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Going Green

IN THIS ISSUE

Photo courtesy of T. Andrews Construction

T. Andrews Construction is building this high-end, energy-efficient home in the Old Irving Park neighborhood of Chicago. Energy efficient elements include a geothermal heating system, insulated windows and engineered panel construction.

Creating energy efficient homes and businesses is a major goal in "building green." New and old buildings can benefit from green technologies to save energy and money, and hopefully reduce their impact on the environment.

Building Green, Building Efficient

By Aris Dravillas

When T. Andrews Construction builds a home in Chicago, the company has all the walls, roofs and floors pre-engineered in factory-controlled conditions, and then ships them to the building site for final construction. This high-tech approach, called **engineered panel construction**, helps produce an eco-friendly building by maximizing the strength of the building. In addition, it uses the most efficient amount of materials, and the time the structure is exposed to the weather is greatly reduced—from an average of three weeks to five days.

"By using engineered panel construction, we've eliminated a lot of excess waste when compared to the construction of a traditional stick building home, which wastes a lot of lumber," said Dimitri Nassis, vice president of T. Andrews Construction. "In dumpster costs alone, we went from spending an average of $9000 per construction to $3500."

Nassis believes that using emerging "green" technology in construction, such as the process he uses when building homes and businesses, and then certifying them as energy efficient is important because it provides a way to "conserve energy and reduce your carbon footprint."

Building green today not only protects the environment; it helps people spend less money in the long run and saves energy as well.

WARMING TRENDS

One of the top emerging technologies in building green is **geothermal heat**. The initial system and equipment is more expensive, but the decrease in monthly heating costs is significant. "Typically you get 70% savings when compared to a heating system using natural gas," said Nassis. "[In addition] one geothermal system is the equivalent to planting one acre of trees or taking ten cars off the road."

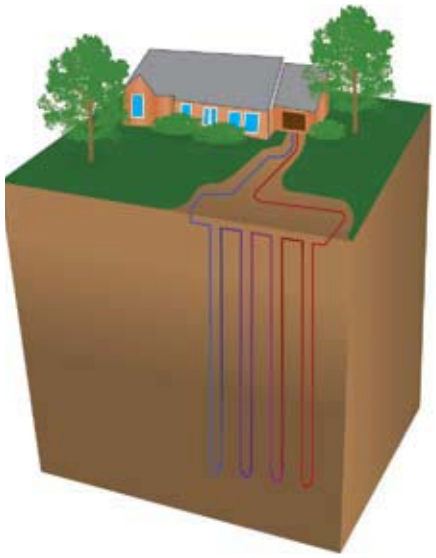
This technology works well because the earth absorbs almost 50% of all solar energy and remains between 50°F to 70°F, depending on geographic location, according to ClimateMaster, which installs geothermal systems.

It *was* built i

Engineered panel construction
engineered in a factory, then
Less material gets wasted, and

"By working with an underground loop system, geothermal systems use the constant temperature of the earth to exchange energy between a home and the earth for heating and cooling," according to the company. "In winter, the liquid circulating inside a sealed loop absorbs heat from the earth and carries it to the unit. Here it is compressed to a higher temperature and sent as warm air to your indoor system for distribution throughout your home. In the summer, the system reverses and expels heat from your home to the cooler earth via the loop system."

Another popular energy saving solution is installing **solar panels** to create electricity. Areas with warmer climates that get a lot more sun such as the southwest are more conducive to solar panels. Nassis believes that solar energy in areas such as Chicago where sunlight is not very prevalent is not a valid option yet, but predicts that could change in a few years. "What we are doing [concerning solar energy] is pre-wiring and preparing for the future when in five or ten years the technology is at a point where it does make sense to install," he said.



A geothermal heating system uses the Earth to heat and cool your home. While it is expensive to install, the costs are typically recouped in lower utility bills in about five years.

Currently the best use for solar panels in the Chicago area is for providing hot water for the home, he added.

Energy efficiency is key to creating a greener home, but there are many other options besides alternative heating systems and solar panels. Insulation, for example, can drastically affect the way a home holds in heated or cooled air. More efficient types of insulation help boost the "R-value," a term used to measure how much heat is retained. "The higher the number, the higher the amount of heat retained. If you use good insulation, your R-value will increase," said Nassis.

Instead of the pink rolls of fiberglass insulation, some buildings are using green insulation. One such product is **cellulose insulation**, which is made from recycled newspapers and is 40% more energy efficient. The cellulose is blown into walls and therefore fills better than traditional rolled fiberglass insulation, said Nassis. Yet Nassis believes the best and latest form of insulation is **spray foam**, which completely seals all gaps when sprayed on. This material can help reduce energy prices by up to 50% when compared to traditional fiberglass insulation.

Water conservation is another innovation to the eco-conscious building. Today, faucets and

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makes framing a house astonishingly quick. Whole sections of this Chicago home were transported to the construction site. Not only does this process save time, it also saves money. clients can save thousands in dumpster costs alone.

Photos courtesy of T. Andrews Construction

Certifying Efficiency

The Energy Star certification is an assessment of a building's overall sense of energy efficiency, and the certification is based on specifications set by the U.S. Department of Energy and the Environmental Protection Agency. Another third-party certification process called LEED is administered by the U.S. Green Building Council (USGBC). When a building is LEED certified, it is rated on not only energy efficiency, but also the selection of building materials, the quality of the indoor environment, water configuration, and the sustainability of the surrounding outdoor environment, according to the USGBC Web site.

showerheads are fixed with restrictors to produce less gallons of water per minute. Other water conservation efforts include **tankless water heaters**. These appliances provide hot water on demand, eliminating the need for the continuous heating of stored water. Tankless water heaters reduce water heating costs, but they also sacrifice a back up supply of always-warm water for showers and sinks. Additional eco friendly home options include windows and appliances specifically designed to save energy.

Energy efficienct products work harder on less energy to keep money in the homeowner's pocket, all the while preserving the environment's supply of natural resources. Using energy efficient products from popular brands such as GE and Electrolux can reduce energy bills up to one third—or roughly $700 per household.

Because of the multiple options on how to improve a home's efficiency, Nassis advises those searching for greener home options to go with something that is proven. "You can easily get confused by the vast amounts of green products out there and spend money on technology that isn't quite where it should be," he said.

CERTIFICATION IS KEY

Installing green products into a home or business is just the first step in going green during construction. It's also a good idea to prove efficiency via a certification process sanctioned by the Environmental Protection Agency, Department of Energy or the Building Green Council. According to the EnergyStar Web site, certified houses are 20% to 30% more energy efficient.

To be certified, a structure must meet guidelines set by the EPA to specifically measure the energy efficiency of the building as a system, taking into account the insulation quality, efficiency of appliances, window quality, air duct configuration, heating and cooling system selection and, additionally, a third-party verification.

To satisfy the third-party verification, some environmentally conscious homeowners choose to have their homes checked by eco-consulting companies, such as the Green Dream Group. Third-party certifications provide a non-biased evaluation of a building, and if they go well, lead to an official certification. T. Andrews Construction uses certifications such as these to prove they have taken the necessary steps to creating an environmentally friendly structure.

"We are what you call an EnergyStar Partner," said Nassis. "We have a testing company come in and perform **blower door and duct blower tests**. If we receive certain ratings, combined with insulation values and appliance specifications, the home becomes EnergyStar Certified."

According to Director Corbett Lunsford of the Green Dream Group, the blower test is only the first step when certifying a building. After the blower test is set up, an **infrared temperature scan** is performed to pinpoint low-efficiency spots in the building's heating system. Lunsford uses a hand-held device that shows if cold air is coming in around windows, doors and foundations by measuring the temperature. "You can see things like deficiencies," he said. "If a door is sealed correctly, you shouldn't see anything [during the infrared scan]."

Lunsford, who is also the head of Consumer Education for the Residential Building Committee for the Chicago chapter of the USGBC, said the last step in their energy audit is a utility bill evaluation. From this point, eco-consulting companies can fully diagnosis the energy situation of the building, and then provide recommendations on how to increase the efficiency.

The information gained from the blower test, infrared scan and utility bill evaluation can be used during various certification processes. These certifications provide a valuable asset because they declare a building as "environmentally responsible, profitable and a healthy place to live and work," according the USGBC Web site. It also provides a national standard for energy and environmental superiority.

THE BENEFITS

The Green Dream Group's recommendations are designed to be cost-efficient as well as energy efficient. "We want people to make their money back within five-to-ten years," Lunsford said.

Nassis acknowledges the same feelings about a quick turn around for building green. "People listen, people are interested, but it comes back to the economic benefits in terms of dollars and cents," he said. "Unless it is cost-effective, people say thanks, but no thanks. That's the difficulty."

Lunsford also believes that most consumers do not want to sacrifice aesthetics for efficiency. "Most people misunderstand how buildings work as a system," he said. Lunsford notes that potential clients will call wondering about the efficiency of their furnace, when they should actually be more concerned about the effects of having ten skylights in their home.

"Glass is the least efficient in a building, but people like it because then they feel like they are living the beautiful life," Lunsford said.

For some people, being "green" may be a psychological way of making themselves feel better, added Nassis. "Some think, I have my BMW, I have my Hummer, but I also have my Prius and my house is geothermal. Green justifies their lifestyle." Yet both men agree that green building is a trend that is not going to disappear anytime soon.

"It makes your house more comfortable, it lowers your utility bill and hopefully, it will help save the environment," Lunsford said. "It's the responsible thing to do."

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—Dimitri Nassis, T. Andrews Construction