

Creatively Combining Lean and Six Sigma

Creative Forming Inc. working with Empowered Performance, LLC has developed a Lean Manufacturing operational strategy for the workplace orientated toward achieving the shortest possible cycle time by eliminating waste. Six Sigma training is also being conducted at Creative Forming to allow employees to use problem-solving to improve the business.

Waste in a business include: overproduction, inventory, waiting, motion, transportation, re-work and over processing.

Lean techniques result in decreases in the time between a customer order and shipment, and it is designed to radically improve profitability, customer satisfaction, throughput time and employee morale. The benefits of Lean generally are lower costs, higher quality, and shorter lead times.

“These techniques were developed to reduce waste in any business,” said Harold Ellsworth, Vice President Operations.

Lean is derived from the Toyota Production System, and its key thrust is to increase the value-added work by eliminating waste and reducing incidental work. Not only has Creative Forming adapted Lean Manufacturing techniques to their business, they have also used a training method called Six Sigma to help improve their business as well.

Six Sigma is a systematic approach set up to help businesses use scientific problem-solving to improve their business. Six Sigma focuses on projects that will produce measurable business results by using data, the scientific method and problem-solving to find the root cause of a current business problem. The five phases of Six Sigma are called DMAIC. DMAIC stands for Define, Measure, Analyze, Improve and Control. The phases are a methodology used to help project participants find results for a current issue in their workplace. By using the Lean approach and Six Sigma, the two form a powerful approach to business improvement.

“The main focus is meeting the needs of the customers,” said Ellsworth. “We need to drive improvement in the business to better serve our customers.”

Green Belt training is a step in the Six Sigma process as well. Each participant is classified as a “Belt” and has an important leadership role in their selected team. Creative Forming, Inc. divided ten participants into two teams.

“We wanted to get a broad mix of people from different areas,” said Ellsworth. “Selected people had the skills, interests and ability to apply what they learned and help other people use the methodology to solve problems.” Projects for the Six Sigma training were chosen by Ellsworth for the significant impact they would have on Creative Forming and their customers. The projects were also selected as issues that could have the DMAIC methodology applied to it and participants could learn while completing the project.

Team One's project was related to a food container tub and base for a major customer. "There were some quality and trim issues with this product," said Ellsworth. "We wanted to increase the throughput, shorten the lead time and make a better quality product."

In the end, the food container project had significant results. Team leader, Phil Barhouse, Director, Quality Assurance and Research Development, led the container project group by using base line data to solve the quality issues with the container.

"Using the DMAIC process, we monitored the existing process and gathered base line data to set up an experiment," said Barhouse. "We then used the experiment to control key parameters in the process while increasing the cycle time and monitoring the quality characteristics."

Ellsworth was happy with the efforts of the team.

"The team used DMAIC problem-solving to increase the throughput by 40% and reduced the clarity issues as well as improving the quality," said Ellsworth.

Extrusion was the core theme of Team Two's project. Team Two needed to find the root cause of a problem with the release agent coating on the sheeted plastic. The silicone was applying unevenly, and the team needed to come up with ways to eliminate the problem. Using DMAIC, in the end, the applications were more even and there weren't as many products being rejected.

The benefits of Six Sigma training are great. By analyzing and using problem solving with the selected projects, each group saw the benefits, including shorter lead times, reduction of variation and an increase in throughput. All of these factors allow for the customer to receive the product faster, with greater quality and at a lower cost.

After Green Belt training days are complete, Ellsworth hopes that all participants will have gained valuable information to help them in their departments as well as with their co-workers.

"We want them to learn the concepts and tools of good problem-solving so we can apply it and improve Creative Forming," said Ellsworth. "The participants can then take what they learned and help others in their departments use problem-solving techniques to reduce the waste in our business."

Follow up with Six Sigma training will continue at Creative Forming.

"We have selected four more projects for the team leaders to lead with other participants and get them involved," said Ellsworth. "We want more people to learn the approach and have the knowledge of Six Sigma and Lean spread throughout the company."

About Creative Forming, Inc. Located in Ripon, Wis., Creative Forming and its extrusion division ALPHATEC EXTRUSION™, offer state-of-the-art extrusion expertise and custom thermoforming solutions to the food and consumer goods industries throughout the United States. For more information on Creative Forming, visit their website at

www.creativeforming.com.