



CASE STUDY

IN TOLERANCE ACCELERATES EFFICIENCY & COST SAVINGS

Lean Works for Custom Manufacturing

Jack Hardin, general manager of In Tolerance, was skeptical when long-time customer (for the past 62 years) Rockwell Collins asked his company to participate in WMEP's Accelerate program. A 35-employee precision contract manufacturer based in Cedar Rapids, Iowa, In Tolerance specializes in low volume, high variety machined parts used in the aerospace, military and medical industries. Hardin did not see how Lean methods developed for use in high volume manufacturing environments could help his small operation fabricate small quantities of thousands of different parts more efficiently, but nevertheless, he was interested in learning more.

In Tolerance and nine other suppliers attended a kick-off session presented by Andy Hayner and Roxanne Baumann of WMEP. As the name suggests, Accelerate focuses on eliminating waste to increase the overall speed of production, thereby improving performance, increasing capacity, flexibility and collaboration.

The Accelerate process combines two powerful Lean tools; Value Stream Mapping and the Manufacturing Critical-path Time (MCT) metric. Value Stream Mapping graphically depicts the flow of information and materials involved in producing a part, while MCT measures the total value stream in calendar days (the view point of the customer).

"Many contract manufacturers are amazed to learn that Lean methods can make a huge positive impact in the operations of small job shops," said WMEP's Hayner. "Lean principles are applicable in virtually all manufacturing environments, and efficiency, quality, and speed are more important today than ever before." In today's global marketplace, the future success of

In Tolerance Results:

A Value Stream Map on just one part produced the following results:

- Reject rate fell to 0%,
- Manufacturing Critical-path Time reduced by 50%
- Part production was shortened to 10 days from 40 days, creating additional capacity
- Work In Progress (WIP) Inventory reduced by 61%
- Raw material on hand reduced by 75%

"The average amount we are saving on packaging supplies is \$50.00 per month," said Hardin. "More important, we are not sending 640 square feet of foam packaging to the landfill every month. These results are just for the part of the process for which we completed the Value Stream Map."

Jack Hardin,
General Manager, In Tolerance, Inc.

an OEM and their suppliers' are inseparable. World-class OEMs demand world-class performance from their suppliers, and Accelerate was developed to help small suppliers develop exceptional product quality and responsiveness."

The first target for improvement was on a part that was fairly complex to produce. . "The 'Accelerate Program' as presented by Andy and Roxanne from WMEP was truly an exciting, eye-opening experience for our team at

In Tolerance, Inc.

In Tolerance. We did not think this program would work in a job shop environment but we were certainly proven to be incorrect. This program has and will continue to develop many cost saving exercises,” said Hardin.

Jim Black and Jeff Mohr of the Center for Industrial Research and Service (CIRAS), the Iowa partner of the Manufacturing Extension Partnership, spent two days at the In Tolerance facility, walking Hardin’s team through a Value Stream Map for the selected part, a delicate housing with a special painted finish. Employees from every part of the company participated, from the shop floor to the front office. “It was an enlightening and rewarding experience”, said Hardin. “It energized the whole company and got everyone excited about change and making things even better.”

The Accelerate team at In Tolerance developed a project plan to take time out of the production process, and quickly began to implement these changes in Phase II of the process.

For example, the team looked at every aspect of the packaging process. To protect the finish from scratches during shipping, each part was carefully wrapped in foam and secured with tape, a time-consuming process that used a lot of packaging materials. Stepping back from the process, the team looked at other ways of protecting the part during shipping and came up with the idea of using pre-made, reusable boxes lined with egg-crate foam that could accommodate 4 parts per package. After testing, the new packaging was launched with the following results

- Packaging time reduced from 5 hours to 40 minutes
- Reusable boxes reduced waste by 95%

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A similar process of improvement focused on each step of the production process, with the following results:

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“We achieved these results working with just one part,” said Hardin. “We’re now working on Value Stream Maps for high volume and high cost parts, aiming to reduce set-up, painting, handling, Quality Assurance and packaging time. I can’t wait to see what our results will be.” “Jim Black and Jeff Mohr from CIRAS did an outstanding job of training our team at In Tolerance in Value Stream Mapping in the “Accelerate” program,” said Hardin. “They kept everyone involved and were able to make it an interesting and fun experience. Our team learned a lot from Jim and Jeff, and the cost savings they helped provide on a part we manufacture were tremendous.”

Jim Black of CIRAS praises In Tolerance for being an innovation leader. “The quality and performance levels at In Tolerance have always been outstanding,” said Black, “yet Jack and his team are always open to improvement. I can’t wait to see what they are going to achieve on their lean journey!”

Hardin recommends that other job shops explore the lean concepts of the Accelerate program, and gives high marks to CIRAS and MEP in helping his firm sharpen its competitive edge. “Accelerate has re-vitalized our operation, saved time, reduced costs and reduced waste,” Hardin said. “Clearly, the results we’ve achieved show that this method is not just for high-volume manufacturing.”

For more information, visit www.wmep.org or call 1-877-856-8588.