

## *Pulte Homes Builds With SIPs*

Every home builder in the country knows there is a shortage of skilled tradesmen that will only grow more acute in the future. But very few have the vision, money and wherewithal to pursue a large-scale solution and implement it. One of them is Bill Pulte, founder and chairman of the board of Pulte Homes, the second-largest home builder in America with revenues last year of \$11.7 billion.

Seven years ago, Mr. Pulte started grappling with the labor issue. When he built his first house more than 50 years ago, he said in a recent interview, the primary source for skilled labor in the home-building business was the families that had been practicing the trades for generations. But in recent decades, the families that once raised their children to be carpenters and masons began to encourage their offspring to become doctors and lawyers, and other young people were not being recruited in the numbers needed.

After some months of thoughtful analysis, Mr. Pulte and the team he assembled concluded that the most promising long-term solution was to take computer-instructed machines that could be operated by less-skilled workers and adapt them to home building. The machines already existed for some aspects of home building; for the rest they were on their own.

Once Mr. Pulte made the leap to computer-driven solutions, he and his team began to rethink the entire home-building process from the foundation right up to the ridge vent at the peak of the roof. Machines could substitute for skilled framers, but what else could they do? For example, how could machines improve quality? What combination of machines and materials would make a house more energy efficient? Would the houses look any different? The answer to that one he knew had to be no. Buyers in every market have consistently shown that they favor a very traditional look. The houses could be built differently, but they would have to look the same as those built the old way.

After five years of trial and error, designing and redesigning the machines and the process and building entire houses or parts of them in the Detroit, Mich., area where Pulte Homes is headquartered, the company was ready to go. They built their first plant in Manassas, Va., a suburb of Washington, D.C., and started moving "product" out the door in December.

After a recent factory tour followed by a visit to a nearby Pulte Homes building site, I concluded that Mr. Pulte may have precipitated a sea change in the home-building business – he has shown how computers enable a builder to construct a better house in less time. At the Manassas facility, his firm is producing tract-built, energy-efficient houses with the construction quality that is normally associated with custom-built homes.

Visitors to the Pulte plant will not see the exotic hardwood floors and tumbled marbles that say "custom" to most home buyers; they will see the bells and whistles that say "custom" to a home builder: Machinery that produces straight and true walls, which means that the framing pieces will fit together easily and the framing will go up faster. Extremely stiff floor systems that don't squeak and that eliminate those late-night phone calls from irate buyers complaining that every time they use their treadmill the whole house shakes. An energy-efficient building envelope that will produce an unusually comfortable house with rooms that are not drafty, an inside temperature that won't vary from room to room and floor to floor, and a house that costs far less to heat and cool.

Pulte's exterior walls are structural insulated panels, commonly called SIPs. Though a rarity in Manassas, these are readily available in many areas with cold climates.

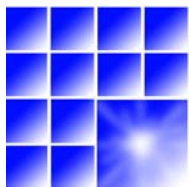
A SIPs panel is made by sandwiching polystyrene foam between extremely large sheets of oriented strand board. Compared to the conventional exterior walls made with wood studs that most builders use, SIPs walls are more energy efficient, and they can be made much faster.

Giving an example, Chippero said that in about 10 minutes, 12 people working with computerized machines can make an 8-by-24-foot long SIPs wall that combines structural framing with exterior sheathing and insulation; cut the holes for the windows and doors; attach house wrap (a material to keep any rain that gets under the siding from getting into the walls); install the windows and door frames; and load it on a skid to be taken to the job site.

With conventional construction, the same job would require four separate trades: carpenters to frame the walls and add the sheathing, a crew to install the insulation, a crew to attach the house wrap, and a crew to install the windows. For a 3,500-square-foot house, it would take five or six men eight days to frame both the exterior and interior walls using panelized stud walls that were previously assembled in a factory (if the crew started from scratch and "stick-framed" the house it would take an additional day). You would then need three more days for each additional trade to do its work. At the PHS factory, they can build all the walls for the same size house in four hours. Chippero said.

In an industry in which success is always eventually copied by a competitor, will other builders start fabricating parts of their houses in factories? The cost will discourage many. Few builders could have afforded to bankroll the research and development and the initial work in the Detroit facility, and the cost to merely replicate the plant in Manassas would be very high.

When asked exactly how much it all did cost, Mr. Pulte demurred. But with the resources available to him – Pulte Homes' net income in 2004 according to its annual report was \$986,540,000 – he could afford to spend a bundle, and judging by what I saw, you can bet that he did.



*"A better way to build"*

**Cornerstone**  
energy efficient homes

PO Box 94 • 1404 Eighth Street Suite 112  
Leeds, AL 35094

Voice 205-267-4414 • Fax 216-803-3865

[cm32@charter.net](mailto:cm32@charter.net)