THE Manufacturers' Advantage

CONNSTEP, Inc.

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With Lean, Magnatech of East Granby Sets New Records

Magnatech's expertise lies in its ability to miniaturize complex mechanisms that are rugged enough to operate in extremely harsh welding environments, which are sometimes unsuitable for welding technicians. Its major products – systems for orbital tube, pipe and tubesheet welding operations – serve rapidly growing worldwide markets that demand increased welding productivity and quality, especially those fabricators serving the aerospace, chemical, pharmaceutical, power generating and pipeline industries. The equipment utilizes three widely employed welding processes: Gas Tungsten Arc Welding (GTAW); Gas Metal Arc Welding (GMAW); and Flux Core Arc Welding (FCAW).

Its first innovative pipe welding system – having wire feed, oscillation and arc voltage control – was introduced in 1971 and remains the cornerstone for Magnatech's current business, with thousands having been sold since. Now their latest autogenous tube welders not only solve the problem of a shortage of skilled welders, it allows a worker with minimal welding skills to make reliable welds that will meet code standards.

Magnatech's manufacturing operations utilize a modern machine shop with CNC turning and milling equipment, printed circuit board manufacturing, and electrical and electro-mechanical assembly. Since its products are highly engineered, all mechanical and electrical engineering (including electrical schematics and PC board layout) is conducted using CAD. A state-of-the-art welding laboratory, equipped with electrostatic particle removal system to maintain stringent air quality conditions, supports product qualification and development activities. Its highly experienced staff (12 of the 44 employees are engineers) also trains customers in equipment operation and provides technical assistance as experts in the mechanized welding field.

Situation

Magnatech felt they were in "desperate times" from 2002-2004. In response, they completely redesigned their product line, increasing their market share opportunity – even though they were only 1/10 the size of their only competitor (located in California). They began facing a new problem – significant demand, and they were unable to keep up. Rarely delivering on time and making minimal profit, they did not have the infrastructure in place to support the business growth they were experiencing. Orders were doubling – this increase in order activity would have ordinarily resulted in a proportional change in expenses for operations, labor and the cost of goods. However, these expenses did not double – the increase was limited to 28%.

> "These improvements can only be attributable to the efficiency gains derived from CONNSTEP teaching us the principles of Lean in that we made optimal use of inventory and labor. As everyone well knows, the net result will 'show' on the bottom line in greater profitability "
>
> —Garry McCabe, Executive Vice President

Garry McCabe, Executive Vice President, developed a good appreciation for the value of Lean practices at his former job as a chief technologist. As business began to multiply, he noticed that the area set aside for inventory storage began to increase. This was a result of their inventory system, which was based on anticipated sales, adding considerable expense to the company's products. It was clear to McCabe that the time had come to adopt a build-to-order inventory system.

He realized that this move not only required him to change how he managed inventory but how waste could be minimized in the entire production cycle.

McCabe learned about the Lean program through CONNSTEP's newsletter *The Manufacturers' Advantage*. He contacted Ray Snyder, CONNSTEP's Manager of Quality Standards, who had previously helped Magnatech prepare for the ISO9001-2000 quality standard. He asked Snyder who at CONNSTEP could help prepare a continuous improvement plan that would meet the company's immediate and long-term goals. Snyder introduced McCabe to George Snyder, a CONNSTEP Business Development Manager, who saw the opportunity to help make a significant impact on Magnatech's business. Bill Kirchherr, a CONNSTEP Lean Manufacturing expert eventually facilitated the Lean project and became intimately involved as a key participant in the continuous improvement planning process.

Solution

A team was enlisted, comprised of the production planner, the manufacturing manager, two lead manufacturing foremen and the purchasing manager. The group provided excellent ideas, which were vital to the plan. A phased approach was subsequently formulated:

- The initial phases included the development of an inventory management process, integrated with forecasting needs to support the production of spares, as well as warranty and repair requirements.
- Next, a plan was developed to address the production of catalog-based items, which could be shipped within an established period while maintaining on time delivery of new business. An approach for developing a supply chain co-managed spare parts inventory was also addressed.
- The next portion of the work was to be directed at maximizing inventory turns and developing methods to reduce the time and effort required to convert the inventory to finished product.
- The final part of the project would provide designs for work cells with visuals and instructional aides for kitting, a disciplined scheme for purchasing materials and stocking parts and the introduction of a Kanban system.

Results

Magnatech experienced significant results from the improvements provided by Lean. Inventory was reduced by more than 55% and inventory turns increased from 1-5 turns in 2007. They achieved 100% on-time delivery, which previously averaged 15-days late. Profits increased 200%, allowing the company to invest in building renovations, new office furniture, upgraded HVAC units, new engineering and manufacturing software and purchase three new major pieces of machinery. They also added 12 new employees - an increase of their workforce by 38% (now approaching ½ the size of their competitor). Their new-found success benefits the Connecticut economy overall as they expand their local supply chain to satisfy their demands. As they enter 2008 they expect the growth trajectory to continue as new technology displaces the old. They are currently on schedule to increase sales by 58% over the record sales of 2007.

Much of the costs associated with "leaning" Magnatech came from Connecticut's Aerospace Defense Initiative (ADI). This program, announced by Governor Rell in May 2005, is a $2 million, two-year initiative to help small and medium-size companies use Lean Manufacturing to increase productivity and efficiency.

Q&A

CONNSTEP Lean Specialist, Tom Southworth, answers your questions on Lean Manufacturing.

Q: *Our manufacturing group was introduced to Lean about a year ago, but we haven't fully implemented it yet. I am new to facilitating these projects and the challenges I am facing are first, gaining buy-in and support of the Lean efforts from management and second, sustaining the efforts. A good number of our manufacturing employees are very resistant to the changes and I'm also looking for ways to open their minds a bit more.*

Our Lean initiative came from upper management with a primary motivation to decrease downtime related to set-up. Several of the middle-management members were not sold on the Lean theories and I'm looking for more ways to get them excited about what we could do again.

A: What this reader describes is typical of 95-98% of companies who attempt "Lean". Management has heard some good things, so they "try it out" like they're trying on a pair of pants to see if they like the fit.

One of the first things that all parties need to agree on is this: what is your common ground? By common ground I mean mutually agreed upon reasons that you are in business. The obvious answer in a for-profit company is to make money – after all, you're not a charity. No money equals no paycheck, so there shouldn't be any disagreement on this. Anyone who doesn't agree that you're in business to make money should be shown the door.

A second area of common ground is the answer to the question "how will we make money?" On this, too, there should be no debate. You make money by selling more products, faster, with better quality, and at lower cost than your competitors. No one, from the most anti-change press operator to the top ranking executive, should have any argument with this, either. There shouldn't even be any debate about it. You're not in business to be slower and deliver a lower quality product that's more expensive, right?

Once everyone is on common ground about why your company exists you can reintroduce Lean (even without calling it Lean or any other name) by saying "OK, we all agree that in order for us to make money (and get paychecks) we need to always be faster, better, and cheaper than the next guy."

Underlying this, always, is safety. You must think and act with safety as your #1 priority. So, how can you make your particular machine, area, department, or plant better, faster, and cheaper while still being safe?

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