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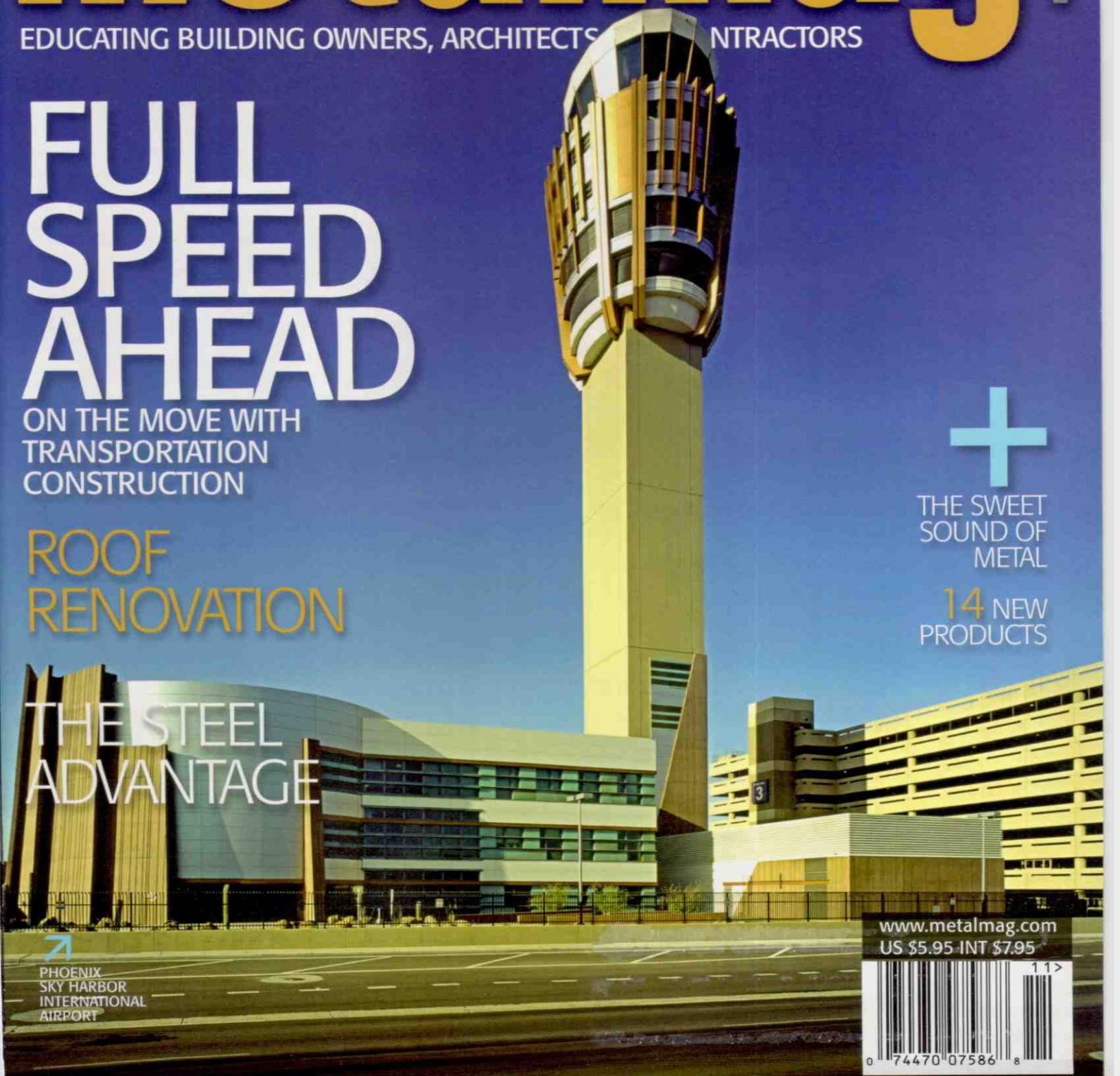

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STEEL HOME FOR SUSTAINABLE LIVING

A STEEL-FRAMED HOUSE DEMONSTRATES RESOURCE EFFICIENCY

BY ANNE BALOGH

JIM HORGAN, president of AmeriBuilt Steel Structures, Oviedo, Fla., has long touted the performance benefits of steel-framed buildings. He knows they are exceptionally strong, fire-resistant and engineered to withstand hurricane-force winds as fierce as 180 mph (290 kph). Now he's out to prove that these sturdy structures are environmentally sound, as well.

This year, Horgan introduced a green home made almost entirely from ready-to-assemble steel structural components, including galvanized 12-gauge steel columns, girts and purlins, and 26-gauge steel roofing and siding panels. More than 90 percent of the steel is recyclable, and the siding and roofing panels are Energy Star certified.

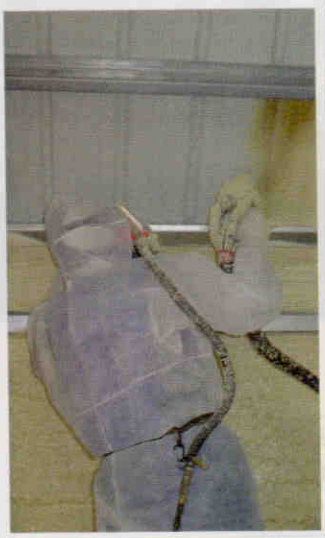
A prototype of the home recently was built in Geneva, Fla., to demonstrate just how green a steel-framed home can be. "I built it to include all of the energy-saving and environmentally friendly features I would want in a home to help others visualize the possibilities," Horgan says. Initially, the house will serve as a showplace for potential homebuyers who are interested in sustainable living and conserving natural resources.

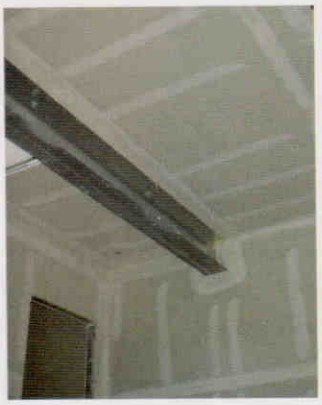
The house also will help dispel the notion that a green residence, especially one made of steel, has to look unconventional.

The house also will help dispel the notion that a green residence, especially one made of steel, has to look unconventional. With its gambrel roof and dormers, covered front porch and red shutters, the spacious 2-story, 4,100-square-foot (381-m^2) structure could pass for a traditional country-style wood-framed house.

INNER GREEN

The quaint façade does little to hint at the home's many green attributes, which include some of the latest energy-saving technologies, such as a tankless, solar-powered water heater; a SEER 15 heat pump utilizing an ozone-friendly refrigerant; double-pane insulated windows with low-E glass; and insulated steel garage doors. But the biggest contributor to energy efficiency is the wall and roof insulation: a soybean-oil-based polyurethane foam. Spray-applied as a liquid, the foam rapidly expands to fill





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every nook and cranny of the home's steel framework before hardening to create an airtight thermal envelope. "It gets into every crevice. It actually glues the whole building together as a single unit," Horgan says.

Because of the insulation's airtightness and high R-values—19 or better depending on application thickness—smaller, more energy-efficient heating and cooling equipment can be used. According to research by the United Soybean Board, Chesterfield, Mo., soy-based foam insulation can cut energy bills for homeowners up to 50 percent because of its ability to squeeze in between studs and around outlets. The foam also is an environmentally friendly alternative to petroleum-based spray-foam insulation because it uses renewable agricultural oil rather than consuming fossil fuels.

In addition to being green in an environmental sense, Horgan's home saves green by costing substantially less to build. "This home came in at about $70 per square foot whereas normal costs in Florida are $150 to $200 per square foot," he says. Horgan attributes the cost savings to the factory-fabricated and predrilled components, which allow more efficient erection, and the metal building shell, which costs about one-third less than masonry block and lumber framing commonly used in Florida.

Horgan also expects the home to accrue dramatic long-term savings by reducing overall energy consumption, particularly for air conditioning. He plans to monitor

MATERIALS AND SOURCES

RECYCLABLE STEEL FRAME, SIDING AND ROOFING—Metal Sales Manufacturing, Sellersburg, Ind., www.metalsales.us.com

SPRAY FOAM INSULATION—BioBased 501 from BioBased Systems, Rogers, Ark., www.biobased.net

ALUMINUM LOW-E DOUBLE-PANE WINDOWS—Atrium Windows, Dallas, www.atrium.com

INSULATED STEEL GARAGE DOORS—Clopay, Mason, Ohio, www.clopaydoor.com

DESIGN SOFTWARE—MultiBuild by Outback Steel Buildings, Portland, Ore., www.outbacksteelbuildings.com

DESIGN AND ENGINEERING—AmeriBuilt Steel Structures, Oviedo, Fla., www.ameribuiltsteel.com, and Outback Steel Buildings

BUILDER—Architectural Builders, Orlando, and AmeriBuilt Steel Structures

the home's energy usage in the year to come to document the cost savings.

DESIGN FLEXIBILITY

Homes are engineered to the owner's specifications using special design software that creates customized layouts and building plans. The program also calculates the price of the finished product to ensure it fits within budget requirements. Homeowners can choose from a wide array of options, including architectural style, floor plans, total square footage, and colors for the roof and steel siding.

After the owner receives the customized building plan and gets it approved by the local building department, the home can be fabricated and ready for delivery to the site in as little as four to five weeks. Each home arrives in a ready-to-assemble kit that includes precut steel framing members with holes already drilled for bolts. "Our buildings are designed for the do-it-yourselfer, or the homeowner can hire a local contractor to do the erection," says Horgan. "We supply complete plans and an easy assembly manual. Simple footing and slab foundation plans also are included."

Each home arrives in a ready-to-assemble kit that includes precut steel framing members with holes already drilled for bolts.

Horgan says the homes offer greater design flexibility than the typical stick-built structure because the steel framing permits large, open interior expanses the owner can divide as desired. "We provide the enclosed shell, but most of our customers design the interior. Our open frames allow endless floor plans," he explains.

Owners also can tailor the energy efficiency of the home to meet their needs and budget. "It's up to the homeowner to purchase and install their own insulation, HVAC equipment and water heater, but we can help them optimize energy performance by providing a list of products we have experience with," Horgan says. The home's gambrel-style roof also provides plenty of area for solar panels if the homeowner wants to install them in the future.

"This home allows people to build an affordable, energy-saving dream home while helping to save our planet's resources. This is truly the next step in responsible living," Horgan remarks.

Anne Balogh writes about architecture and construction from Glen Ellyn, Ill.