



Douglas Electrical Components

Lean Initiative Enables U.S. Manufacturer to Stay Competitive, and Stay Onshore

By Jose Del Valle, Production Manager of Douglas Electrical Components



Introduction

New Jersey based Douglas Electrical Components aligns quality, lead times and pricing with Lean initiative.

The past decade has witnessed a continuous migration of manufacturing and associated jobs to offshore locations, ostensibly to enable American manufacturers to remain cost competitive in the face of increasing global competition. While our marketplace supports the spirit of competition - and consumers and purchasing agents alike have enjoyed lower pricing - the downside to this has been a loss of jobs (particularly painful during our recent economic downturn), longer lead times, and in many cases a reduction in product quality. Since 1945, New Jersey based Douglas Electrical Components (DECo) has built a reputation for supplying a high-quality product to a select market, including space agencies, the military and the semiconductor manufacturing industry. "On one hand, I knew that for many of our customers, domestic engineering and sourcing was a big plus. But I also knew that price was part of the purchasing decision," said Ed Douglas, third generation owner and president. "For Douglas (www.douglaselectrical.com), we faced the challenge of maintaining, or even improving, our already industry-leading quality and delivery times, while at the same time increasing our efficiency to help keep our pricing aligned with that of our offshore-sourced competitors."

As pioneers in the development and practical application of epoxy technology to electrical wire feedthroughs, DECo offers proven solutions and works with customers to develop high quality products for their conductor sealing needs. DECo is an ISO 9001 registered manufacturer of UL-approved electrical and fiber optic feedthroughs, hermetically sealed connectors and cables, explosion proof wire assemblies and turnkey subassemblies for semiconductor manufacturing equipment. Major markets served include automotive, magnetic bearing, power generation and distribution, semiconductor processing, space simulation, military, alternative energy, air conditioning and refrigeration, X-ray, explosion-proof, oil and gas exploration, and glovebox.

"When we really sat down and looked at the challenges we faced, we realized a Lean initiative could provide the solution. But we're a job shop, manufacturing a wide variety of custom-engineered products in runs sizes ranging from a few samples to a few hundred thousand. At Douglas, we do something different every day. We knew Lean worked in large corporations like the automotive industry, but we initially were not sure what the net would be for our type of business," said Douglas. That's when Lean consultants PDG Inc. (www.pdgconsultants.com) became involved. "I bid three groups to assist us with our Lean transformation," said Douglas. "PDG immediately stood out as a great match for our needs, mainly due to the way



Douglas recent relocation to a brand new, custom facility underscores their commitment to domestic production.

they indicated they would stay involved throughout the process, working directly on our shop floor.”

“We came in and presented to Douglas in November of 2008,” said John Fischbach, the PDG Lean consultant assigned to lead the Douglas initiative. “They gave us the go ahead within weeks, and we started the program in the late November, early December time frame, just a few months before the downturn really kicked in.”

“In some ways, we could not have picked a worse time to spend money,” said Douglas. “On the other hand, when the downturn really kicked in we had the time and space to give to our Lean program and Kaizen events that really let us get the most out of the process. While it was a tough decision to make at the time, I am glad we moved forward and made the investment as planned.”



Vacuum and pressure environments around the world rely on Douglas hermetic seals and feedthroughs to carry power and signals in and out of sealed vessels.

Continuous Improvement, Cell by Cell

Like all successful initiatives, the DECo Lean project started with a plan. “We began the DECo project with a comprehensive value stream mapping process, performed in conjunction with Lean team leaders and manufacturing floor personnel. Part of this process let us see where opportunities lay for the biggest gains, observations which helped lead us through our cell by cell Kaizen events.” Said Fischbach.

These activities resulted in a 12-18 month action plan of continuous process improvement based on developing a deep understanding of performance trends, errors and defects, and developing improvements in the manufacturing process. Each team was encouraged to suggest any changes they thought valid, with no part of any process off limits. The teams were continuously challenged to take a fresh look at each part of their work flow, with the goal of developing tools that could apply to any project that came through the door. These suggested improvements were then vetted by our production quality team to ensure no negative impact on quality, and were then actioned by the Lean team.



Integrating the vacuum test facility into the work bench saved both time and motion.

Out With the Old, In With the New

In each cell, dramatic improvements and sometimes unanticipated benefits were realized. Tackling the challenges of inventory management, operator motion and re-handling, as well as batching and standard work process issues in the Switchgear Cell, for example, witnessed over 50% improvement in lead times and productivity, and the number of product touches were reduced by over half. “For this Lean Team, it was a real lesson in discovering the efficiency of One Piece Flow, and the fact that Line Balance

really does make the job much easier,” said PDG’s Fischbach.

The Precision Instruments Cell, a work area involved in products for the semiconductor manufacturing market, concentrated on improving batching and corresponding inventory and storage issues, as well as looking at reconfiguring the work cell to incorporate cell-specific features such as integrating the test fixture and packaging elements. The results? Well over 50% improvements in lead times and production efficiency. “This was a real tribute to working with the operators. Ideas straight from the floor were the real key to the successes we saw,” said Fischbach.



Working as a team on the production floor yielded innovative and effective process changes.

High Quality, Fast Turnaround, Competitive Pricing - From a U.S. Manufacturer

Seeing numbers like those cited in the work cells above certainly proves the value of Lean, but what do they bring to the business? For DECo, the efficiency gains translated directly into cost control and competitive positioning. According to Ed Douglas, “I would have to say that we achieved all we set out to do, and more. Our lead times, our product quality, and our pricing are now aligned to maintain our industry leadership position, as well as helping us to remain competitive in the face of increased overseas competition. The ability to continue to offer the known advantages of local engineering, production, and fast lead times all at a competitive price is even more important in the new economy. Our current success is directly linked to the investment we made in our people and our processes.” All this during one of the worst economic downturns in U.S. history. For Douglas and PDG, Lean continues to be an American manufacturing success story of which we can all be proud.



Representatives from across the Douglas organization participated in the Lean planning process.

Summary

Client: Douglas Electrical Components, Inc

Lean Consultant: PDG Consultants Inc.

Facility Description: 16,000+ square foot manufacturing facility in Randolph, New Jersey, specifically designed to support the new Lean program and the over 85 permanent and contract employees.

Challenges: The primary challenge was to increase production efficiency in order to control product

cost, and therefore price in order to remain competitive as a U.S. based manufacturer. Secondary goals included increasing quality and decreasing production lead times.

Response: Lean plan developed with Douglas employees and management, implemented throughout 2009 and 2010.

Results: Efficiency gains of over 50%. Lead times reduced by 50% and more. Labor costs reduced by almost 50%, with the ability to maintain a competitive market position while still providing customers the advantages of U.S.-based engineering, manufacturing and short lead times.



Kaizen events focused on specific work cells, where production changes were implemented and monitored.

About the author: Jose Del Valle is production manager of Douglas Electrical Components, where one of his key responsibilities is ensuring production quality.

For additional information contact Douglas Electrical Components:

5 Middlebury Blvd.
Randolph, NJ 07869

T 973.627.8230 F 866-206-6916
www.douglaselectrical.com