Lean Six Sigma in Action

Lean Six Sigma Cuts Waste, Tackles Tough Manufacturing Problems

Most manufacturing companies have them – ongoing problems that result in scrap or rework on a regular basis. The problems may be addressed, but they're never fully solved. And it's no surprise that many firms also have issues with delivery and waste.

Lean Manufacturing tools can improve the speed of processes by reducing waste. But to solve deeper issues related to quality, precision and process variation, it takes Lean Six Sigma, a method designed to tackle waste and variation issues using both Lean and Six Sigma tools.

"Many companies are familiar with Lean," said Wil Cox, WMEP manufacturing specialist. "Lean Six Sigma is the next step. It's for companies that want to go to the next level. They want to achieve both speed and accuracy."

By using Lean Six Sigma, companies can address the hidden costs of quality issues, including long cycle times, downtime, expediting costs, overtime and lost sales. "Up to 30% of sales dollars are tied up dealing with issues," said Cox. "If you want to grow your business, you can get more sales, but at some point, you have to deal with internal problems."

Lean Six Sigma offers a powerful combination of tools, but some manufacturers are put off by the statistical emphasis of the Six Sigma tools. "Classic Six Sigma has a lot of statistics," said Cox. "But with Lean Six Sigma, you can take a subset of the Six Sigma analytical tools and do things that are very effective without getting into heavy statistics. You can go through the whole process with minimal statistics and be very effective reducing mistakes and errors."

Lean Six Sigma Benefits:

Mid-States Aluminum Corp. in Fond du Lac, used Lean Six Sigma to work on three separate improvement projects.

They created a Value Stream Map of their quoting process, then used Lean Office to streamline the process and cut their quote lead times in half.

They also mapped their extrusion press process and used 5 Whys and Pareto Charting to reduce press downtime. And they used Setup Reduction to reduce setup times for secondary equipment on the shop floor.

The combination of Lean and Six Sigma tools allowed them to address different issues,

- leading to $50,000 in cost savings,
- $75,000 in estimated sales added (due to capacity gains),
- downtime reduction of more than 90% and
- reduction in quote lead times of about 50%.

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Lean Six Sigma also helps manufacturers deal with cultural change issues like resistance to change. The Lean side of Lean Six Sigma gets workers involved early because they can see the waste. Then you can get into the variation issues as needed. It helps if you work together as an organization. People see problems and resolve them. It gives them a strategy and the confidence to do that effectively. Lean Six Sigma utilizes Lean Culture infrastructure and tools to engage and empower employees, resulting in sustained continuous improvement.

Implementing Lean Six Sigma begins by assessing the current state of the business. Lean Six Sigma can be applied to the front office as well as the shop floor – anywhere waste and errors occur. The current state is assessed using Value Stream Mapping, a Lean tool that identifies non-value added activities in a process. The Value Stream Map shows where the bottlenecks are; then you can use waste-cutting Lean tools to attack low-hanging fruit and Six Sigma analytical tools to drill deeper and find the root causes of tougher problems.

Individual problems are solved using DMAIC, which consists of five steps:

- Define the problem
- Measure current performance
- Analyze the problem to determine the root cause of the poor performance
- Improve the situation by addressing the root cause
- Control the process so that improvements are sustained

"When you do the analysis, you may not need statistics," said Cox. "Even if you just start analyzing the measurements, you're far ahead of the game. You can improve the process using real data."

The key is finding the right combination of Lean and Six Sigma tools. "It's about identifying a few tools that will really work for the situation," said Cox. This approach allows manufacturers to customize and scale their Lean Six Sigma work for maximum benefit.

One company, a printing plant in Monroe, used Lean Six Sigma to improve their process for applying adhesive coatings. Many factors affect this process. To get the variations under control and reduce scrap and rework, their team used two Lean Six Sigma tools: 5 Whys, which is a method to determine the root cause of a problem, and the Fishbone or Cause-and-Effect Diagram, which details the causes of events.

These basic tools were used by all team members, from operators to engineers. "The problem-solving tools from Lean Six Sigma are very important for empowering the people who do the process work, so they can determine the root cause of problems," said Cox. "It's very effective." More sophisticated tools for data collection and analysis were used by the engineers.

They also used Lean tools, including 5S/Visual Workplace and Pull/Kanban, to reduce inventory and WIP. The result was a significant inventory reduction estimated at more than $1 million in savings and improved cash flow.

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Benefits from using Lean Six Sigma include:

- Increased yields
- Shorter cycle times
- Reduced costs
- Better quality
- Less waste
- Satisfied customers and employees

For a given metric that a firm might track, "a 50% improvement is not far-fetched," said Cox. "Often, there can be millions of dollars in savings using these tools."

With Lean Six Sigma, you can really change how you approach your business and its processes. "This way, you move from being reactive to proactive," said Cox. "You reduce internal costs and issues that lead to headaches like struggling to ship product and dealing with customer complaints. Life really does start to get better."

About WMEP

WMEP is a private, nonprofit consulting organization committed to the growth and success of Wisconsin manufacturers. A leader in Next Generation Manufacturing, WMEP brings best practices to Wisconsin firms to help them achieve world-class performance through innovation and transformation. WMEP receives financial support from the Wisconsin Department of Commerce, and partners with many public and private organizations to serve Wisconsin manufacturers.

To learn more about how Lean Six Sigma can help your business, call WMEP at 1-877-856-8588.

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