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Lean Thinking - Doing More With Less



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Setpoint provides lean industrial automation equipment customized for specific manufacturing processes.

Lean Thinking - Doing More With Less

Setpoint incorporated lean thinking as a part of everyday operations more than a decade ago as an alternative to mass production. The lean thinking process guides a company to focus on leanness and do more with less. James P. Womack and Daniel T. Jones (*Lean Thinking*) researched this process by visiting and interacting with more than fifty firms in varied industries—sometimes even going onto the production floor to learn firsthand what it takes to convert mass production to leanness.

The overarching principle of lean thinking is doing more with less. Taiichi Ohno, the father of the Toyota Production System, was one of the first manufacturers to incorporate lean thinking in an attempt to eliminate the waste that is so prevalent in mass production. The Japanese word for waste is “muda,” and Ohno describes muda as “mistakes which require rectification” (Womack and Jones, page 15). Part of the process of lean thinking is being aware of the waste in production and taking steps to get rid of this waste.

Womack and Jones determined that lean thinking can be summarized into five main principles: value, value stream, flow, pull, and perfection. A lean thinking company specifies *value* for each product, identifies the product’s *value stream*, helps the value *flow* without interruption, allows the customer to *pull* value from the producer, and pursues *perfection*.

Value

The first step in incorporating lean thinking is determining value. Value is different for each developed product and product family, and defining value for your specific product may be harder than it seems. Outside factors such as financial standing or current trends may sway your immediate definition of value. Rethink value on a product-line basis with dedicated product teams. You

won't be able to define value overnight, but you must do it before moving on to the next step.

Value is almost always defined by the end customer and the target cost of the product or service. Target cost is based on the cost of everything required to create the product once all waste from the process has been removed. Most firms determine this cost by guessing what the customer can ultimately afford and working backward to make sure the firm has a large enough profit margin. Lean thinking firms work forward by going through the process of creating the product and taking out all waste. By doing so, these businesses increase their profit margin and are able to add features and services that other companies cannot offer at the same price with shorter lead times.

Value Stream

The value stream carries each product or service through three tasks of management: problem solving, information management, and physical transformation. Problem solving incorporates the development of the product from concept through detailed design engineering and to production launch. The information management task starts at the first order being taken after product launch and goes through scheduling and delivery. The final task, physical transformation, is the process of turning raw materials into a finished product and delivering to the customer.

Examine the steps and activities currently in your value stream and determine if each activity adds to the overall value for the customer. Map out your current process and decide if each step and action you are currently taking is valuable or muda. Companies create muda in several different ways:

- They produce items that customers don't want causing an increase in unused inventories.
- They take steps that aren't necessary to achieve the same outcome.
- They move people or parts more than needed.
- They have people waiting downstream for completion of processes upstream.

- They often have “goods or services that don’t meet the needs of the customer” (Womack and Jones, page 15).

Keep these types of things in mind as you map out your current process. Put each step of the process into one of three categories: those creating value according to the customer, those not creating value but still required, and those not creating any value. Any actions in the last group should be removed immediately before you can move on to the next step.

Flow

By this point, you should have defined value and removed any unnecessary steps that don’t further that value. Look at the steps that remain and determine the best way to make those steps flow continuously to shorten throughput times and reduce lead times.

Many businesses think that batch-and-queue methods are the most efficient because all employees and machines are constantly working and operating. However, this method often results in repeated steps and lots of waiting. Products sit around while machine tooling is changed or while the company waits for a customer to order the product. Waiting ties up money and resources that could be used elsewhere, like new and improved product development.

To achieve a working flow system, every machine and worker should be able to perform each valuable task in the value stream. Cross-training makes it easy to fill a hole when one employee is absent, since everyone knows how to do each task. Rotating employees occasionally gives each process fresh eyes that may identify tasks or parts that can be eliminated, changed, or rearranged. Flow systems have an everything-works-or-nothing-works system.

Take the process of mailing letters, for example. Mass production would tell you to fold all the papers, stuff all the envelopes, seal all the envelopes, and address and stamp all the envelopes. While this might be a time saver if the process was constantly going, if one step goes wrong, the whole process is stopped. A lean thinking company would have each employee folding, stuffing, sealing, addressing, and stamping envelopes individually. This process

eliminates the step of delivering all the envelopes from one task to the next task. The time saved may be minimal, but it would add up over time because waste and waiting have been eliminated.

Pull

The fourth step in the lean conversion is pull. “Pull in simplest terms means that no one upstream should produce a good or service until the customer downstream asks for it” (Womack and Jones, page 67). When the customer places an order, the order signals a “pull” of parts. The organization should be capable of responding almost instantly to customer orders and getting parts shipped within a few hours (or days, depending on the product). If you have all the previous steps intact, the pull will be automatic and quick.

Perfection

Much of the potential of lean thinking can be lost unless you take the final step, perfection, to heart. Perfection must be brought to “clear view so the objective of improvement is visible and real to the whole enterprise” (Womack and Jones, page 94). Although pure perfection can never be achieved, due to constant inevitable changes, it is something all companies and employees should keep as their ultimate goal. Make a few short, achievable goals that fall in line with the company’s vision of a lean future. These goals will give you focus and relieve any feelings of being overwhelmed by such a lofty overarching goal.

Conclusion

No matter the size or nature of your business, any business can apply lean thinking to their core structure. Companies of all sizes worldwide—such as Pratt & Whitney, Wiremold, and Lantech in America; Porsche in Germany; and Showa Manufacturing in Japan—have successfully applied lean thinking in their organizations and have achieved great results. Each company manufactures different products and had to identify different steps and actions that were wasteful during the process of becoming lean. People used to believe lean

thinking was exclusively for the automobile industry in Japan, but this longtime belief has been proven otherwise.

Use these lean thinking steps as your guide and start by making frequent small steps toward the goal of leanness. Begin with a sensei—someone with the right knowledge and attitude to implement leanness and motivate everyone in the right direction. Sometimes, someone removed from the company who can take a fresh look at the process is best for this position. This process will require a complete rearrangement of your structure of business and may take five years or longer for the transformation to take effect. However, believing that leanness will work for you and your company and incorporating it into your processes will bring you great results and success.

Setpoint is the leader in lean automation equipment from concept to functioning completion. Following the Toyota Production System, Setpoint has successfully created custom solutions for a broad variety of industries for more than 18 years.

References

James P. Womack and Daniel T. Jones. Lean Thinking. New York, New York: Free Press, 2003.