

Lean & Loving It

Modular home producers are utilizing lean manufacturing techniques to increase productivity, quality, worker morale and safety within their factories—all the while dramatically decreasing labor costs and injuries among craftsmen.

By Charles Bevier

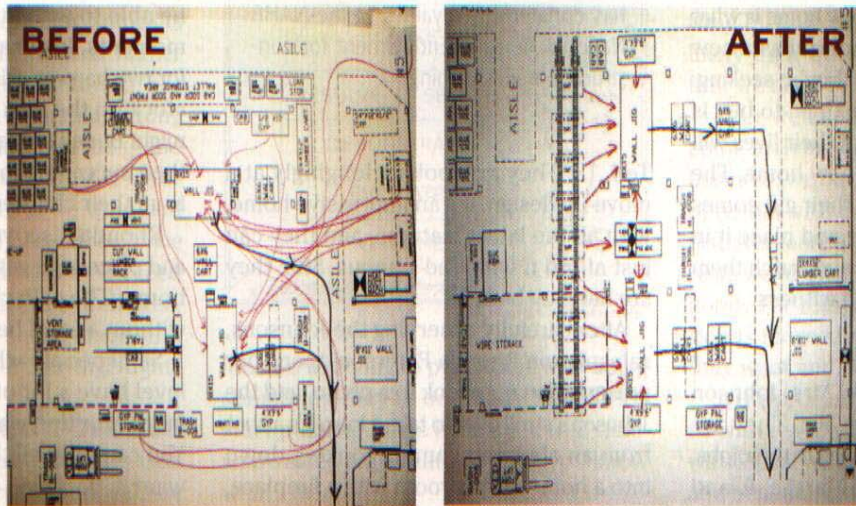
At first glance, “kaizen” sounds like a roll you might order in a sushi restaurant. But the Japanese term translates to “change for the better” and it was pioneered by Japanese automakers seeking continuous improvement—while earning worldwide market dominance in the process.

A world away, modular home manufacturers in the United States are now adopting its tenets. Also called lean manufacturing, the concept is to reduce waste in factory production—not just in using building materials more efficiently. The more important goal is to eliminate wasted time, physical exertion, mental frustration and miscommunication.

EXAMPLE IN BERTHOUD, CO

When the eight craftsmen who man the cross walls construction station at Genesis Homes’ Berthoud, CO, facility were first exposed to the concept of kaizen, they were initially skeptical. But that skepticism was soon replaced with unabashed enthusiasm.

The team, which has 87 years construction experience among them, first identified obstacles to their work-



By moving the tables and material, Genesis Homes’ Berthoud facility has made a dramatic change in material flow to the line.

flow and then began reorganizing their workspace with an eye toward making their workday far easier. All the tools and materials they need to construct walls at the modular building facility were moved close at hand. Inventory procedures were streamlined to make ordering and restocking

instead of walking more than 5 miles during the course of the day, they reduced their steps to less than 1 mile. The team also freed up 512 sq.ft. of factory space and increased their output of wall sections using less effort. The team went from an average of 28 minutes per wall to 19

minutes per wall, an improvement of 32%, says Al Haskell, the continuous improvement-lean manager at the Berthoud facility.

The team was able to reduce the amount of steps they took to construct a wall from 1,402 to just 520 steps—a 63% reduction in physical effort. This means

smooth and efficient. Their workspace was made safer, with fewer obstacles in their paths. Then the team painted their work areas, making them easier on the eye, cleaner and brighter. It took less than two days to accomplish. Sounds simple? It was. But the results were profound.



COMPANYWIDE EFFORT AT CHAMPION

Champion Enterprises (Auburn Hills, MI), the parent company of Genesis Homes, has gone lean in a big way. The company, which has 32 manufacturing facilities in the United States, has held 148 such kaizen events

within the last two years, says John Gledhill, vice president of industrial engineering, who leads the company's lean manufacturing efforts.

"Kaizen events are all about teamwork with the people on the factory floor, those who are directly performing the work, leading the effort. They know more about their job than any of us. This isn't a top-down



Everything in its place.

directive, where the stuffed suits are telling them what to do. We give them the concepts and some simple techniques, such as counting their steps to retrieve materials, and then they implement it," says Gledhill.

Champion employs in the neighborhood of 5,000 people and kaizen events have involved more than 1,000 craftsmen within the company so far. "One in five has had a shot at this compa-

nywide, and the results have been encouraging," says Gledhill. "Our goal is to really be at the top of our manufacturing game. We want to build a better house faster, with improved quality and less rework."

The events have led to a 30% cycle of improvement within the company. Some of this is attributed to freeing up wasted floor space within the factory that can be put to better use, some of it is attributed to reducing the cost of inventory of materials not used in a timely matter (or at all), and still more is labor savings from eliminating steps and reorganizing workflow for the better.

"There's also the nonfinancial rewards or soft benefits," says Gledhill. "We want to have happier employees, who are more satisfied with their jobs. Better ergonomics in the factory means we will have a better workplace overall and fewer injuries, which helps reduce turnover."

FOCUSING ON IMPROVED HOME BUILDING

William Griffiths, chairman, president and CEO of Champion, has refocused the com-

pany's mission more toward home building efficiencies and away from some of its ancillary businesses, such as retail centers and financing, says Kevin Flaherty, vice president of sales and marketing for Genesis Homes. "Bill Griffith has identified that our best growth opportunities lie in being a nimble and lean manufacturer. John (Gledhill) and Bill have worked together to create a new philosophy within the company, focusing more on our manufacturing capabili-

ties for different types of construction and making them more efficient."

REAL OPPORTUNITY

While less than 15% of homes are systems built in the United States, lean manufacturing offers producers a way to increase their bottom line and gain more market share, says lean manufacturing expert David Thompson, who is based in Denver, CO.

"This is a huge opportunity for this indus-

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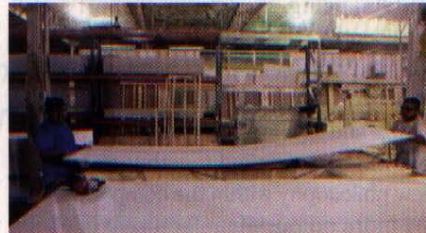
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try. Even a small part of the construction revenue generated by the large site builders would create a huge expansion for system builders. Likewise, Ford and GM could find salvation by entering the high margin home building field. Toyota Homes builds 4,600 homes each year in Japan, a far smaller market than the United States. If Japanese home builders set up low-cost manufacturing plants in Northern Mexico, as the auto manufacturers have already done, they would be able to make overnight deliveries of houses to 27% of the U.S. market. It takes 10 years of practice under expert guidance to reap all the benefits of lean manufacturing. The clock is running."

The urgency to embrace lean manufacturing isn't just about increasing market share or preparing for the future, manufacturers say. Rather, it's something that's already happened—widespread customization. Rarely do companies build the same home twice. With the increase in design sophistication comes a thousand-fold increase in the number of building materials and products for the home that man-



ufacturers have to track, order with just-in-time delivery, and install—from faucets, fixtures and flooring to every other product category.

This cascade of complications has caused many to invest in sophisticated software to track not only building materials but also the cost of labor to install products and the production efficiency of the factory line.

HOME BASE SOFTWARE

To augment its lean manufacturing, Cardinal Homes (Wyllisburg, VA) has invested in a computer-based order processing system called Home Base. It tracks sales orders,

Drywall close at hand at the Berthoud, CO, facility.

building materials, labor—everything it takes to build the home. "It's given us a real sophisticated tool to use," says Jill Duncan, product manager at Cardinal. "It eliminates a lot of wasted time and effort in handling an order." The adoption of the program and other lean efficiencies has led to an 18% reduction in the cost of labor at Cardinal.

The company has combined these initiatives with others to make the company function more efficiently, including cross training craftsmen at different workstations and giving the production manager the power to decide in what order the factory line will build each week's worth of homes. "Our production manager makes that decision so we don't have too many complicated designs going down the line back to back, which keeps the line from getting bogged down. Instead, we stagger complicated designs with less complex floor plans."

PACING OF PRODUCTION

At R-Anell Homes (Denver, NC), lean manufacturing practices have made the com-

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pany rethink its production schedule. The company was producing as many as 36 modules each week—simply because it could, says Charles Kilbourne-Jervais, director of process development at R-Anell. “You have to be careful you don’t overrun demand. We’re now down to 24 floors a week. We were running so fast, we were drying up our orders. By slowing down, we can focus more on quality.”

When they were building 36 floors a week, the company would often be performing finish work in their yard and then storing the units until the builder’s foundation was in. Now the company builds homes when the builder needs them, which reduces storage needs and the likelihood of weather-related damages to the units.

DIFFICULTIES IN CHANGING ATTITUDES

Change makes us humans uncomfortable. Even when R-Anell went to great lengths to explain to everyone in the company how lean manufacturing was going to benefit them, some resisted.

“When I began implementing lean here at R-Anell, I was asked by the president and CEO, Dennis Jones, how we can ensure everyone at the company supported the lean effort,” says Kilbourne-Jervais. “The HR director and I sat with each person and explained what we were looking for. Since I came here, we’ve lost a GM, purchasing manager, production manager and sales manager. Some left because of the high degree of uncomfortable change and others who were unwilling to make the necessary changes were forced out. Two of those who left, after seeing what other places had to offer them, asked for their old jobs back. We decided we were more likely to get to where we needed faster without them and did not allow them to return. The only way this works is by having the right people on the bus and the wrong people off the bus. If you haven’t read *Good to Great* by Jim Collins, move it to the top of your reading list,” says Kilbourne-Jervais.

REACTIONS THEN & NOW

Fortunately, many of those who stuck with the lean manufacturing program at R-Anell are glad they did. “This isn’t going to work,” said one manager, prior to one portion of the lean process, called Line Balancing Simulation. The final changes resulted in

more parts delivered with 25% less people, 45% less inventory and 100% perfect quality. “I never would have believed it was possible until I saw it first hand,” said the production manager after Line Balancing.

“I understand this. Being able to see the results of our decisions between rounds helped me understand where my original thoughts were wrong,” said a production supervisor.

“You can’t see everything that needs to

happen all at once. You have to improve in stages to be able to identify that next need,” said a zone manager.

“This process makes non-believers into believers,” claimed another production supervisor.

“Everyone is involved and lean is very hands-on,” added a production operator in the wall department. “The environment allowed faster changes through improved communication.” ■

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