

Powerline

Local school districts take action to save energy



Staff and students at Middleton High School and Middleton Alternative High School are reducing energy use in their schools.

Thanks to the efforts of committed students, teachers and facility staff, several local school districts in the MGE service area are significantly reducing energy costs and the associated environmental impacts. Madison, Waunakee, Monona Grove and Middleton-Cross Plains have dramatically reduced electricity and natural gas consumption in their respective buildings and facilities. When faced with diminished revenues, many districts are aggressively looking for ways to reduce operating costs. Teacher salaries and building energy costs are the two largest expenditures for school districts. One of the most expensive yet controllable items in a school district budget is utility costs. Some districts contract with outside energy consultants to help manage their buildings' energy use, and in some cases, the consultants actually guarantee annual energy savings. Waunakee School District reported a combined gas and electric first-year savings of about \$200,000! Most

of the savings are the direct result of carefully managing daily, evening and weekend building energy consumption using customized energy management building automation software.

As electricity and natural gas rates rise, districts are saving thousands of dollars through conservation efforts and equipment upgrades. Optimizing the heating, ventilation, air-conditioning equipment and lighting on daily, weekend and seasonal variations has yielded impressive savings. District facilities' staff and outside energy management consultants can now efficiently control building automation software offsite and onsite to schedule lighting, temperature and ventilation requirements during peak and off-peak periods in the schools and identify and predict equipment failure. These sophisticated energy management systems allow facilities' staff to

monitor equipment and operating characteristics, set parameters and generate reports on building conditions. Clearly, access to information is key. If you can't accurately measure or meter your energy usage, it's very difficult to determine how effective a given energy management or conservation strategy can be.

In addition to having building energy management controls, many school districts are discovering significant energy savings by replacing and upgrading heating, ventilation and air-conditioning equipment, windows, motor controls and sophisticated building energy management systems. Focus on Energy (the Wisconsin statewide energy efficiency program) can offer energy efficiency rebates that make it even more attractive for districts to install renewable energy systems like geothermal heating and cooling systems for new construction. In addition to renewable energy systems, rebates extend to other energy efficiency measures too.

(See Schools save energy, back page.)

Pedal power

Want to generate some interest in your energy presentations? MGE has a new pedal power energy education unit available for loan to teachers whose schools are served by MGE gas and/or electricity.

The unit is a bicycle-powered display board that sets up in minutes and is small enough to be easily portable but large enough to be seen from the back of the classroom. The bicycle stand with generator attaches to any 24-inch or larger multi-gear bicycle, allowing you to use your own bike. Optional accessories include a Btu (British thermal unit) lab kit and lesson plan to teach about how much energy it takes to make one Btu; a circuit breaker lab kit and lesson plan teaches about overloaded circuits, fuses and circuit breakers; and an LED (light emitting diode) light bank kit allows the user to demonstrate efficient lighting with the unit.

Please contact Jim Jenson at 608-252-7091 or e-mail jejenson@mge.com to reserve the pedal power unit for your classroom. The unit will be available on a first come, first serve basis for a three-week loan period beginning in January 2010.



Get the magic of MaGicEnergy

Do you want a memorable educational experience for your students that reinforces energy and environmental concepts? Look no further. For the last five years, MGE has offered at no charge a live performance of the popular show, MaGicEnergy, to elementary and middle schools in the MGE gas and/or electric service area. MGE developed the show with Bob Kann, local educator and entertainer, to educate students about the importance of energy use and the value of personally making a difference. Performances are fun, fast-paced and interactive with a nice balance of magic, storytelling, special effects and puns. Your students won't be disappointed. Different versions of the show are available for K-5 and 6 to 8 audiences along with a newly designed Leaders Guide complete with English and Spanish scripts, program synopsis, suggested lesson plans, glossary of terms and additional resources. A limited number of performances are available in 2010, so call soon. To schedule a performance of MaGicEnergy for your school, contact Jim Jenson at 608-252-7091 or Bob Kann at bobkann@charter.net.

Switch to Safety

For more than 25 years, MGE has offered its electric safety education classroom program, "Switch to Safety," to area fourth-grade students. The program features a live simulation/demonstration of many potentially hazardous situations involving high-voltage electricity and how to safely respond in those situations.

Knowing how to safely react to outdoor electric safety hazards can mean the difference between life and death. Whether you're an adult or child, knowing some rather basic information can literally save your life and the people around you. Quick thinking and knowing how to safely respond in an electric emergency is something everyone should know.

Kathy Laubmeier, MGE Electric Safety Consultant, has presented Switch to Safety in area schools for more than five years. Teacher evaluations rank the program and Kathy's presentation style as top-notch. Switch to Safety reached more than 2,800 students in more than 35 schools during the 2008-2009 school year, one of the highest participation years ever. The tabletop simulator used in the classroom program effectively demonstrates downed power lines, overhead wire contacts near the home, underground contacts, down wires involving vehicle contacts, wet surfaces involving electric-powered equipment, animals and high-voltage equipment and more.

To schedule Switch to Safety for your classroom, contact Kathy Laubmeier at jklaub@tds.net or call her at 608-271-4399.

What's New at MGE?

Taking the lead with plug-in electric hybrid vehicle charging stations

In June 2009, MGE announced that it will build a series of six electric charging stations in Madison for recharging new plug-in electric hybrid vehicles (PHEV). PHEVs, like the much-hyped Chevy Volt, are likely to appear in showrooms next year. The electric hybrid car battery system is capable of running the vehicle for up to 30 miles before the gasoline engine kicks in. Depending on the amount of city vs. highway driving, the plug-ins are capable of 60 to 100 miles per gallon.

The charging stations allow customers the option of recharging their car battery away from home and paying for that electricity with a simple credit card swipe. A standard full charge would take about 4 to 5 hours using 120 volts and cost about 60 cents at the current residential electricity price. With 240 volts, the time is cut in half. Eventually, the community charge stations will support dual 120/240-volt charging options.

The first station will be installed later this year with all six stations completed sometime in 2010. Using a personalized swipe card, drivers can access the charger and literally refill on electricity. A computer tracks the amount of juice used and bills a customer's account accordingly.

A station consists of a laptop computer-sized device mounted on a utility pole located near a shopping mall or neighborhood center. The owner could conceivably charge the car at home, at work or at a community station and never visit a gasoline station again, depending on the length of commute.

Also, the utility is planning to install "vehicle-to-grid" technology on a new Ford Escape plug-in hybrid. That will allow the vehicle to recharge itself at lower demand times and discharge power back to the electric grid at times of peak demand.

MGE is one of the first utilities in the United States to install the electric vehicle charging systems. Watch for additional charging stations to be installed in the MGE service area.



Green Power Tomorrow

Are you interested in reducing your carbon footprint from the conventional fuels used to generate the electricity you use? Let's say you want to significantly reduce your carbon footprint but you can't afford to build a wind generator for your home or install a photovoltaic system for your home or business? You conserve energy at home, recycle and drive a fuel-efficient vehicle. What else can you do to reduce your impacts? MGE has a voluntary program called Green Power Tomorrow (GPT) that helps you offset the emissions from conventional nonrenewable energy sources. For an additional \$0.0125 (1¼ cents) per kilowatt-hour (kWh), you can offset all the greenhouse gases you would normally produce. For example, the average residential customer uses about 600 kWh of electricity per month. Purchasing all of your power from GPT would add another \$7.50 per month. Residential customers electing to purchase electricity through GPT can purchase a fixed 300-kWh block or 50% or 100% of their monthly usage. The average small business customer purchasing all of their electricity from the GPT program

would add about \$14 per month to their bill. A growing number of small commercial customers are finding that GPT helps their business demonstrate commitment to maintaining a clean environment. Purchasing renewable energy through GPT helps:

- Address global climate change.
- Reduce the environmental impacts of developing fossil fuel dependence.
- Reduce our dependence on scarce energy sources.
- Reduce our dependence on foreign energy sources.

MGE ranked eighth out of 982 U.S. utilities for new solar power additions supplying the grid and second in the central U.S. region for total solar watts per customer. The rankings are part of an annual survey released by the Solar Electric Power Association, which is comprised of 560 utilities and solar industry members.

MGE's Green Power Tomorrow program has the second highest participation rate of all investor-owned utilities according to the U.S. Department of Energy's National Renewable Energy Laboratory.

Schools save energy (continued from front page)

Simply learning how to accurately run the building energy management systems can generate significant savings without sacrificing comfort. Installing lighting controls, motion detectors, high-efficiency lamps and ballasts and operating those systems efficiently can yield some pretty hefty savings. Gymnasiums, bathrooms, cafeteria/food service areas and outdoor lighting represent areas for possible lighting and equipment efficiency upgrades.

Another commonly overlooked area that yields long-term savings is preventive equipment maintenance. Having a detailed maintenance schedule covering lighting, food service equipment, motors and other mechanical systems is crucial for maximizing energy savings, maintaining a healthy building and minimizing equipment failure.

Opportunities for more savings

Encouraging students and teachers to turn off unused lights, computers and other unnecessary electrical devices can save districts thousands of dollars per year. Behavioral energy awareness programs and efforts to promote energy conservation can make a significant contribution toward efforts to reduce energy use. That translates into significant funds that can be spent on educational resources.

Many different student and school-based organizations have taken the lead on reducing energy consumption in their schools. After school clubs, ecology clubs, green clubs and active parent teacher organizations have increasingly found out how saving energy can yield impressive results for their schools and teach students needed skills like teamwork, goal setting, leadership, promotion, fund-raising and consensus building.

Local success stories

Competition between schools often leads to interesting results. Three years ago, students at Madison East High School came up with an Earth Day idea to raise awareness about school energy use. The idea was to measure how much energy they could save when lights, computers and other nonessential electricity loads were shut off for a one- to two-hour period. One challenge was how to quickly and accurately measure real-time interval electricity consumption for those two hours and compare it to a normal period. Ideally, schools would have access to building energy consumption interval data that shows real-time consumption. MGE

billing provided students with the electrical consumption several days later instead of weeks later. First-year results didn't show a dramatic decrease in electricity consumption, but students did have success. That success later translated into a competition between East and West high schools to see who could save the greatest percentage of energy in their respective schools on Earth Day. Although East High students jokingly said they won the contest, West High topped East 16% to 6% (official results were tallied by MGE). Stay tuned for the planned Earth Day 2010 interschool competition.

Madison's Hawthorne Elementary School After School Club started an Energy Club that monitored classroom electricity use and overall energy waste in the building. One significant finding was the amount of electricity it took to run the soda vending machine in the staff lounge. Students borrowed an energy meter from MGE and monitored the machine for several days to determine how much electricity the machine used. By putting the machine on a timer, changing incandescent lightbulbs to compact fluorescent lamps and issuing tickets to classrooms that leave unused lights on, students showed they could save over \$700 annually.

Over the last five years, students at Madison's Lincoln Elementary School have sold more than 7,300 compact fluorescent lightbulbs (CFL) at a CO₂ savings of more than 10 million tons. They've raised over \$10,000 to pay for school garden supplies, environmental field trips and the Homegrown Snack Program. "These are all programs that help the students become more aware of the world around them," said Claire Seguin, Lincoln Elementary teacher. Not only did students raise significant money, they learned a great deal about lighting efficiency and the environmental savings associated with replacing incandescent lighting with CFLs. Students taught their lightbulb customers about the value of saving energy.

Getting started

All of these examples demonstrate what a few committed individuals can do to make a significant contribution to reducing energy usage in their school buildings and helping the environment. All it takes is the commitment of adults and students to get involved, educate themselves, set goals and get started.

If you are interested in starting an energy club and reducing energy use in your school building, contact Jim Jenson, MGE Community Education Manager, at 608-252-7091 or e-mail jejenson@mge.com.

If you have any questions about MGE education services or want to request energy education materials, contact Jim Jenson, editor, at (608) 252-7091 or e-mail jejenson@mge.com.