Bigger & Better

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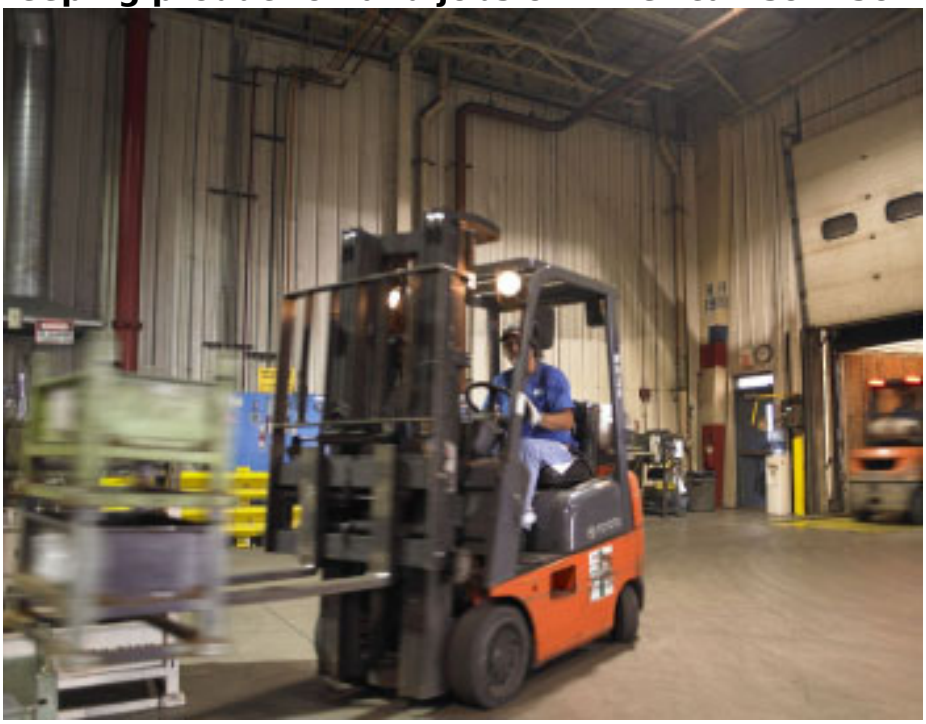
Toyota Industrial Equipment Manufacturing expands for the 11th time, keeping production and jobs on American soil. So what's their secret?



Toyota Industrial Equipment Manufacturing management credits its success to Toyota's commitment to continuous improvement, and the company's long-term vision to survive any type of conditions.

When it comes to process improvement, it's no secret that Toyota quite literally wrote the book. Yet after a particularly daunting year of layoffs and closures throughout American manufacturing, it's still a bit surprising to hear the word "expansion"—even from Toyota.

This past spring, TIEM (Toyota Industrial Equipment Manufacturing, Inc.) announced its Columbus, IN plant would begin manufacturing the company's line of diesel tow tractors. This would mean the 11th expansion for the 870,000 square foot facility—with an addition of 20,000 square feet coming in to accommodate the tow tractor manufacturing operations, as well as other equipment and production.

According to company leadership, the addition made perfect sense for this

particular facility. "Placing the diesel tow tractor production at the Columbus plant allowed us to take advantage of several manufacturing synergies already in place," says president and CEO of Toyota Material Handling, USA (TMHU), Shankar Basu. "The welding of the tow tractor frames and the assembly process are consistent with our lift truck manufacturing processes."

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Quality Control

Whether or not it makes sense on a micro level, it's the macro that people seem to have a hard time swallowing. When more and more global outsourcing is taking place, how is Toyota able to keep business moving at the kind of clip that allows for facility expansions?

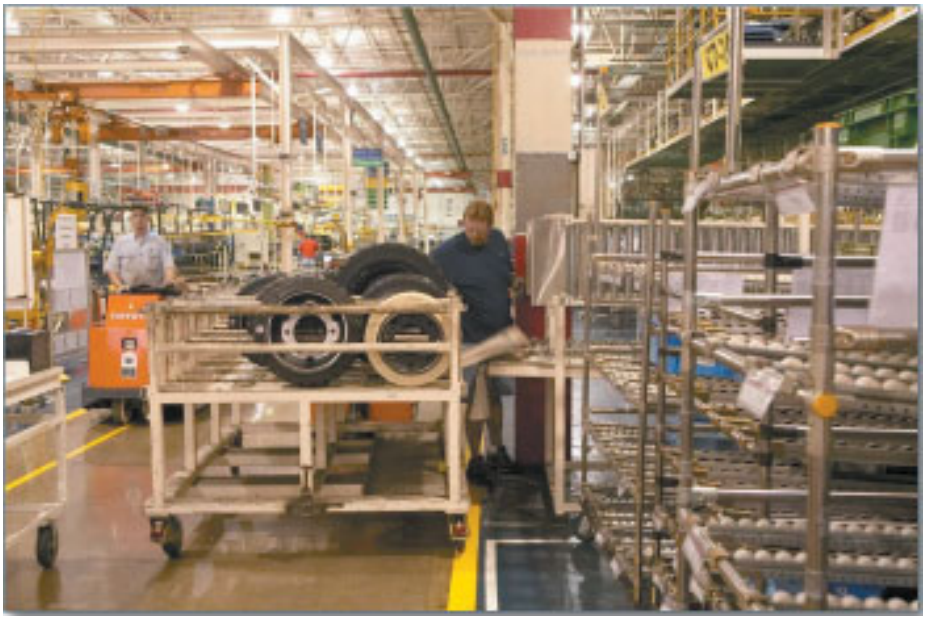
"We do have a lot of people come in and think that it's strange, because you hear a lot of other businesses going in the other direction," says Tony Miller, TIEM's senior manager of production engineering. "The buzzword is outsourcing, but we've never taken that approach. I guess we're somewhat egotistical, but we think we can do it better than anybody else."

TIEM's management team seems to think its ability to "do it better" goes back to Toyota's history—one so entrenched in continuous improvement, with an emphasis on the continuous: meaning a long-term ability to react to any type of conditions.

"Toyota is a very long-range thinking type of company," says Scott Redelman, manager of production control and business system planning for TIEM. "We want to be able to continue to support the market where the products are being used. The best way to do that is to have the manufacturing here, so we can react quickly when we see those particular needs," says Tom DePalma, TIEM's senior manager of

quality assurance.

Adds TIEM senior manager of purchasing, Thomas Lego, "From a TPS (Toyota Production System) standpoint, in-house manufacturing helps us control our quality, and reduce our lead-times."



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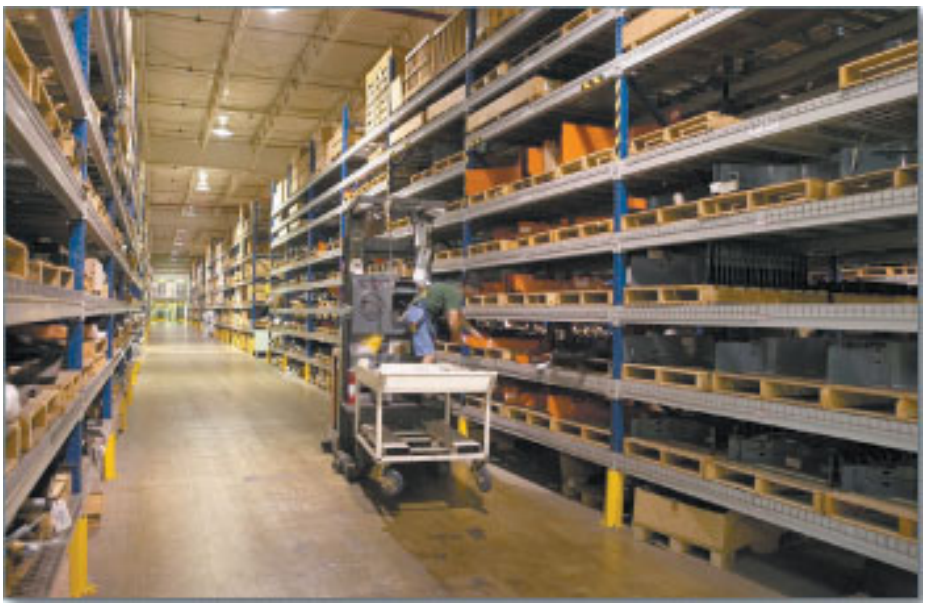
A Clear Vision

Long-range to these folks also means a kind of unflappable optimism in the ability of the company to survive the many economic peaks and valleys of its tenure. Continues Redelman, "Our culture understands that the market is going to come and go."

So when other companies are laying off associates, Toyota is playing a waiting game. Part of this comes from having been through it before and coming out ahead. "We had a big downturn after 9/11, and no one was laid off," says Lego. Many of the excess employees were redistributed into kaizen improvement groups.

It sounds basic, but a lot of this kaizen improvement, in the slow order cycle, allows Toyota to review job processes and make safety and quality improvements so they can be prepared when the market rebounds. "The associates came away with such an appreciation that we protected their jobs and prepared for future growth," says Lego.



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The Economic 'Hangover'

After the dip in 2001—a period where orders dropped from 25,000 in 2000 to 18,000 in 2001—Toyota came back with a fierce grab in market share, settling in as the number one forklift manufacturer in the United States. The company attributes this to its readiness throughout the slow cycle.

"You've got to make sure you don't come out of these things with a 'hangover' from times when the economy is down and orders aren't quite up to speed. We're not going to go half speed out there and then all of a sudden realize it's time to ramp up," says TIEM's customer center manager Fred Williams.

"What we did was, we redesigned our production lines and staffed them accordingly, to build the orders that we were getting in an 8-hour period—at the same pace as we're doing it now. We took the excess personnel and put them into kaizen improvement groups. We wanted to keep all of our expertise in-house. The economy was going to come back, and this time it is too. The urgency is to make sure we are what we need to be when the economy comes back, so we have no lag in quality or on-time delivery."

On the factory floor, Toyota associates certainly walk the talk. Involvement is the name of the game, an element of which includes the "West Wall Meetings" that take place at the beginning of each shift and re-convene every two hours. These meetings provide associates a chance to be briefed on the day's production goals or address problems.

Spreading Knowledge

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"We have tour groups come in that are sent by the CEOs of their companies to 'go find out what Toyota does,'" says Redelman. "We also take that same approach with our suppliers," adds Lego. "They're a partner with us, and we want to support them and help them. If we can't give them the volumes we'd like (in an economic downturn), we can at least go in and help them understand and improve their processes. That makes them more efficient and financially sound. It's not just here that we take that philosophy."

"Book Smart" TPS

The folks at TIEM are also quick to point out, however, that TPS is no quick fix—and not something you can just learn from the books. "People are reading the books and seeing more of the mechanical side—the kanban and the TPS—but they don't understand the cultural and human resources part of it. They're not seeing the big picture," says Redelman. "What you have more importantly, is respecting your people and the culture. I don't know why that is, but for us it was very easy because we grew up with it. We've evolved, but that's always been part of our principles here.

"For those who want to copy it, sometimes they just want to pick and choose the pieces that they think can plug in easily," continues Redelman. "One of the very first questions that we get on some of the 'TPS Days' where we bring customers in who want to learn more about the production is, 'what is the first thing I should do?' "It's not that people don't want to do it, they just don't know how," adds Melinda Beckett-Maines, Marketing Manager, TMHU. "They get the book and they try to follow the manual, but you can't do that. It has to be a culture shift."

Seeing Is Believing

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The idea is for associates to know the day's target's exactly—almost down to the minute. This communication is improved with the use of what TIEM calls "ANDON" boards, which are big visual displays of the number of trucks being produced that day, and real-time progress. ANDON boards ensure that if overtime is warranted that day, associates know almost immediately at the start of the shift.

Associates are also encouraged to share their ideas through a kaizen suggestion group program—one which requires three improvement ideas per person per month. According to Toyota, the suggestion group comments have an implementation rate of 96 percent. Other approaches include TIG (Toyota Improvement Groups) where cells participate in yearlong projects to improve their specific areas of the production line. This type of active participation helps ensure TIEM remains on it's toes—especially considering 70 percent of the orders coming through this Columbus facility have custom options and 45 percent special design requests.

It's these types of initiatives—with TIEM associates at the core of the facility's goals—that keep the company competitive year after year. "It's all driven by the culture where people are your most important assets," says Redelman. "When we talk about kaizen, we're trying to grow the culture of constant improvement. We're always trying to promote the idea. It doesn't have to be the biggest improvement. We give our monthly kaizen award to an associate, but it's not for the idea with the most cost savings. It's about the spirit of kaizen. Those big ideas will come."

The Green Evolution

Toyota sold its first forklift in the Unites States in 1967, and manufactured its first on domestic soil in 1990. Along the way, technology is not the only thing to have advanced. As it stands today, Toyota’s commitment to environmental sustainability is one of its key values. Highlights include:

- ISO certification in environmental management.

- Zero landfill status for manufacturing, as of 2002.
- Recycling programs where all proceeds are donated to charitable organizations.
- VOC levels at 87 percent below the permitted limit.
- Water contaminants at an average level of 2.63 percent of the current EPA mandate.
- Lift trucks which are 99 percent recyclable.

TPS: A Place In History

For Toyota, its storied history serves as a foundation for what has become the basis for much of today's industrial process improvement strategies. According to the company, the Toyota Production System (TPS), developed by Kiichiro Toyoda, the founder of Toyota Motor Company, was evolved through many years of trial and error to improve efficiency.

Toyota's production control system has been established based on many years of continous improvements, with the objective of "making the vehicles ordered by customers in the quickest and most efficient way, in order to deliver the vehicles as quickly as possible. At the core is a complete elimination of waste.

TPS was established based on two concepts:

Jikoda- Loosely translated as "automation with a human touch", jikoda means that when a problem occurs, the equipments stops immediately, preventing defective products from being produced.
Just-In-Time (JIT)- Each process produces only what is needed by the next process in a continuous flow.

Toyota describes these elements of the TPS system in more detail:

Jikoda

- Jidoka means that a machine safely stops when the normal processing is completed. It also means that, should a quality or equipment problem arise, the machine detects the problem on its own and stops, preventing defective products from being produced. As a result, only products satisfying the quality standards will be passed on to the next processes on the production line.
- Since a machine automatically stops when processing is completed or when a problem arises and is communicated via the "andon (problem display board)," operators can confidently continue performing work at another machine, as well as easily identify the problem cause and prevent its recurrence. This means that each operator can be in charge of many machines, resulting in higher productivity, while the continuous improvements lead to greater processing capacity.

JIT

- When a vehicle order is received, a production instruction must be issued to the beginning of the vehicle production line as soon as possible.
- The assembly line must be stocked with small numbers of all types of parts so that any kind of vehicle ordered can be assembled.
- The assembly line must replace the parts used by retrieving the same number of parts from the parts-producing process (the preceding process).
- The preceding process must be stocked with small numbers of all types of parts and produce only the numbers of parts that were retrieved by an operator from the next process.

Now the company's "spirit of making things" is referred to as "The Toyota Way" and continues to evolve.

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