

on global warming, have brightened prospects for new tax credits aimed at energy-efficient and renewable technologies.

TUCSON, AZ — About 100 home builders, architects, and other housing industry professionals attended "Hands-On Builder: The Technology Lab for Builders" held at the Civano master planned community near Tucson, Arizona, on May 22 and 23. The sponsors — Partnership for Advancing Technology in Housing and

Fannie Mae — say they're planning another hands-on workshop for November.

CORRECTION — In an earlier news item about the merger of the Gas Research Institute and the Institute of Gas Technology (see *EDU*, May 2000), we presented the name of the new merged entity incorrectly. The correct name is Gas Technology Institute (Des Plaines, Illinois). We regret the error.

RESEARCH AND IDEAS

Estridge Homes Blends Tradition with High-Tech

By the looks of it, you'd never guess that Estridge Homes' new housing development in Westfield, Indiana — called Centennial — is one of the most technologically advanced communities in the world. Modeled after a 19th century New England village, the development features a picturesque town square, handsome old street lamps, and a white-steeped church that looks like it was lifted straight off a Christmas card.

The 100 or so new houses that have already gone up in Centennial are within walking distance of schools, parks, and shops, creating a real sense of community. This down-home, environmentally sensitive approach to development reflects a growing trend among builders to create neotraditional neighborhoods that are designed for people rather than cars. Over the next four years, Centennial will build out to 800 single-family homes and 100 townhouses, with prices ranging from \$140,000 to \$300,000. All will be located and styled to fit in with the *Our Town* feel of the place.

But underneath Centennial's traditional layout and veneers is a high-tech, energy-efficient infrastructure that is unsurpassed in the world of production building. Each new home and building will come standard with a touch-screen, ethernet-Internet appliance that is on all the time. There is no computer to boot up or connection delays while a modem dials in. Every home

and building has a Nortel high-speed cable modem with up to seven data port connections (four come standard). All data and video communications are routed through coaxial cables, enabling download speeds up to 27 megabytes per second (MPS) and upload speeds of 10 MPS. Phone lines are installed separately.

The homes' electrical distribution panels, designed by Cutler-Hammer (Milwaukee, Wisconsin), can accommodate an optional energy management system made by Smart Corporation (Las Cruces, New Mexico), which uses CBUS technology to control lights and appliances.

"The buying public used to say that the three most important things in real estate are location, location, and location," says Charlie Scott, executive vice president of Estridge Homes. "But we think it's time to rethink that old adage. Nowadays, the three most important things in real estate are location, location, and *bandwidth*."

In addition to its role as builder/developer at Centennial, Estridge Homes has set up an innovative new business — called First Mile Technologies — which provides Centennial homeowners with phone services, high-speed Internet access through a community intranet, security monitoring, and cable television. "A few years ago, we recognized that there's tremendous value in the infrastructure and connectivity between

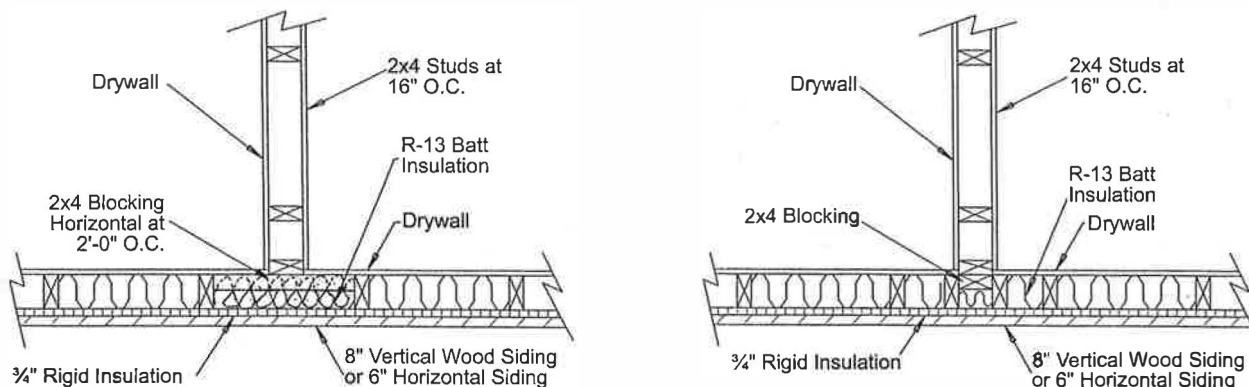


Figure 1 — This new inside wall lead detail (left) saves a lot of lumber, effects a tighter seal, and gets more insulation into the wall cavity than the old detail (right). To put changes like this into place, Estridge Homes gives the subcontractor a "pictorial wall scope," which combines text, drawings, and photos showing how the detail is correctly done.

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the homeowner and the originating backbone service provider," says Mark Flagg, director of special projects at First Mile Technologies. "And we asked ourselves, 'Why are we giving this away?!'" (See sidebar, "The Most Valuable Real Estate in America?")

Staying Three Steps Ahead of the Customer

Though Estridge Homes was growing, ringing up profits, and winning prizes (including the National Association of Home Builders' prestigious Energy Value Housing Award), President Paul Estridge decided to reorganize the company in 1997 to "make an assault on even higher standards." "You might say that we slowed down for a year so that we could speed up," he says.

Many changes were implemented as a result. To improve energy efficiency and comfort, exterior corners and T-walls were redesigned to get more insulation into the cavity and effect a tighter seal (see Figure 1 on previous page). The company also decided to wrap every house, in every price range, with ¾-inch tongue-and-groove rigid insulation and to upgrade to Andersen

windows and Trane high-efficiency heat pumps (see sidebar, "Spec Sheet: Centennial Model 625 (Estridge Homes)").

"We decided to make the energy-efficiency improvements despite the fact that they are a hard sell in Indiana, because electricity prices here are only about four cents a kilowatt hour," Scott notes. "We also decided to incorporate the envelope and HVAC improvements all the way up and down the product line, because it's the right thing to do. Most builders cut back on energy-efficiency measures in their low-end products, but we figure that those are the homeowners who need the energy savings most." (See Figure 2.)

Scott tells *EDU* that local utilities and subcontractors played critical roles in helping the company push through the changes. "It's hard for me to overstate what a great resource our local utilities — Cinergy, Indianapolis Power & Light, and Indiana Gas — have been to us," Scott says. "Some home builders are only interested in utilities if there's some kind of rebate program in place. But I'm here to tell you that it's well worthwhile to sit down with

The Most Valuable Real Estate in America?

"Connectivity is the most valuable real estate in America," says Mark Flagg, director of special projects at First Mile Technologies (Carmel, Indiana). "And home builders have been giving it away *free*." Launched in 1998 with capital from The Estridge Companies and other investors, First Mile believes that production builders and developers can create a profitable new business for themselves by becoming the area network provider for people who buy their homes.

"Whenever people purchase a new home, they effectively reboot their lives," Flagg says. "They are open and receptive and actually expect to change their service providers, including banks, doctors, phone companies, Internet providers, and utilities. That presents the builder with a golden opportunity to step in and provide a bundle of services, to become — in effect — the gatekeeper."

Currently, home builders don't interact much with their customers after the sale is completed, except maybe to address a complaint or perhaps to pursue remodeling work at some later date. But Flagg sees those new homeowners as a source of continuous income, or positive annuity, provided the builder/developer retains control of connectivity.

At the Centennial housing development in Westfield, Indiana, First Mile has teamed with Estridge Homes and Nortel Networks to build a state-of-the-art network operating center right in the middle of town. (See main story.) Each new home and building in the community, equipped with a touch-screen, ethernet-Internet appliance, and high-speed cable modem, will operate as a local area network.

"We are the Internet service provider. We are the local and the long-distance telephone. We are the cable company. We

are the community intranet. And we are security monitoring," Flagg says. "Gas, electricity, and water are still provided by outside utilities because Indiana hasn't deregulated yet. But as we expand the First Mile model into deregulated markets, the builder/developer can bundle those services as well."

Flagg says that one of the big reasons that Centennial has been outselling other master planned communities in the Indianapolis area is because potential buyers want the high-speed access and bundled services that Estridge Homes and First Mile are providing. "We are on the cutting edge. No one else is doing this type of total package, especially at our price point," Flagg says. He tells *EDU* that the equipment and services add \$2,000 or less to the price of a new home in Centennial.

"A few years from now a home without this kind of infrastructure will be viewed sort of like a house without plumbing," Flagg says. "As a result, you're going to see a noticeable shift in the way that home values and resale values are assessed."

When First Mile recently announced that it was going to offer its business model and technology package to other builders around the country, Flagg got so many responses that he couldn't keep up with them. He tells *EDU* that the company plans to expand into every major home-building market in the country soon; at the top of the list are Dallas, Texas; Denver, Colorado; Orlando, Florida; and Chicago, Illinois.

For more information, contact First Mile, 1041 West Main Street, Carmel, IN 46032. Tel: (317) 815-2514; Fax: (317) 582-2452; E-mail: Flaggm@estridge.net.

Spec Sheet: Centennial Model 625 (Estridge Homes)

GENERAL

Size: 3,293 ft² (306 m²)
(two stories and basement)

Garage: 444 ft² (41 m²)

Style: Traditional two-story,
with four bedrooms

Location: Westfield, Indiana

Lot size: 11,430 ft² (1,063 m²)

Price: \$253,166



ENVELOPE

Foundation: Concrete basement and block foundation wall

Floor: Open Joist 2000 floor joists; 23/32-inch OSB Sturdy-floor subfloor

Walls: 2x4 studs @ 16 inches o.c.; Owens Corning fiber-glass wall insulation (R-13); ¾-inch, T&G, xps rigid insulating sheathing (R-4)

Siding: Certainteed Wolverine vinyl siding

Attic: 12 inches of fiberglass (R-38)

Roof: Wood trusses 2 feet o.c.; plywood sheathing; 15- and 90-lb. roofing felt, 30-year Supreme three-tab shingles

Windows: Andersen Builder's Select, wood frame with vinyl cladding, double-pane insulated glass

Exterior doors: Perma-Door steel

Air sealing: Rigid insulating sheathing taped with Owens Corning Bild-R-Tape; polycell sealant around all windows, doors, pipe, and wire penetrations through plates, and exterior wall penetrations; Owens Corning FoamSealR sill plate gaskets

Interior partitions: 2x4 studs @ 16 inches o.c.

HVAC

Heating and Cooling: Trane heat pump (12 SEER)

Water heating: A.O. Smith electric water heater

Ventilation: Bath exhaust fans

OTHER FEATURES

- SMART switches with programmable lighting scenes
- SMART doorbell: intercom between entry door and any phone

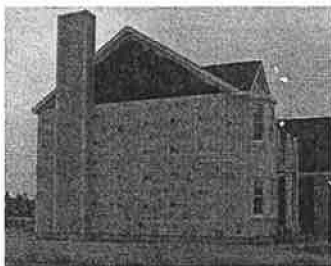


Figure 2 — Can this be *production* building? The ¾-inch tongue-and-groove rigid insulation, which is standard on every house, is carefully taped at the seams (left). The plumbing stack and all other penetrations into the attic are meticulously sealed (right).

the utility's builder rep and learn all you can." Scott says his local utility representatives will calculate the heat gain and heat loss on new home models, help with duct design, and provide cost analyses on various fuel and HVAC system options so that prospective home buyers can make an informed choice.

The company's long and friendly relations with its subcontractors also helped smooth the road to change. Estridge Homes has been working with the same HVAC contractor — R.T. Moore (Indianapolis, Indiana) — for 12 years. Business relations with the drywall contractor date back almost 15 years. (Thus, when there were shortages of gypsum board in Indiana a couple years back, the loyal contractor saw to it that Estridge never ran short.) The company enjoys similar "partnerships," as Scott calls them, with its insulation and plumbing subs.

How Quality Pays Off

Estridge's investments in high technology, energy efficiency, and overall quality have paid off handsomely. When Estridge unveiled the first model house at Centennial last summer, the company was hoping that 200 prospects would show up. Instead, the site was swarmed with 2,000. Not only is Centennial outselling Estridge's other 12 developments in the Indianapolis area, it's also luring buyers away from two nearby competitors who are offering "similar" homes for \$10,000-\$15,000 less.

"Some of the differences between our homes and the competition's are not real obvious to people just walking through," Scott says. "For example, one of our Centennial models has 22 windows while the competition's so-called 'similar' house only has 17. Believe it or not, prospective buyers can miss that kind of difference if your salespeople don't take the time to point it out."

Some other distinguishing features that Estridge's salespeople are carefully pointing out include:

- The high-speed, full-time Internet, ethernet, and video connections alluded to above
- Trane high-efficiency heat pumps
- Maytag appliances throughout
- Full-sized overhangs versus skimpy or no overhangs on competing houses
- Full flooring installed under the fireplace chase

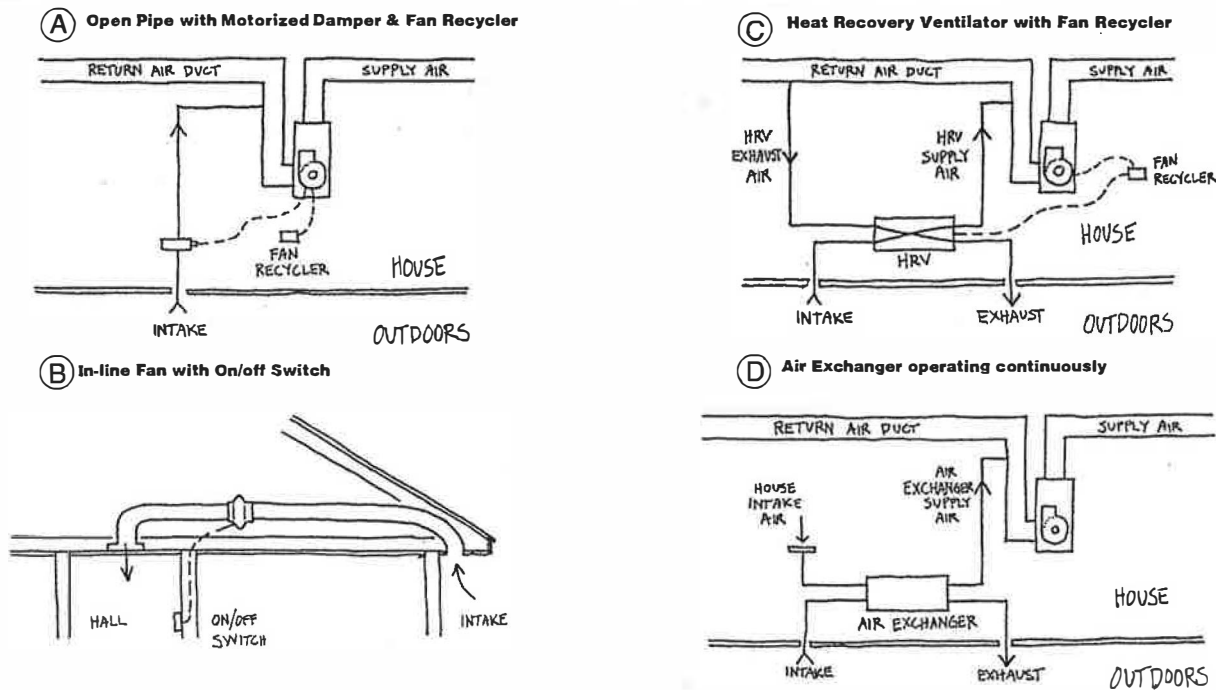


Figure 3 — Four new pilot houses, designed in conjunction with Integrated Building and Construction Solutions, will give Estridge Homes the chance to do a cost-to-benefit analysis on four different mechanical ventilation systems: A. Open 10-inch pipe with motorized damper and fan recycler; B. In-line fan with on/off switch; C. Honeywell heat recovery ventilator with fan recycler; D. Air exchanger operating continuously, tempering incoming air with conditioned house air before it's introduced into the forced-air distribution duct.

When it comes to "invisible" features, the company is especially proud of the three-year warranty that it introduced this past April. "It covers plumbing, HVAC, structural, roof, squeaks in the floor — most everything inside the home with the exception of normal wear and tear," Scott says. "We like to point out that most home builders only offer a one-year limited warranty, which says something about the confidence we have in the quality of our homes."

Future Thought

Good as the current product is, Paul Estridge and the rest of the management team are putting a lot of thought and effort into what lies ahead. The company recently joined Integrated Building and Construction Solutions (IBACOS), one of five Building America consortiums funded by the US Department of Energy. Four pilot houses, designed in conjunction with IBACOS, are being constructed at Centennial to test out new materials and designs aimed at making future models even more energy efficient. For example, each

pilot house is being equipped with a different mechanical ventilation system so that Estridge can evaluate their respective cost and performance (see Figure 3 above).

"We're also studying the feasibility of using structural insulated panels and different types of modular construction," says Rick Howell, director of estimating and purchasing. "One of our biggest challenges is getting skilled framers and other skilled labor. We think the way to overcome that problem is going to be through a manufacturing process and technology."

Another idea on tap for the future would be to create a franchise-type operation that would let other home builders around the country use Estridge floor plans, construction details, and management systems in exchange for a licensing fee. Estridge Homes has been discussing this concept with several national partners.

For more information, contact: The Estridge Companies, 1041 West Main Street, Carmel, IN 46032. Tel: (317) 846-7311; Fax: (317) 582-2452; Web site: www.estrledge.com.

NEW PRODUCTS

Plymouth Foam's New Interior Insulating System

Plymouth Foam (Plymouth, Wisconsin) has introduced a new interior insulating system — called Gold-Wall — for finishing concrete block or poured concrete walls. The system all but eliminates thermal bridging and, according to the company, provides significant labor

savings over interior stud-and-batt assemblies and rigid insulation panels put together with Z-strips.

Gold-Wall comprises 4x8 sheets of rigid expanded polystyrene (EPS) with steel furring strips embedded in the

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