

Lean Manufacturing In the Moldmaking Industry

Many think that lean manufacturing doesn't apply to the moldmaking industry. However, by not considering the option, moldmakers could be missing out on opportunities to cut costs and increase business.

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Many of you have probably heard of lean manufacturing from different stories, explanations, successes and failures, leaving you wondering what this could possibly have to do with moldmaking.

For most people, the lean dialogue started in the early 1990s when the book *The Machine That Changed the World* — written by James P. Womack, Daniel T. Jones and Daniel Ross — coined the term “lean” in its comparison of Toyota and its famed Toyota Production System to the competition — particularly the Big 3: GM, Ford and Chrysler. It chronicled the vast difference in performance, including quality, cost, delivery and even brand performance. In fact, at New United Motor Manufacturing, Inc. (NUMMI), the joint venture between General Motors and Toyota, both the Toyota Corolla and Chevy Prizm share exactly the same parts, process and design. However, Toyota's brand is valued so much that over the life of the vehicle it demands a 15 percent premium over its General Motors sister. *The Machine That Changed the World* circulated quickly through the auto industry and spawned a pursuit that still continues today in chasing Toyota's success through lean practices.

Because lean manufacturing was coined within the auto industry and centered around the copying of Toyota's practices, many industries struggled, and continue to struggle, about if and how lean manufacturing applies to them. This includes the moldmaking industry.

Lean Moldmaking?

In almost every industry, company or department, you can hear the same thing



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— lean doesn't apply to us, we're different. There are tons of reasons offered, starting with, “We don't churn out 1,000 automobiles a day” to something like, “But our customers are really, really difficult.” But different just means that the results, problems, opportunities and results will be different.

Why do people make the mistake of overlooking lean success? First of all, people often try to copy the end result of lean instead of applying the lean thinking

process to their situation. As a result, people put in place tools such as 5Ss, kanban cards, andon cords, U-shaped cells and all kinds of other tools that might have worked at Toyota. However, try to build airplanes, generate electricity or serve patients in the emergency room in a U-shaped cell. No one will ever learn to become a best-selling author by taking a previous best seller, crossing out the author's name and writing in their own. But that is exactly how most lean efforts

begin and then fail — by trying to copy solutions that solved someone else’s problems.

Lean transformation involves not only tools, but also a process of thinking and change. It begins with rules and principles of how to think lean. Then it moves to examining your own current reality, your own ideal state, and then utilizing lean systems thinking to help you close the gap. This process can apply to any type of company and any area of a company. A controller’s department can change the closing of the financial books process from taking four weeks to taking only four days. This provides more time for value-added activities and costs a whole lot less.

This thinking process can be applied to food process, healthcare or moldmaking — yielding different but dramatically successful results. In one instance, an electric/gas utility company developed a way of doing business that saved millions of dollars and improved customer satisfaction. But achieving these kinds of results is hard work, especially when you can’t just copy from someone else’s success. There are challenges, setbacks, failures and difficulties. If it wasn’t hard, however, anyone could do it and then it wouldn’t give you a competitive advantage. No one has been able to catch up to Toyota despite years of trying — that’s as close to a sustainable competitive advantage as we have ever seen.

Customer Order to Cash-in-Hand

Many moldmakers say that they are afraid of foreign competition. Cost and quality is one thing, but losing domestic orders because of leadtime should never happen. The pursuit of leadtime reduction is a major benefit of any lean transformation. Leadtime encompasses all of the time accumulated from the moment a customer places an order to the time you receive cash. It is easy to overlook this all-important “time” measure until you have exceeded the “promised” date to the customer. But time is the most important measure, because it determines the results of the previously most-important measure — money. You save money, save time; invest money, invest time; waste money, waste time. By reducing the time it takes to do things, particularly deliver value to the customer, you will make more money. There is no possible way to spend as much money in four hours as you might spend in four weeks.

The Seven Wastes

The seven wastes provide a lens and a language that help people identify the opportunities for improvement. The following are seven types of waste that can be identified in any environment:

Overproduction	Producing more than the end-customer or immediate in-process customer needs.
Transportation	The extra movement of materials, particularly double- and triple-handling.
Motion	The excess motion beyond the value-added activities.
Defects	Not just defects to the customer, but any defect within the process.
Inventory	All inventory is waste, the only good thing that can happen to inventory is to sell it.
Overprocessing	Doing more than is required and desired by the customer.
Waiting	Waiting for information, people, tools and materials can have a major impact on leadtime and cost.

Through lean thinking, you learn to focus on the difference between activities that add value for the customer versus non-value-added activities. When first studying a process, you may find that value-added activities usually represent less than one percent of the total time for a process. That shocks most people the first time they see the results. After all, they’ve lived with this process keeping them very busy, so how could all that time not matter to the customer?

What happens is that you’re so busy with the one percent, you aren’t even aware of the other 99 percent. You forget that it exists, how it got there, who is responsible for it, and so on. All of that waste showed up in the process while no one was looking. It isn’t anyone’s fault and it wouldn’t matter if it was — the job is to start eliminating the waste in order to improve leadtimes, satisfy the customers and throw away less money.

Things like “leadtime” and “non-value-added time” sound like high-volume manufacturing issues, but they apply equally — often with greater benefit — to high-variety, low-volume manufacturing such as moldmaking. For example, in the moldmaking process, what percentage of the time that steel is in your shop are you actually adding value? Most likely the answer is less than one percent. The remaining time is spent waiting on machines, people or information, being reworked because of defects or being moved again and again.

In another example, a company department responsible for the repair and refurbishment of transformers, particularly the kind that sit outside your house, started looking at leadtime. Transformer repair is difficult, because you never know what you will find when you take it apart and test it. So, the department couldn’t plan very well. It took them an average of 33 days to get a transformer out the door.

The department had been established as a cost-center to serve others in the company, but the cost was getting out of control. They became a candidate for outsourcing. But through a careful study of leadtime and by removing as much non-value-added time from the process as possible, delivery went from 33 days to 22 hours. In no time the backlog was eliminated and then, with nothing left to work on, the department signed a contract to bring in work from the outside. Now generating revenue, it actually added a shift and grew the business with the only thing different being the significant reduction in leadtime.

The Power of People

Many owners, executives and managers complain about not having enough time to make all of the improvements or investigate all of the problems that they have. They shoulder the burden and quickly find themselves beyond their limit. The answer to this problem already exists in the people of the organization. There is tremendous potential wasted by not engaging, educating and empowering people to make change happen.

Most companies don’t waste human potential by design, but are so busy and occupied with doing the work that there’s no time left to think or talk about how the work is being done. Focusing on the how is where the opportunity can be found, but we’re just too busy running around trying to get everything else done. Many people say they have an open-door policy or that they have “empowered” all of their people to create change and improvement, but good intentions are not enough. Without structured processes to make improvements and shared thinking about how to make those improvements, good intentions will not turn into results.

One such process is the kaizen workshop. The kaizen workshop utilizes the ideas and experience of employees who are closest to the work to systemati-

cally drive out waste from any process — from how tools are requisitioned, to how parts are made, to how machine tools are changed-over (see *The Seven Wastes*, page 34). Remember the team that reduced the time it took to build a transformer from 33 days down to 22 hours? All of that happened through the structured process of kaizen.

Why do kaizen workshops succeed? The kaizen workshop integrates two kinds of success: business success and people success. Instead of getting business results at the expense of people, it gets both kinds of success, which leads to greater commitment and support in implementing the results of a workshop. The business success is clear: by dramatically reducing leadtime and eliminating waste, the processes will have better quality, cost and delivery than ever before. People's success results from giving people a voice in how their work is done and how they serve customer needs. This unleashes the potential in people that, when properly harnessed, can drive your business to the front of the pack. This doesn't happen naturally and requires the structured

process of the kaizen. In workshops, you often hear "that's the first time anyone ever asked what I thought."

Getting Started

The first step in getting started is getting trained. You must be prepared for the journey on which you are about to embark. Training does not have to be a long process, but without learning the rules and principles of lean thinking, you will get off to a rocky start. This is the foundation on which to build your success, so don't try to take shortcuts or find the cheapest way possible to fill the requirements. When talking about the future success of your firm, quality matters more than anything.

Most companies start lean as an extra initiative. When approached this way, it is very easy for lean to become an expendable effort, falling off the radar screen of people before it even gets started. Instead, address a particular problem or project that has to occur regardless, and use lean systems thinking to make that a successful effort. This approach will not only get something accomplished more successfully, but also will begin the valuable learning needed to

transform your business and the moldmaking industry.

And lastly, mistakes will be made. But experience in the lean transformation process limits those mistakes and makes the most of your successes. Experienced help — whether it comes from hiring someone who's been on the journey or whether it comes from an outside coach, will help with pushing through difficult barriers, facilitating kaizen workshops or coaching managers in their new role — will be critical to making the changes sustainable for your business.

Remember, lean is not about a fad, a tool or extra work, it is about creating sustainable change that drives both business and people success for your business. The journey is difficult but worth it, and in the moldmaking business, lean will determine who survives and who does not.

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