Going Green: *Modular Builder Finds His Niche*

Builder's Experience

EASE OF INSTALLATION
DIFFICULT — EASY

SPEED OF CONSTRUCTION
SLOWER — FASTER

COST EFFECTIVENESS
POOR — EXCELLENT

RETURN ON INVESTMENT
IMMEDIATE — DEFERRED

COMPETITIVE EDGE
NONE — SIGNIFICANT

HOMEOWNER INTEREST
LOW — HIGH

Challenges: Trying to get a modular manufacturer to use different materials.

Would he do it again? Yes

PATH Attributes:

- Energy Efficiency
- Quality and Durability
- Environmental Performance

Builder Tips: "Do your homework up front to determine which features of the modular construction are compliant with local green certification requirements."

Builder:
David Bennert
Innova Homes
Asheville, North Carolina

Builder Type:
Small Modular Homebuilder

The Technology:
Modular Construction

The Project:
A 2,400-square-foot modular home certified by the North Carolina HealthyBuilt Homes program.

David Bennert is a modular builder who wanted to create a niche market by building green modular homes—homes that are energy efficient, resource efficient, and healthy to live in. To get a stamp of approval that would resonate with customers, he decided to build a modular spec home that would be certified by the North Carolina HealthyBuilt Home green building standard.

"It was an experiment that was very successful. It has given us a huge amount of exposure, and a niche market, which is where we want to be."

– David Bennert

BENNERT'S STORY

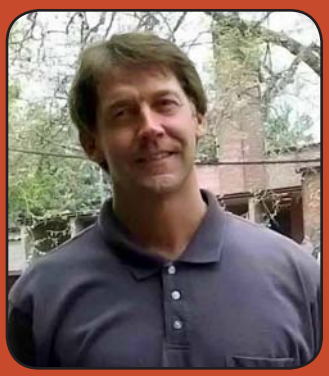
David Bennert builds only modular homes for a variety of reasons, the greatest being quality control. "The homes are consistent, better sealed, less prone to mold since they're constructed in a dry environment with well-stored and well-maintained materials, and they generate less construction waste," says Bennert.

"With modular construction we can do a project in a few months, so cash flow is more manageable and financing costs are reduced. Most stick-built homes take six months to a year. A simple home made from two modular pieces can be done in 30-45 days, and a cape cod in 45-90. In addition, most of the construction—the factory part—is completed at a fixed price, which leaves less room for error in costing."

Modular homes are built in a factory and trucked to the job site, where the different modules are fastened to the foundation and each other.

"From a green perspective, modular homes offer great advantages over conventional stick building, and help when you go for a green certification like North Carolina HealthyBuilt Homes. In all, the modular process takes care of about half a dozen points toward certification, which put us ahead of the curve compared to a site builder."

"It was a bit of an experiment to go for the certification. We didn't know how much going green would cost us; we didn't know which green items would be easiest to implement; we didn't understand what the documentation requirements would ultimately be for the certification.



David Bennert co-founded Innova Homes in 2003, a small company that specializes in modular homes. Innova builds about six homes a year ranging in price from $150,000 to $400,000.

Why build modular?

"There has been a tremendous rise in consumer interest in modular homes because they are generally less expensive and more environmentally friendly than stick-built homes."

Workers guide a second-story module into place with the help of a crane.

MODULAR

Modular homes are built in a factory and trucked to the job site, where the different modules are fastened to the foundation and each other. Modular homes can be built with significant cost savings over stick-built homes.

So we documented heavily, talked with manufacturers and energy specialists, and attended trainings on green building. The result was not just a green project; we also developed a comprehensive understanding of what it takes to build green that will help us for any project in the future."

"It's probably easier to go green with a modular home than a site-built home because some things are already taken care of by the modular manufacturer," says Bennert.

The house included a tree preservation plan and xeriscaping; low-flow fixtures; HVAC zoning; airtight construction; insulation 20 percent above code; low-e windows; ENERGY STAR qualified appliances; fluorescent lighting; low-VOC carpet, paints and finishes; and construction waste recycling.

WORKING WITH THE MODULAR FACTORY

"The challenge for us came when we tried to get the factory to either revise its process or raise its standards for specific green requirements," Bennert says. "When you have a company that is putting out two or four homes a day, and you tell them that you want your home built with finger-jointed studs or an alternative to OSB, it's difficult for them to bring in material for that specific home. Sometimes it can be impossible because they are often locked in with specific products' distributors. Even when it is possible, the administrative, handling, storage, and transportation issues are difficult to handle in a production environment."

"Even though the modular factory couldn't provide us with all the green options we wanted, we learned that we can still build a very green home," says Bennert's partner Tanya Williams. "A lot of the materials that the modular manufacturer is already using are green, even though they aren't necessarily marketed or promoted as green. Things like gypsum, OSB, and fiberglass batt insulation provided us points toward green certification. We also earned points because the gypsum was made from recycled content materials, the OSB came from fast-growth forests, and the fiberglass insulation was formaldehyde free. That was a pleasant surprise."

"But there remain a lot of opportunities that the modular companies could bring to the market and to general contractors like me without a whole lot of effort," Bennert says. "Simple changes include using insulated headers, engineered lumber, additional air sealing, and improved insulating practices. Once they realize that there is a market for these upgrades, I think they will be more receptive because it will allow them to differentiate their product in the market."

COSTS

"This first time around, it cost us about $10,000 in administrative costs to make the modular home green, including all the time we spent on research, documentation, and certification. This was our up-front investment in going green."

"We expect that the basic green certification in the future will cost only $2,000 to $3,000. This would include upgrades that really focus on getting the house up to ENERGY STAR standards—things like additional insulation and low-flow aerators."

TECHNOLOGY HIGHLIGHTS

This project included the following PATH-profiled technologies:

- Fly Ash Concrete
- HVAC Equipment and Duct in Conditioned Space
- HVAC Smart Zoning Controls
- Modular Construction
- PEX Piping
- Precast Concrete Foundation
- Recycled Content Carpet/Padding
- Xeriscaping

"These costs would be quickly recouped by the homeowner through lower utility bills. For example, the energy model indicated that the home would save $437 in heating and cooling costs annually, and I'd estimate another $200 to $250 in lighting and appliances, for a payback of only 3 to 5 years. The estimated heating and cooling is only about $30 a month for 2,400 square feet, which is very impressive for our climate."

MARKETING

"We're successfully using this home as a marketing tool to help us build a niche market," says Bennert. "The project has given us a huge amount of exposure. The local newspaper did an article on us because it was the first green modular home certified by North Carolina HealthyBuilt Homes. A large number of people have come through the house. Some were interested in buying it; others were just interested in the concept."

"We sold the home only three weeks into advertising, while similarly priced to less expensive homes in the neighborhood are still on the market over three months later. A couple in New York purchased it over the Internet, and they didn't have a clue about the green elements. Instead, they were sold on our attention to detail, the economics of the ENERGY STAR certification, and the low-maintenance features."

"A major benefit of earning a green certification is that it demonstrates the attention to detail you put into the home. You can't get a HealthyBuilt Home certification without such attention to detail, because a home is certified through a series of third-party inspections. The certification will obviously attract people who are looking for a green home, but it is also a powerful marketing tool to target consumers that are simply looking for a quality home."

NORTH CAROLINA HEALTHYBUILT HOMES PROGRAM

The North Carolina HealthyBuilt Homes (HBH) Program provides a certificate for homes that meet HBH's green home guidelines. To earn a bronze, silver, or gold certificate for their homes, residential builders must use sustainable, high-performance building strategies that reduce energy and water usage, promote renewable energy use, and protect the land where the home is built.

This Asheville home was the first modular home certified by the North Carolina HealthyBuilt Homes program.

The Partnership for Advancing Technology in Housing (PATH) brings together builders, manufacturers, researchers, government agencies, and other members of the housing industry. PATH partners work to improve the quality and affordability of new and existing homes. The program is administered by the U.S. Department of Housing and Urban Development's Office of Policy Development and Research.

To learn more about PATH, visit www.pathnet.org. To learn more about PATH-profiled technologies, visit www.toolbase.org/techinv.

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