



The Latest in Going Green

From plumbing to HVAC, from solar to landscaped roofs, from Frank Lloyd Wright to healthcare facilities, the green craze is no longer a fad.

According to a recent internet study by Autodesk, more than half the architects surveyed incorporated high-efficiency HVAC systems in 50 percent of their projects designed within the past twelve months.

In Texas we are incorporating green standards.

Check out the McKinney Green Building, a 61,000 square foot, three-story, speculative office building in McKinney Texas, scheduled for completion this month. Compared to a typical office building, the McKinney Green Building will use 30 percent less water and produce 50 percent less waste water. Non-potable irrigation water is provided by storm water stored in above- and below-ground containers. Geothermal heat pumps, under-floor air distribution, solar water heating and an exhaust air-heating and air-conditioning recovery system have been installed along with a variety of other significant elements, providing overall energy savings of 60 percent.

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Welcome to HVAccess!

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Energy Efficiency on a Budget

According to the **Energy Information Administration** (EIA), approximately one-third of a building's energy consumption is related to its HVAC system. Department of Energy statistics indicate that commercial buildings represent 17 percent of total U.S. energy consumption and 35 percent of electricity consumed. Whether motivated by money or the environment, we must all become more energy efficient.

Most solutions reported in the news and on the internet are geared toward new construction or purchasing expensive equipment. We've compiled a list of

practical solutions to save money and energy without breaking the bank.

- **Check cabinet panels.** If you have rooftop units, check the cabinet panels quarterly to ensure you're not losing chilled air. Make sure the panel is attached with screws and that all gaskets are intact.
- **Change or clean your air filters.** Dust blocks air flow through the filters, making your system work harder. Give your system and your pocketbook a break and change your filters regularly.

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Going Green

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BOMA is going green as well. The Building Owners and Managers Association is working to extend the energy efficiency tax credits provided in the Energy Policy Act of 2005. The window to complete projects is 24 months ending in December 2007. BOMA is lobbying lawmakers to extend the program through 2010. BOMA is counting on Senator Diane Feinstein from California to propose the extension this year.

Water Conservation. Reducing water consumption 20 percent below baseline fixture performance is an easy way for any facility to earn LEED points. Therefore, restrooms are key focus areas in LEED buildings. Investigate installing dual-flush flushometers to reduce toilet water use by more than 25 percent.

Medical Care facilities are learning to conserve water. Minimizing the risk of spreading infections and germs is a good reason to modify plumbing

fixtures, but you can also promote fixtures that are conservation friendly. Installation of sensor-operated faucets conserves water and reduces the spreading of germs. According to the Centers for Disease Control and Prevention, a nurse should spend approximately 56 minutes of an eight hour shift washing hands. Touchless faucets significantly lower water consumption in the healthcare setting.

A new children's hospital in Austin is currently 50 percent built, on its way to a February 2007 completion date.

The \$200 million Dell Children's Medical Center of Central Texas is seeking LEED certification for its hub-and-spoke building. Low-flow toilets and fixtures, native plants, high-efficiency HVAC and a gas-fired turbine generator providing steam and chilled water are significant features designed to assist in energy efficiency.

To expand on LEED, a new standard, 189P, is underway. The U.S. Green Building Council; the Illuminating Engineering Society of North America; and the American Society

of Heating, Refrigeration and Air-Conditioning Engineers have joined forces to develop a new standard. Standard 189P is not a rating system, but will be a standard available for building code incorporation. Currently LEED focuses on the larger commercial construction projects. Standard 189P targets the commercial marketplace at large, applying to commercial buildings and major renovation projects. Watch for 189P as it develops in the coming 12 months.

Frank Lloyd Wright. Wright renovations are heavily reviewed by the Association for Preservation Technology International and the US Green Building Council. Wright's architecture is renowned for being environmentally friendly for its time. With seventy years of design, Wright focused on energy efficiency and sustainability. Renovations of Wright homes focus on preserving the original design, while adding even more energy efficiency efforts. Wright's designs stand as a reminder that we need not sacrifice style when building green.

Bright Ideas in lighting

LED lights...from alarm clocks to traffic signals

Remember the 60's? Remember sit-ins and rock-n-roll? Well there's more to remember than you think. Those small red and green LED lights that illuminate power buttons, alarm clocks and old pocket calculators were a product of the 60's too. Who could imagine that those LEDs would morph into parking garage lights and traffic signals? In 1993 a Japanese company started producing blue LEDs, opening the market for a host of applications using white light.

Today LEDs are coming on strong. Companies are racing to produce affordable white lighting for commercial and industrial use. Based on semiconductor technology, LEDs are becoming brighter, more efficient, and are lasting longer every year. While production is still ramping up, vendors are finding new and better uses for these lamps.

LEDs can last more than 50,000 hours, providing 5.7 years of continual light. Up-front costs are still significant, but for large installations, it just may make sense.

One company producing low bay lighting fixtures for garage facilities claims its product consumes 60% less energy than similar incumbent lighting. The long lasting feature minimizes maintenance costs in replacing bulbs.



One of the more creative uses of LEDs is signage. Neon signs are subject to fires and vandalism, but LED signs made with plexiglass stand up to weather and vandals. LEDs solid-state and durability not only make them perfect for signage, but they are also a great fit for aircrafts, motor vehicles and boats where vibration is an

issue. Several cities across the world are ordering traffic lamps with LED applications.

White LED lighting has been in use in RVs and boats running off direct current (DC) for years.



Energy Efficiency on a Budget



- **Install an economizer.** An air conditioning economizer uses cool outside air and air flow management to supplement electrically cooled air. In Texas this technology is very important in the Spring, Fall and even Winter months. Sensors measure the differential between inside and outside air to determine when outside air will aid the cooling process. The air flow dampers are adjusted automatically to accommodate outside air. Since the compressor consumes the most energy, economizers will have a significant impact on saving electricity.
- **Maintain the economizer.** The linkage on the dampering system can seize up and break. If the economizer is stuck in a fully open position, it can add a tremendous burden to your system. Clean and lubricate the linkage and calibrate the controls annually.
- **Replace older blower fans with variable-speed blowers.** A typical fixed-speed blower fan runs only at full speed and consumes up to 500 watts per hour. When the unit kicks on, the AC motor can consume up to six times full power which may result in dimming lights. Variable-speed systems can provide energy savings up to 50%. In larger applications consider installing a variable-frequency drive (VFD) between each motor and its corresponding power source. This application can be used on motors that drive both fans and chilled water circulating pumps.
- **Clean cooling towers, evaporator and condenser coils.** Dirty coils reduce your system's performance, costing you more money to operate and decreasing its life cycle. Scale, corrosion, biological growth and



sludge decrease cooling tower efficiency and reduce its life cycle.

- **Check your load or test and balance.** As the use of space in a building changes, the furniture, walls and thermostats are moved, more computer and electronic equipment is added, you may find it is time to test and balance your system.
 - **Lighting.** Don't underestimate the importance of low temperature controlled lighting. Those halogen lamps are HOT! Install motion detectors or incorporate lighting into your building automation system.
 - **Optimal start-stop.** If you don't have building automation, consider implementing an optimal start-stop strategy that utilizes a database and outside temperature measurement to determine the optimum time to resume heat and air conditioning.
 - **Program your thermostats.** Effective programming of thermostats is the next best thing to automation.
 - **Budget your equipment changes.** Track expenditures of aging equipment. Know when to cut your losses and budget for equipment changes. Research equipment to determine how much energy and maintenance you will save.
 - **Building automation.** Its time has come. Technology allows us to control our buildings at the touch of the mouse. HVAC, lighting, security and fire can all be controlled to maximize safety and efficiency.
- Call on Frymire to help you reduce energy bills. Your Frymire representative will be happy to discuss these solutions in more detail and suggest other ways to improve your energy efficiency in the months ahead.

LED Lights (continued)

Old technology controlled the current of the three colors (red, green and blue) to yield a white light. Now white light can be emitted from a single diode. (For you folks who like to know how: A blue indium gallium chip with a phosphor coating is used to create the wave shift necessary to emit white light from one diode.)

Look into the future and you'll see LED lighting compete with fluorescents in a variety of applications. As the cost to mass produce LEDs diminishes, we may all enjoy the benefits of energy efficient, long lasting, durable, versatile lighting fixtures.

Frymire Employee Milestone Anniversaries

We have a great team at Frymire! Congratulations to the following employees who are celebrating milestone anniversaries with us:

5 years: Donna W., Samuel K., Juan J., Dolores M., Luis C., Dusty Y., Jorge F., Misael C.

10 years: Keith P., Lawrence Z., Gary V.

30 years: Andrew C.

Tech Talk by Tony Zemanek

“Engineering Times” reports that mechanical engineers at Purdue University are testing tiny refrigeration systems that could be used to cool microchips by direct contact. These tiny devices are manufactured with what could be the smallest known refrigerant “tubing” yet. These one square inch copper plate devices contain numerous grooves – 231 microns wide and 713 microns deep. They have been tested with R-134a refrigerant. The Purdue team tested the device by attaching it to a heating element that simulates a hot electronic component. They report that the physics principles that apply to normal sized refrigeration systems do not always yield the same predictable results with these micro systems.

Some predict that future electronic devices could generate 10 times more heat than conventional products, making conventional fan-cooled systems inadequate. The Office of Naval Research has reported an increasing need for thermal management systems in the propulsion and pulsed-power weapon systems of warships and combat vehicles.

Purdue may get bragging rights on the small refrigeration technology movement.



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