Got the Summertime Blues? Go GREEN!

Sandra Anderson, PE, President

Nothing brings out the summertime blues quite like rising energy costs. As the temperatures rise, so do utility bills from increased air conditioning loads. Commercial buildings consume operating budgets as voraciously as they consume energy. Office building energy bills are the highest of any commercial building type. While heating, ventilation, and air conditioning (HVAC) and lighting are still the largest power consumers, office equipment now accounts for almost 16% of an office building's energy use. As business owners or employees with a stake in reducing expenses, engineers are always looking for ways to help the bottom line. While 'there ain't no cure for the summertime blues', there are many ways to reduce a building's energy footprint.

Energy-smart buildings incorporate efficient lighting and daylighting systems, as well as advanced windows, roofing, insulation, and mechanical and ventilation systems. These high-performance building designs also consider the use of renewable energy systems, water conservation features, recycling and waste management systems, and environmentally sensitive building products and systems.

- How old is the HVAC system? What was its installed efficiency? Is it due/overdue for repair or replacement?
- Has ductwork on forced-air HVAC systems been cleaned recently? Or ever?
- Has the HVAC system been tested and balanced?
- Are there heating and cooling zones, or just one big one size fits all? Is the bottom floor cold and top floor hot, so that heating and cooling systems are running at the same time?
- Check for space heaters in cold spots and fans in hot spots.
- Ask about employee relations and behaviors. Are there thermostat wars that constantly turn the system on and off?
- Is there an energy management system, occupancy sensors, and programmable thermostats? A quick way to realize savings of 10% or more, at little or no cost, is to effectively operate and maintain existing systems. Energy-smart behavior, such as turning off lights when leaving a room, helps reduce energy use. Automated controls like occupancy sensors and programmable thermostats ensure reduced energy use in unoccupied offices or infrequently used areas like conference rooms.
- Have inefficient incandescent lighting fixtures been replaced with T-8, compact fluorescent, and metal halide fixtures?
- Are the existing light fixtures clean, so they emit the maximum amount of light?
- Are existing lights in the right spot for the task at hand? Is the foot-candle output sufficient or too much? For example, a migraine sufferer needs indirect task lighting instead of bright overhead light. Lost time means others have to work longer hours to pick up the load.
- Are there Energy Star computers, printers, copiers and other office equipment?
- Do employees shut down electrical devices when they leave for the day or when they are not needed?
- Is there adequate insulation in walls, ceiling, and crawl spaces?
- Are there good seals on all exterior doors?
- Are there processes that can be run at off-peak hours, to take advantage of lower utility rates and lower the maximum demand? Can any of the processes make use of variable-speed drives?
- Is there a wastewater treatment system to recycle, filter, and clean water from sinks, dishwashers, showers, and toilets and pump it out to landscaping?
- Are low-flow toilets installed?

In addition to cutting operating costs, energy-smart office buildings can enhance the comfort and performance of workers, which boosts productivity. Many of the same measures that improve a building's energy performance also make it a more comfortable place to work. Employees' benefit from the use of daylighting and non-toxic chemicals, plus better temperature control, ventilation, and indoor air quality.

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MSE Board Welcomes Crystal Kuntz

By Dan Munson, PE, Immediate Past President

Crystal Kuntz was nominated and ratified to take on the duties of the Secretary office of the MSE State Board for 2007-2008 term. We welcome Crystal and look forward to employing her enthusiasm to get our society goals accomplished.

Crystal graduated from MSU-Bozeman in 1997 with a BS in Civil Engineering and worked as a transportation engineer focusing on MDT projects for six years. Crystal obtained her P.E. in April of 2002 and went to work for Electrical Consultants, Inc. in 2003.

She is currently the manager of the Site Development/Environmental Department at ECI.

This group provides the civil design support and environmental permitting for all of ECI’s substations, transmission and wind development design projects across the nation.

Crystal has an MS in Public Relations, an MS in Communication and an MBA from that University of Montana.

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Crystal: Congratulations and welcome!

MSU’s 2007 Gold Medal Winner Announced

By Dan Munson, PE, Immediate Past President

For over sixty years, Montana Society of Engineers has recognized a top graduating engineering student at the Montana State University with the MSE Gold Medal Award. The MSU College of Engineering requests that each engineering department selects an outstanding senior studying that department’s discipline.

The criteria used to select outstanding seniors are:
- Distinguished academic record
- Involvement in extracurricular activities
- Leadership in extracurricular activities
- Commitment to the practical use of the sciences in the execution of engineering work
- Promise of service to their profession with integrity, devotion to high standards, and a sense of obligation to humanity

The candidates are reviewed by the MSU College of Engineering Dean’s Office who submit three names to MSE. The MSE Gold Medal Committee interviews these top three individuals.

This year, Miss Keely Obert graduating in Civil Engineering received this prestigious award at Commencement Exercises. We congratulate Keely in her accomplishments, and wish her the best as she pursues a career in bridge design.

Got the Summertime Blues? Go GREEN

—Continued from Page 1

With the high cost of labor, payback on energy features is shortened even further when savings from reduced absenteeism are combined with energy cost savings. Energy-efficient building features also help building owners attract and retain tenants. In existing buildings, renovations that replace older systems with more efficient technology can yield savings of up to 30%, with the same positive impact on building comfort.

- What kind of personal energy-consuming devices are there in the individual office spaces? Examples include coffee makers, microwaves, radios, under-the-desk refrigerators, iPod/MP3/cell phone chargers. Would putting in a kitchen/break area with Energy Star appliances reduce the overall energy usage, while maintaining employee comfort & satisfaction?
- Install a water filter system for drinking water, instead of buying or renting an electric water cooler or buying bottled water.

Educate! Reducing energy use and costs requires education of and buy-in from management, workers, and tenants.

At the end of June, Crystal Kuntz will join the MSE board. Crystal is a delightful addition to any conversation she joins, and we look forward to sharing her insight, enthusiasm, and fresh ideas.

Thank you for the opportunity to serve as your president this past year. It’s been an honor.

For Things Engineering, Visit: www.mtengineers.org TODAY!
It’s a spring day and as I sit at the cabin and listen to Ten Mile Creek roar as it flows by bank full and muddy, I am so very thankful that the legislative session(s) are over. The State public works sector received bountiful funding to meet the needs of the ever growing and aging state infrastructure. The State Architects’ office has its largest Long Range Building Program in history, we at The State Water projects have received the green light for several preliminary designs and it looks like everyone is going to very busy for the next few years or so. All this funding is very good but we face another barrier to getting projects implemented. The Architecture, Engineering and Contracting communities are all swamped. From what I see we just don’t have enough trained architects and engineers to accomplish these goals nor contractors to do the building.

From the projects that I have either in design or bidding, I am having at tough time getting projects out on the streets and then when I get them out to bid, I get very few interested contractors. What happened? Ten years ago, consultants and contractors were beating down our door. The days of twenty generals showing up for one of our pre-bids seems like a fading memory. This is very alarming as we are expected to implement larger programs with the same amount of people and the longer we delay in getting to bid the more likely that the project will be under funded because of inflation or events that will cause a major scope change may occur. All the while inmates are released early because of overcrowding, sewer and water systems become more antiquated and the needs of the public goes unmet. This works against us as Professionals as the agencies get backed into a corner to how the owner can improve to help you meet your goals nor contractors to do the building.

In the last two years it just seems that my outside consultant design projects languish with the consultant’s way too overcommitted on the number of projects they are involved in. From discussions with my friends that do work as consultants it’s just difficult if not bad business practice to turn down work. But it is also bad business to string along designs for 6 months, that’s ok, I can schedule around that and then everyone from Administrator on down is aware of what’s happening. And don’t think that during the interview process that this will be a negative as we all realize that everyone is swamped. To me truthful realistic schedules are very important at this time of over abundance of work.

Schedule, when we are negotiating a contract please be honest and realistic in your schedule. Don’t hand a schedule over that you think we want to see and then constantly let it slip. Have one project that I am on the second contract extension with no change in scope. I then have to explain to someone who is a non-engineering bureaucrat type why I have to do this contract extension. Frankly it then reflects poorly on me as they start thinking we are managing the contract poorly. If I know from the start that you can’t even start the project for 6 months, that’s ok, I can schedule around that and then everyone from Administrator on down is aware of what’s happening. And don’t think that during the interview process that this will be a negative as we all realize that everyone is swamped. To me truthful realistic schedules are very important at this time of over abundance of work.

Staffing, I know that staffs are constantly changing and realize that sometimes a firm needs to level resource level and move staff around. I ask one thing as an owner; please let me know who is actually working on the project. Even if it’s an EIT, I won’t mind as long as certain other responsible engineers are overseeing his work. In fact bring them by the office and let me meet them, I get a better understanding of their background, skills and personality and this really helps me when reviewing their work and emphasizing what portion of the work needs more review than others.

In stepping down from my soapbox, I again ask the question to all of you out there. How are we going to handle the workload in the next few years? Any suggestions would be greatly appreciated. Working on State projects can be a real pain as there are lots of players involved with our projects but if there was ever a time that the State needed outside resources it is now. And since I gave my two bits on how I think consultants can improve their relationship with the owner, I would love to hear from you as to how the owner can improve to help you meet the challenge of the implementation of the work that the Legislature has bestowed upon us. Feel free to send me your thoughts on this issue as feedback is very important to promote change.

kphillips@mt.gov. Thank you.

The Architecture, Engineering and Contracting communities are all swamped. From what I see we just don’t have enough trained architects and engineers to accomplish these goals nor contractors to do the building.
A small company called EESTOR Inc., from Austin, Texas claims to have developed a parallel plate capacitor using barium titanate as the dielectric.

There is more. A Canadian car company called Zenn Motor Company is producing an all-electric car that you can buy today for $12,000 to $15,000. It seats 2, has room for grocery bags in back, and has a heater, radio and windshield wipers. The steering, brakes, and safety features are the latest technology. It uses 6 12 volt batteries to power a 72 volt electric motor. You can recharge with solar panels or plug in to any wall receptacle. The Zenn Motor Company supposedly will soon have the new EESTOR parallel plate capacitors instead of lead acid batteries. So why not run up to Canada and buy one? The top speed is only 25 MPH – a small drawback. Last time I checked logging trucks still outnumbered economy vehicles in the streets of Kalispell. But at 25 mph, she couldn’t shop as much in one day … and the purchase price is one fourth the cost of a new STS!

An engineer friend, John Belisle, from Donaldson Air Cleaners in Minnesota had a great idea to solve our national fuel crisis.

Regarding high gas prices, I think we need a national priority program to cut petroleum use 50% in ten years, no ifs ands or buts. …The technology developed right now can achieve this first ten year goal and already pays for itself in cost savings. I have a diesel VW which gets 48 mpg and by adding bigger batteries to the Prius type hybrids people are actually getting 100 mpg in regular daily use…. The only way to screw the radical Arabs, which I desire with all my heart, is to make the value of petroleum drop back down to the $6.00 per barrel range and keep it there and that can't be done if we start driving HumVees again as soon as the price drops like we did last time. To put the cost of this kind of revolution in energy consumption into perspective I just did some rough calculations and think it would cost about $200 billion to change all the houses in the U.S. over to heat pumps. If they last 10 years that would be about 20 billion per year. It would cost about 1 trillion dollars to give every household in the U.S. a Prius. If they last ten years that would be about 100 billion per year. So for an investment of about 120 billion per year we would come very close to cutting petroleum use 50%. (Remember, this investment pays for itself right now in savings)… Also, To put this big number into perspective, we've already spent 424
Pretty slick idea, but there is one small drawback. The chamber would have to be 60’ square by 2’ deep to collect 1 gallon. If anyone can improve on this idea, there are many Mexican locals who would be appreciative. Maybe they could sell the residual sea salt for a high price to some crazy Americans who think sea salt is better than Morts. If they called it Cabo San Lucas sun dried organic aroma therapy aloe wheat germ bamboo vinegar sea salt, many American women would go for it and pay a premium price. Then the locals could afford an RO system.

Angry Mobs

Remember the old western movies where the Sheriff catches the bad guy and the local townspeople turn out late at night carrying torches, armed with shot guns, pitch forks, scythes, and a hanging rope. Then Jimmy Stewart confronts the angry mob “Go on home. If there is any hangin’ to be done it will be done legal-like, after this man has a fair trial. Now go on home, all of ya....”

There was an angry mob in Kalispell recently when the County Commissioners had a hearing in the proposed Flathead County Growth Policy. There were no hangin’ ropes, but close.
There was an angry mob in Kalispell recently when the County Commissioners had a hearing in the proposed Flathead County Growth Policy. There were no hangin’ ropes, but close.

MATHCOUNTS Update

By Dan Munson, State MathCounts Coordinator

The 2007 MATHCOUNTS season officially wrapped up on May 11th when 228 “Mathletes” from around the nation gave it their best at the National Competition in Fort Worth, Texas. Kevin Chen of Sugarland, Texas, answered this challenging math problem in less than 45 seconds to win the MATHCOUNTS National Champion:

On an exam, a student answered 15 of the first 20 questions correctly. Of the remaining questions, he answered 1/3 correctly. If the student answered 50% of all questions correctly, how many questions were on the exam?

Answer: 50

The official Montana state team consisted of Sayre White and Jack Klemay from Missoula’s Sussex School, and Erik Anderson from Missoula’s Washington Middle School, and Bekezhan Nurkhaidarov from Reichle School. These four students were accompanied by Montana Coach Bente Winston from Missoula’s Sussex School.

This year we also selected a Montana MATHCOUNTS Champion of the year to attend the National Competition. Jim Hamling from Lewistown Middle School has been involved as a MATHCOUNTS coach for 22 years. His positive attitude and untiring efforts have touched hundreds of math students throughout the state. He retired from teaching this year, and was honored at the State Competition with an invitation to attend the National competition.

The MATHCOUNTS program is organized by the National Society of Professional Engineers on a national level. Locally, MATHCOUNTS is organized by the Montana Society of Engineers, with local volunteer effort being provided by area engineers, students, and professionals. Montana has always had a great contingent of fellow engineers volunteering their time to make the program run smoothly. A special thanks to all of you who have helped make this program so successful.

MSE would like to thank all of our corporate sponsors and dozens of volunteer engineers who have helped make the chapter and state competitions so successful. We get a number of letters each year from students who really believe that MATHCOUNTS has made a difference in their entire study habits and their attitude towards school. It is rewarding to think that a number of these students will be our next generation of successful engineers. Thanks for helping make a difference.

The Montana MATHCOUNTS Team pose before taking their tests at the National Competition in Fort Worth, Texas. From left: Bekezhan Nurkhaidarov, Sayre White, Shackleton, Jack Klemay, Erik Anderson.

2006-07 MathCounts Corporate Sponsors

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- Robert Peccia and Associates
- Smurfit-Stone
- Stillwater Mining Company
- Timberweld
- Western Energy Company
- Western Sugar Company
- Yellowstone Electric Company

A special thank you to our Corporate Sponsors, Chapter Coordinators and many, many volunteers for making Montana MathCounts happen!
Visit: www.mtengineers.org

The goal of the Montana Society of Engineering’s website is to create a site that would be ‘all-things-engineering’ for Montana. This site is for all professional engineers.

- Need information and on-line registration for the Joint Engineers Conference — as the JEC Committee creates this year’s program, updates will be made — visit often!
- Looking for a new position? Ready to make a job change? Visit JobTarget at mtengineers.org
- Trying to find an engineer, draftsman, or new office personal? Visit JobTarget at mtengineers.org
- Who is currently part of the PE Hall of Fame? This site has a complete list.
- Is your firm or engineering society offering a course for CEUs to maintain licensure? Please send the information to mse@assoc-mgt.com and it will be posted with links to this site.
- Is your firm linked? Download the Engineering Firm Profile and make it happen today!

Are you involved in another professional engineering society? Create a link and make it easier for all to share information.

- Have a great idea that you think this site should offer? Let MSE know. The purpose of this site is to offer Montana Engineers a tool that works for all engineers.
- Looking for resources? Click on the link to NSPE for Mentoring Programs, Online Resume Posting, FE & PE Exam Review Courses and Preparation Materials, Scholarship and Internships for Engineering Students.
- Professional Engineers are facing many issues such as unlicensed practice. How can this site help?

This site is being developed for the professional engineer practicing in Montana.

From the MSE Office
By Connie Dempster, MSE Office

A clarification needs to be made to the March—2007 issue of this Newsletter. In the article about the 2006 PE Hall of Fame, I failed to note that both nominations and the information regarding Dr. Eldon R. Dodge, PhD., PE and Joseph A. Maierle, PE were submitted by Timothy R. Berry, PE, DEE and Past President of MSE. It was not my intent to attach another’s name to this information.

Certificate of Authorization: If you are a sole proprietorship, firm, partnership or corporation engaged in the practice of engineering or the practice of land surveying in Montana, you, the firm, the partnership or corporation are required to obtain a ‘Certificate of Authorization’ from the Montana Board of Professional Engineers & Professional Land Surveyors and must have a professional engineer or professional land surveyor who is in responsible charge of the engineering or land surveying work conducted in the office or place of business. This is in accordance with 37-67-320 MCA. You can obtain an application for ‘Certificate of Authorization’ at

www.engineer.mt.gov

This is as reported in Montana PEPLS Newsletter, Volume 10—Spring 2007 — pg. 2.
MSE Announces New Executive Committee & Review Committee Assignments for 2007-08

The Montana Society of Engineers’ fiscal year runs July 1 to June 30. At the Executive Committee Meeting scheduled for June 22 in Butte, Montana, the Executive Committee will seat the new board. The new board will be as follows: Jeff Ruffner as President, Tom Abel as President Elect, Kenneth Phillips as Vice President, Crystal Kuntz as Secretary/Treasurer and Sandra Anderson will serve as Immediate Past President.

Jeff Ruffner will serve as the MSE House of Delegate (HOD) Representative to the NSPE, Doug Brekke will continue to serve as Chairman for the Joint Engineers Conference and Dan Munson will continue to serve as State MathCounts Coordinator. These positions are key to the success of MSE and the dedication and commitment of these individuals are not always fully appreciated. Anyone interested in one of these positions or serving on one of these committees should contact the MSE Office. Your involvement would be welcomed!