ASHRAE Research Investment in their market image . . . local and international . . .

That’s the plan. Let me know your thoughts and if you would like to help in any way.

By the way, all of the Chapter officers have pledged an honor roll level investment – Full Circle! . . . and, check out those who have already invested . . .

### Chapter Research Investors 2009-2010 Campaign

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

<b>Honor Roll Donors (\$100 - \$249 Individual/\$150 - \$249 Business)</b>
Edward Tonn Jr, Butters-Fetting Co Inc. Bernard Radoszewski, Air Technologies, Inc. Jason Gerke, GRAEF Jude Anders, Shoreline Concepts, LLC
<b>Research Donors</b>
Alexander Weisheim, Auer Steel & Heating Supply Parmjit S. Jaspal, PSJ Engineering
<b>Table Top Participants</b>
<b>Hydro Flo Products (November)</b>
<b>Fluid Handling Inc. (February)</b>

Invest online at:

[ASHRAE RP Online](#)

Let’s make this another good year!

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>
October 22, 2009	JCI Headquarters	11:30 AM	Tour of LEED Remodel	JCI Personnel
November 19, 2009	MSOE	11:30 AM	Building Manager Perspective	Brian Brantmeier, Kohler Co.
December TBA	Moe's Pub, Tosa	After Work	Christmas Party	
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		