

**GOODYEAR**

**GOODYEAR TIRE  
& RUBBER CO: FAYETTEVILLE**  
**LIVING LEAN**



# LIVING LEAN

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*Lean manufacturing is not about adopting Toyota's tools, or using Japanese terminology, it's a continuous improvement philosophy that becomes a way of life, says plant manager Billy Taylor*

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**GOODYEAR**



Billy Taylor in the warehouse

Goodyear’s Fayetteville plant in North Carolina was struggling to survive in 2010. It was a high cost plant and it wasn’t meeting market demand. The plant was producing 31,200 tires a day, but the market wanted between 36,000 and 38,000. Something had to change.

A lean manufacturing initiative in Goodyear’s plant in Lawton, Oklahoma had done very well, earning a Shingo Silver Medallion – the second highest honor associated with the Shingo Prize, the “Nobel Prize” of manufacturing. This successful transformation was led by Lawton’s plant manager, Billy Taylor, who moved to Fayetteville on June 15, 2010, to bring the North Carolina plant back up to speed.

Within six months the plant was producing 38,000 tires a day with no change in the number of employees or any significant investment in equipment. “In 2009 the plant was working about 14,400 hours a day,” says Taylor. “Today we’re making 38,000+ tires working over a 1,000 hours a day less. Since we started, the cost of production has come down by \$2.27 per tire.” In a plant with almost 3,000 employees, that’s some transformation.

“The challenge when I first came here was to meet the company’s goal to create sustainable economic value,” says Taylor.

“We weren’t doing that efficiently here. We were building a good product but we were struggling with the supply chain, the links between our people and our customers.”

Having trained in lean manufacturing in Japan, Taylor knew the answer lay in the culture, not the tools. “Many American companies fail on their lean journey because they focus on trying to look like Toyota rather than operate like Toyota,” he says. “They concentrate on

the Japanese vocabulary when they should be concentrating on learning and embracing culture change. Companies need to challenge assumptions and understand what reality really is.”

His first task at Fayetteville, therefore, was to get to know the people and understand what was happening in the plant.

With his family still in Oklahoma, he had time to find out. “I would come in at all hours in blue jeans and a baseball cap and just walk around, looking at the reality,” he says. He soon realized that the people themselves were not the issue. “We were not engaging them. It was almost ‘check your brain at the gate.’”

He started having meetings every day with 25 people at a time, one at 6.15am and one at 2.15pm, to explain the business case for change. “They could ask me anything they wanted to ask me,” he says. “We made a list of follow up items to address such as

**“THE COST OF PRODUCTION HAS COME DOWN BY \$2.27 PER TIRE”**

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cultural or social issues, equipment problems, system weaknesses and the answers were posted for all to see. With the opportunity to speak openly about the things that concerned them, and the visible evidence that their issues were being addressed, associates started to buy in to the concept that change could be beneficial for all.”

Tire manufacturing is not like automotive assembly where ready-made components arrive just in time to be fitted to the vehicle. At Goodyear, they buy raw materials, then make the components and carry out final assembly themselves. “Tire manufacturing is a cradle-to-grave process,” says Taylor. “The only things we buy are natural and synthetic rubber, oils, chemicals, fabric, and wire. We mix the compound, extrude the tread, coat and cut the fabric, and form the wire beads which go on the rim and then those products are sent to be assembled at the tire machine. So we create our own parts, assemble them, cure them and send them out to the market.”

With over 600 skus, there’s a great deal of variety, which is a challenge for the internal

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A first-stage tire builder crafts a tire. The plant is now using newer, more efficient technology

“WE CREATE OUR OWN PARTS, ASSEMBLE THEM, CURE THEM AND SEND THEM OUT TO THE MARKET”



Billy Taylor in his office

supply chain. “Customers love choice, and that means more changeovers,” says Taylor. “If I’m changing it means I’m not running. So what we’ve done is take somewhat of a NASCAR approach to code changing. Our teams are developing different kinds of changeover equipment to speed the process.”

Visual communication is an important element in keeping everything on track, but where some companies like to have charts all over the factory floor in an effort to engage people, Taylor believes in keeping it simple. “If you stand ten feet from those charts they don’t mean a thing,” he says. “We have a red/green system where the operators tell us what they’re doing every hour.” Boards showing production goals have been installed throughout the plant. Green means on target, red means the opposite. It’s an instant indicator of where help may be needed, which is all it needs to be, at this point. “Our position is that if it cannot be seen and understood in 10 seconds or less, it is too complicated.”

If anything gets checked at the gate these days, it’s egos, not brains. Taylor hates being thought of as the boss. His approach is to allow the people who do the work and are closest to the process to solve their own problems. In their own work area, they are the boss. Many executives in declining companies make the mistake of not listening to solutions from the shop floor, he says, because they believe that as they are higher up the organization, they must know better. This may be true in strategic respects, but when it comes to



Fayetteville tire assembly team

**“IF IT CANNOT BE SEEN AND UNDERSTOOD IN TEN SECONDS OR LESS, IT IS TOO COMPLICATED”**

the nitty-gritty of operating machinery and producing components, no-one knows the job better than the person who does it.

“It’s entitlement versus engagement,” explains Taylor. “Entitlement is ‘I tell you’. Engagement is ‘You tell me’.” He has a great example from the shop floor to illustrate that. “One of my tire builders had the CEO of the company visit him one day. He talked him through the whole process, explaining in detail how many tires he needed to build every hour to meet the pull system from his customer. He talked about how he could tell when the customer needed product, and when he could stop and do some TPM and lubrication. It was mind-blowing.” This

tire builder was initially opposed to the red/green system when it came in, says Taylor, but now it’s a way of life for him. “I was robotic prior to this,” the employee said. “I came in and I did my job. Today, I’m running a business.”

One might have expected strong resistance to change in a unionized plant like Fayetteville, but the opposite has been the case, as it often is when unions see that the underlying principle of lean is to preserve jobs, not to cut them.

The level of engagement continues to rise, and with it comes performance improvement and cost savings. A continuous improvement process was introduced right

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at the beginning whereby individuals from the shop floor presented their projects in twice-weekly meetings. “When we first started in 2010, participation was about 38 associates a month,” says Taylor. “In 2011 we averaged 262 associates participating a month. In 2012 it’s up to 532 people on average. This year we will complete over 756 different projects.

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“Those 532 associates generated millions of dollars in savings, \$1.8 million in cost out of our plant in one month alone,” he continues. “We call it exposing the hidden factory – the things we walk by every day but have stopped seeing. We have a target of over \$24 million in savings this year, just from the CI process.” Some early gains could be described as low hanging fruit, he acknowledges, “but these were the projects that helped us establish a culture that openly participates in change. With the associates motivated to find improvements in their own processes, we continue to improve every day.”

With minimal bureaucracy, CI projects are first scrutinized by peers and immediate



A tire going through a “test” drive in the Final Finish Dept

“WE HAVE A TARGET OF OVER \$24 MILLION IN SAVINGS THIS YEAR, JUST FROM THE CI PROCESS”



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supervisors, explains Taylor. "If your idea is not accepted, you know why because you were part of the acceptance process. They understand the resources they have available to them and if the scope of the project moves beyond the resources available that's when the leadership comes into the decision making process to free up the resources they need."

One of the fundamental changes required in lean manufacturing is to make what the customer wants, rather than build up inventory. The Japanese call the process kanban, and it's one of the few Japanese terms used in the plant—although Taylor still prefers to call it a pull system. "We pull through the factory versus push through the factory," he says. "What we've done is

link to the customer. We have a very robust supply chain network. I would call it best in class in our industry. We're putting the tire builder in the retail store—it's a market based kanban.

"Once the customer triggers a product it has to trigger all the way back to the raw materials," he continues. "All our processes have to be linked, not only in the manufacturing plant but in customer

service, logistics, and transportation. We're at the back end of it. So it's important that we cut down on the time to flow that product through our entire system. When it's triggered we run that product. We no longer run just for the sake of it. It's been an evolution. We've had to be very innovative in the way that we looked at our kanban. If we don't need it, we shut the machine down. We no longer run for volume."

**"ONCE THE CUSTOMER TRIGGERS A PRODUCT IT HAS TO TRIGGER ALL THE WAY BACK TO THE RAW MATERIALS"**

Lean manufacturing has been around in the United States for a good while now, but it's by no means as widespread or well understood as one might think. Billy Taylor speaks on the subject regularly at public events run by the Shingo Prize International Conference and The Association for Manufacturing Excellence (AME). How lean does he think manufacturing is in the United States in the 21st century? "I would say that American manufacturing has made progress on the lean frontier, but we still

have significant untapped opportunities. To reach and sustain the highest levels of efficiency, change must be driven from the bottom up," he says. "Many organizations continue to use the tools to drive culture change as opposed to using the tools to support culture change.

"The difference is subtle but critical," he explains. "It is analogous to the difference between push and pull when you speak of material flow. If you use the tools to drive culture change, you are 'pushing'

**"LEADERS MUST HAVE COURAGE AND HUMILITY AND A COMMITMENT TO BEHAVIOR CHANGE"**



A TPM event in 2012



A specialist in Component Prep completes a quality assurance inspection of tread component

improvement and sustainability is limited by the maturity of the organization. When you focus, instead, on changing the culture through leadership improvements and subsequently use the tools to support the needs of the people, you are in effect building a 'pull' for improvements. In this way you achieve real and sustainable economic benefits. There are many companies who understand this and in their lean journeys, these companies are linking the tools, process systems and associate behavior to evolve into a lean organization. The real opportunity for the future of US manufacturing lies down this path."

The inevitable conclusion is that a successful lean implementation requires a substantial mind-shift from everyone in

the organization—from shop floor right up to the top. Workers need to engage, and leadership must allow them scope to solve their own problems. Some leaders understand the need for change, but fear to relinquish control to the shop floor. "Leaders must have courage and humility and a commitment to behavior change," says Taylor. "They must be willing to build a culture that encourages and supports their employees to be innovative, to experiment with change, to take risks, and to learn from failures." **BE**

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