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CALENDAR OF EVENTS

September 12	Golf Outing
October 9	Regular Meeting Radar Level Technology
November 13	Regular Meeting Career Marketing
December 11	Christmas Dinner Berry Hills Country Club
January 8	Regular Meeting Electrical Safety
February 12	Regular Meeting Carbon Footprint Reduction Scarlet Oaks/Wellington's 11:30 - 1:00
March 12	Regular Meeting Wireless Sensors in Homeland Security Applications Scarlet Oaks/Wellington's 11:30 - 1:00
March 24	Class - Overview of Grounding & Noise Reduction for Control Equipment WV St. Univ.
April 9	Regular Meeting Wireless Networks & WI Hart Scarlet Oaks/Wellington's 11:30 - 1:00
May 14	Awards Dinner TBD

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MARCH Meeting

Wireless Sensor in Homeland Security Applications

Speaker: Dave Kimberling - Director of Homeland Security/Public Safety Applications at Eagle Research
Thursday, March 12, 2009
Scarlet Oaks/Wellingtons
Lunch 11:30 - \$10 Buffet
Presentation 12:00

Mr. Kimberling's presentation will center around a portable toxic gas wireless sensor developed at Eagle Research that will be used at the new Dallas Cowboy's football stadium. These devices can be integrated into a fixed or portable wireless mesh network.

April Meeting

Thursday, April 9, Wellingtons
Wireless Networks and WI Hart

CHARLESTON SECTION NEWS

If you normally renew your dues at this time of year and have not gotten a renewal notice in the mail then please log on to www.isa.org and renew. You can do it on line, or print off a form and snail mail it, or call and ask for an invoice and they will mail you one. Paper renewal notices are behind schedule because of the changes voted in at Expo last October.

One of the big changes, besides a slight price increase, is free membership in two divisions. Divisions specialize in your area of expertise and provide more in-depth knowledge and networking opportunities. See the web site for a full list of divisions to choose from.

Another new benefit is ISA Jobs. It is a website tool that enables job seekers to connect with potential employers. ISA members can post their resume at no cost. Employers can post their jobs for a nominal fee and immediately get access to the most skilled automation professionals. There is also a section for contractors and a section for interns. Check it out at www.isajobs.org.

This is the time of year to start planning for next year. Send feedback and ideas on what is needed from your local ISA chapter.

Grace MacMillen
Charleston Section President

Mr. Daniel Steele died January 18, 2009 at his home. He was active in ISA for most of his career and was President of the local section in 1987. He was retired from Union Carbide and Dow Chemical and had worked in the Special Instruments Division in South Charleston.

Welcome New Members:
Joshua Ferguson Abarta Oil & Gas

Gilson Engineering would like to announce their new location:
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Heat Transfer Basics

A friend was commenting on his chilly house that could not be insulated without tearing out the walls and ceilings. Between my engineering background and experience with an old house I gave him some hints that have made a world of difference.

Heat transfer has three main components: conduction, convection, and radiation. There is also vaporization, but that will be ignored in this discussion. Radiant heat is difficult to change when the house gets chilly. The best example is planting trees so the sun shines in your windows in the winter and is blocked in the summer. That is a form of radiant heat; but also not part of this discussion.

Conduction has several factors in the engineering equations. Thermal conductivity is the inverse of the R value (thermal resistance). Metal has a high thermal conductivity. It transfers heat well. Wood is medium. Very still air is low in thermal conductivity and therefore high in R value. Surface area is a factor. So is differential temperature. The colder it is outside, the faster you will lose heat, and the warmer it is inside, the faster you will lose heat through conduction. The last factor is the thickness you are conducting through. Multiply surface area times delta T and divide by thickness times thermal resistance and you can calculate the rate of heat loss in each section of the house. Then add them all together for total heat loss. Note that heat transfer will take the path of least resistance. Adding more insulation to the spot easiest to get to will usually not do nearly as much good as working to make sure all spots are insulated as much as possible. Heat will go around the insulation if you allow it.

Conduction is the vibrating molecules bouncing around and transferring energy from one to the next. The molecules stay put and only the electrons get excited as they give energy to the molecule next to them. A heat gradient exists until the temperature is equalized on both sides.

In convection the molecules are free to move and give their energy to everything they meet along the journey. Normally this is in gas but it is also the method to heat a pot of water on the stove. An old science project is to add a few drops of food color and watch the currents move the energy around. Convection transfers heat much more quickly than conduction. In your house, convection is air movement and drafts.

So the first advice to my friend is before worrying about R value, worry about drafts. Seal them all up. Use caulk and foam. Of course, with a new house under construction worry about both. And it is possible to get a house too tightly sealed. But if you are spending too much money on heating bills, stopping convection will make more of a difference than stopping conduction. Then insulate where you can.

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And the best convection detector is a spider. Look for the webs. They love to build webs where the air is moving. It brings them more food.

Look for places where an open path lets air move from the heated space to the unheated space. Plumbing chases with holes on each end are notorious for pulling heat out of a house. Places where two materials meet, like the house sitting on the foundation, is another place. Gaps around molding can let the air into the walls where it can exit somewhere else. Spider webs in the attic and in the basement can point to lots of expensive air leaving the house. My friend says the improvement is tremendous and the best part is that the real cold rooms are now nearly the same temperature as the other rooms. From my old house perspective, you would not believe the heat transfer errors made by the previous owner. But that is another story.

And while I am on my soap box, a famous columnist once gave an incorrect answer about wind chill. She said it only applied to people and not to pets. The wind chill factor actually is the difference between conductive and convective heat transfer. When the air is still, a warm object loses heat by conduction through many layers of still air. Still air is a relatively good insulator. When the wind blows, the thickness of the conduction layer decreases in proportion to wind speed. Convection then removes the heat much faster. Wind chill temperature is the still air temperature that would cause a conductive heat loss equal to the actual convective heat loss.

Wind chill applies to any object you are trying to keep warm on a cold night: people, pets, and your house. It does not apply to any object that is already at ambient temperature.

Until next month,
Grace MacMillen
Self proclaimed Automation Expert

Class - March 24, 2009 Overview of Grounding and Noise Reduction for Control Equipment (TI21C)

This is an 8 hour class taught by an ISA professional instructor. Location: West Virginia State University, Wilson Student Union Bldg, Institute, WV
Cost: \$445.00 for ISA members, \$495.00 for non-members

This course provides an understanding of grounding, both from an electrical systems relationship and from an instrument loops relationship. The purpose of grounding and electrical systems, grounding for safety, signal noise, signal wiring systems, and methods used to reduce noise will be covered.



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