EVOLUTIONARY SOLUTIONS

Lean In

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"Waste" is a "four-letter" word, especially for manufacturers who attract and retain customers only when they add significant value. Waste is anything that does not add value to the product being sold to the end customer. Some examples include motion, defects, overproduction, transport, waiting, inventory, and extra processing.

But how do manufacturers identify waste and eliminate it from manufacturing processes? And how do they do this on an ongoing basis to ensure that waste does not creep back into their workplace? The answer is to adopt philosophies and systems that are proven to work. Manufacturers must Lean in to this effort relentlessly to get desired results.

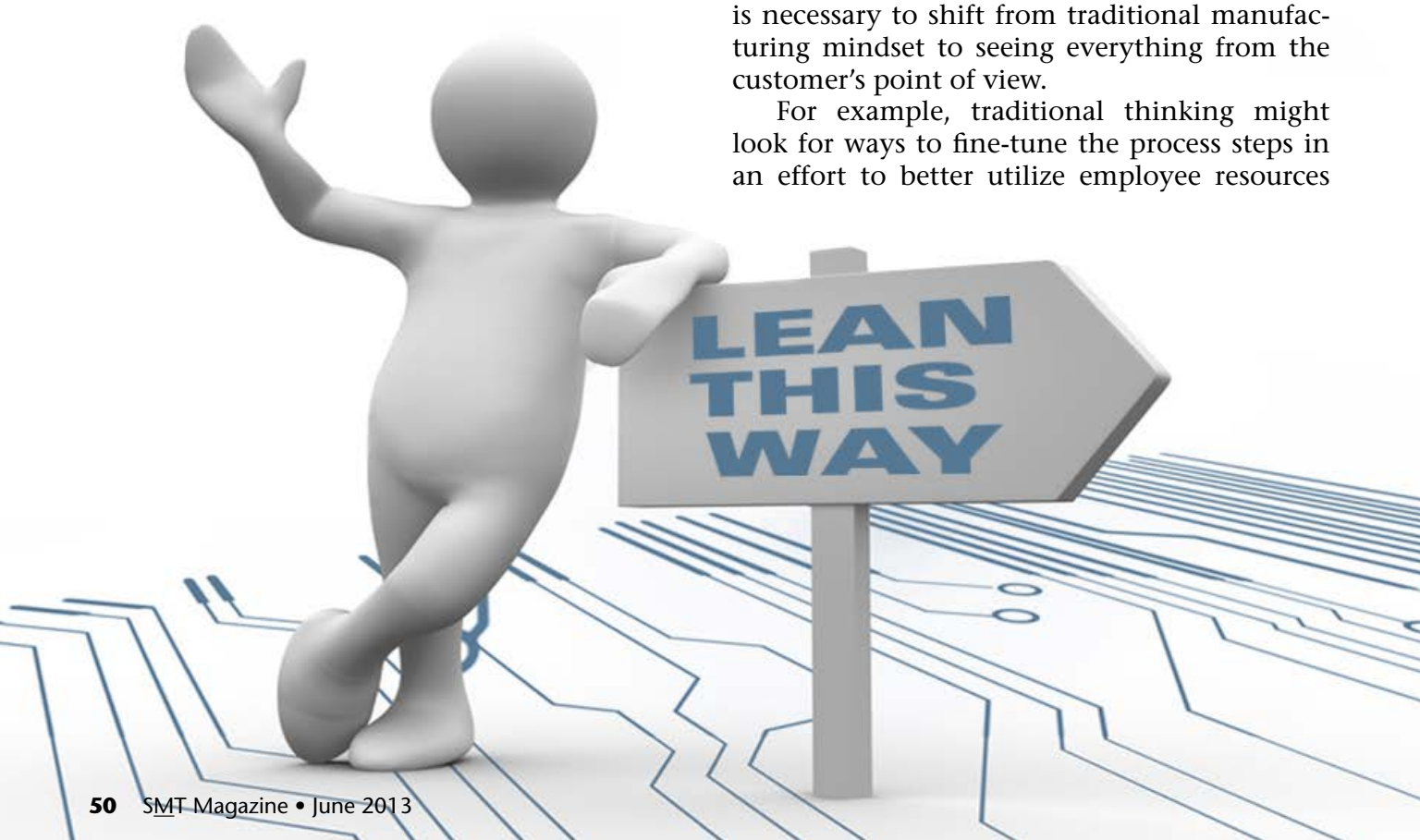
Lean Manufacturing

Lean manufacturing, or "Lean," is defined as a production practice that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful and a target to be eliminated. Makes sense, right? Will the customer pay for the activity or process? If yes, then do it because it is value added, and if not, eliminate the activity or process because you will not be paid for it.

Lean manufacturing is a management philosophy originally from Japan. It derived mostly from the Toyota Production System (TPS). Although Lean conceptually has been around for more than six decades, it was identified as "Lean" in the 1990s. It has passed the test of time and proven to work successfully when companies work it consistently over time.

Built on the simple concept that customers will not pay for mistakes, successful Lean manufacturing starts by educating teams. Lean requires culture changes and shifts in thinking. It is necessary to shift from traditional manufacturing mindset to seeing everything from the customer's point of view.

For example, traditional thinking might look for ways to fine-tune the process steps in an effort to better utilize employee resources



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or to save small increments of time. From the customer's point of view, revolutionizing the process may be more in order. This would require that teams question every activity, as well as the value to the customer. It helps to pretend you are asking the customer, "Would you pay for steps 1-5 of this specific process?" With that question in mind, manufacturers would make more significant changes than simply fine-tuning the existing process.

Remember: The goal is to eliminate waste. Waste is a reflector of imperfections of the system and must be rooted out and removed.

Implementing Lean for large and small jobs in your plant is beneficial and never time wasted. Lean may seem like efficiency planning and optimizing, yet learning the mindset and skills, then implementing the practice can be challenging. Historically, companies who choose to Lean in remain competitive and profitable.

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Lean In

What does it mean to Lean in? Traditional manufacturing looks at making each department in the organization efficient. True Lean says it only matters if the whole organization works together and waste is eliminated. Sub-optimization is the enemy because it does not matter how each department performs if the whole system includes waste.

The following are some practical overview steps to Lean in and eliminate waste.

1. Realize there is waste in the system. If you have not already Leaned out your organization (and sometimes even if you have), then you have waste. Acknowledge this immediately. Have conversations with your team to acknowledge this reality. Manage the conversations and ensure the team knows that this exercise is for a purpose. No blame, shame, or other morale busters allowed during these conversations. The goal is to shift thinking and if there is a heavy-handed consequence when waste is discussed, the conversation will stop and Lean will be theory, and not reality, in your plant.

2. Identify types and causes of waste in your workplace. You are looking for root causes. Using Lean means you will never treat symptoms. Your efforts will only be effective when you address the root cause issue and remove the root issue permanently.

3. Find the solution to the root cause of the issue. Use Lean manufacturing tools to address the root cause. In your solution, consider the entire process. It is important here to look at the whole picture by looking at the whole system. A Lean solution is only a solution if it does not have a negative impact to the whole system. For example, addressing inefficiencies in one part of the system may create excess inventory or labor in another part of the system. Look at the solution and make sure the net effect to the entire organization is positive.

4. Implement and test the solution. Are the results as intended? If not, then make corrections or adjustments based on discoveries during the implementation process. Training and follow up also occur during this final stage. Likely, this step will take the most time. And as with each step, use the appropriate Lean tools to make sustainable changes. As you can see, earlier efforts at changing culture and learning the tools were a great investment to make.

Lean Tools

Having a Lean mindset is most important because actions will come from thoughts and beliefs. If you have not already, learn the many tools and techniques available to you so you can practically carry out your new beliefs. Here are just a few Lean tools: 5S, value stream maps, and kanban systems.

5S

5S is a technique that results in a well-organized workplace complete with visual controls and order. It brings discipline and standardization to the workplace. It's a culture and environment that suggests "a place for everything and everything in its place for when you need it." The 5S in Japanese (English) are Seiri (Sort), Seiton (Set in Order), Seiso (Shine), Seiketsu (Standardize), and Shitsuke (Sustain).

5S systems create work environments that are clean, uncluttered, safe and organized. People become empowered and engaged. When this happens processes flow well and the customer's needs are met.

Value Stream Maps

Value stream maps are a visual tool for identifying and eliminating waste. When you can see the flow you can see the waste and then work to remove the waste. The current process including all value and non-value added steps are drawn. By viewing and understanding the flow, teams can discuss the required changes. Changes will not be done by fine-tuning the current flow. Instead, changes will be done by envisioning the future state of the process and then revolutionizing the process.

Kanban

Kanban is a communication system and one of the simple tools of Lean. Kanban cards, marked spaces, and other visual indicators are used to signal requirements for the next step in the process. When materials are pulled to the next operation, there is a gap left signaling a need for replenishment. Sometimes the trigger is electronically communicated in addition to the physical vacancy.

Kanban can be used internally and also with suppliers and external parties. This is the ultimate aim of Lean manufacturing and results in lower lead times, lower costs, and space savings. The key to success is that kanban must be used in conjunction with other tools and techniques for there to be significant results.

Contract Manufacturing Specific

Lean manufacturing originated and has been practiced most frequently in large high-volume/low-mix environments. Spending the time to understand tools, map processes, identify waste and create optimal processes makes sense for projects that go on for days or weeks. However, in contract manufacturing, the environment is low-volume/high-mix and projects go on for hours or days and not generally for weeks. Thus, the costs of Leaning out the project can be more than the profits on the job.

Yet, giving up on Lean thinking, cultures, and tools would be a mistake. Strong contract manufacturers Lean in and make it happen. Tools identified above and also cell systems, pull strategies, and takt time all play a vital role in implementing Lean as a contract manufacturer.

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Cell systems can eliminate motion and waiting waste. Rather than sending products to another area for subsequent processes, the product stays in the cell where equipment and skilled employees complete it. The focus with cell systems is on the overall flow and not on sub-optimized individual departments. Often, workers in cells have multiple skills creating more flexibility within the cell.

Pull strategies vary from traditional manufacturing push systems. In push systems, the product is manufactured regardless of the requirements from the next operation or end customer. The disadvantage of push systems is waste in the form of over-production and excess inventory.

In a pull system, products are not manufactured until the next process requires or "pulls"

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the product. Ultimately, this means that the customer's current demand creates the trigger for production. This also results in a reduction of work in process (WIP). Responsiveness, flexibility and elimination of waste are the primary benefits of pull systems.

Takt time or cycle time sets the pace for manufacturing lines. It is calculated by taking the net available time for production divided by the number of units required by the customer for that same available time. For example, if you have a seven-hour work day excluding breaks, and you have demand for 100 units, then the takt time in minutes is 4.2 minutes (4 minutes, 12 seconds). This means that one unit is completed every 4 minutes and 12 seconds.

One benefit of takt time is easy identification of bottlenecks when the product is not moving on the line in time. Another is that other operational issues including station delays are easily identified. Also, since there is only a certain amount of time to perform the actual value-added work, there is strong motivation to get rid of all non-value-added tasks (such as machine set-up and transporting products).

To Lean in is to hold your foot fully on the accelerator and commit to your best work. Combine this with Lean manufacturing principles and you have the antidote to your waste problems. Companies who are in the arena and not sitting on the sidelines empower their teams to do their best work. Their best work will involve Lean manufacturing activities. For jobs large or small, the right choice is to Lean in and get the job done in a way that adds tremendous value to all. **SMT**

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