

Purchasing

Suppliers follow a roadmap to Lean best practices

Aerospace and defense companies join forces to bring Lean to the supply base, and supplier performance is improving on some key metrics. Now, their tier-one suppliers are sharing what they've learned with their own suppliers.

By Susan Avery -- Purchasing, 4/10/2008

In 2003, purchasing executives at the nation's leading aerospace and defense companies decided to take a new approach to sharing best practices in Lean with suppliers.

They realized that what they were doing wasn't working. They were inundating suppliers with competing systems. One week, Boeing would approach a supplier with one way to apply Lean. Another week, Lockheed Martin would come by with its version. Suppliers would make changes, but still they were having trouble filling orders and meeting other customer demands.

The purchasing execs—from Boeing, Lockheed, Northrop Grumman Rockwell Collins, Parker Aerospace and United Technologies—figured they'd take another tack and collaborate. They formed a nonprofit organization called the [Supplier Excellence Alliance \(SEA\)](#), based in Irvine, Calif.

With funding from the state, these companies developed the SEA Lean enterprise system. The system focuses on three areas of a supplier's company: leadership and culture; business systems; and employee training and development. SEA also created a process for measuring supplier progress in each area and a roadmap to figure it all out. The roadmap guides suppliers through steps to Lean: setting up a system for managing it, identifying ways to work with their suppliers to rid processes of waste (i.e., kitting and building bigger subassemblies) and developing a continuous improvement process. Suppliers that follow the roadmap are reporting gains in such performance measures as quality, on-time delivery, inventory turns and sales per employee. And, now they're starting to share what they've learned with their suppliers.

"Our involvement in SEA has made a huge difference in our operation," says Brad Hart, president of Roberts Tool Co., manufacturer of precision parts for the aerospace industry in Chatsworth, Calif. "We've almost doubled our sales per employee, a key metric for us." Roberts Tool has grown from a \$5 million company with about 50 employees in 2000 to a \$20 million company with 75 employees today.

Hart says, "You can solve a lot of problems when you start making more money. You can buy more equipment. You can pay your employees better. You can satisfy your customers without losing profit." He also likes to say that his company and other suppliers that implemented the SEA Lean enterprise system now can compete with suppliers in China and India, taking into account landed costs.

Cessna's story

SEA has since grown to 15 member companies. Including the founders, they are: Cessna Aircraft Co., Honeywell Aerospace, Hitco Carbon Composites, Dresser-Rand, Roberts Tool, Cristek Interconnects, Photo Etch Co., Bodycote Thermal Processing and DRS Technologies. Each has a representative on the SEA board of directors.

One board member, elected in March, is Kevin Meyers, senior director of procurement at Rockwell Collins in Cedar Rapids, Iowa. Rockwell Collins, he says, "sees SEA as an extension of our supplier development program." The company received *Purchasing's* Medal of Professional Excellence in 2005.

Other board members share that thinking. Don Beverlin, vice president of supply management at Cessna Aircraft Co. in Wichita, Kans., says, "What's so exciting about this is that for the first time there's a group of companies that recognizes that we are driving 'unLean' behavior in the supply base. Being willing to do something about it is going to drive rapid improvement." Beverlin has been on the board since 2004 and is now first vice president.

Supply management at Cessna, which received *Purchasing's* Medal of Professional Excellence in 2003, once asked its suppliers as part of its supplier-development process to adhere to principles of the Malcolm Baldrige National Quality Award. Beverlin concedes it was a strong-arm approach and his team has since changed its stance. Now, it's asking suppliers to follow the SEA roadmap, if the supplier doesn't already have a formal Lean process. At a SEA board meeting in 2004, Beverlin recalls meeting Hart of Roberts Tool and has asked him to share his experience with SEA with Cessna's suppliers.

Changing the mindset of suppliers is a hurdle for Beverlin and his colleagues at other aerospace companies. Another is convincing them to commit resources to improvement. Roberts Tool's Hart is doing his part. He's set up a consortium of companies that work together to meet requirements of their customers. It's called the Southern California Manufacturing Group. One way they've collaborated is by hiring a supply chain manager who pools suppliers' requirements in an effort to be more cost effective and efficient. They're also working together on recruiting efforts and have created a database of skilled workers.

Roberts Tool is taking inefficiencies and costs out of the manufacturing process for wing clips for Cessna's Mustang. "Previously, when we needed a set of clips it took weeks to come up with a source," says Beverlin. "Now, we call Brad and he runs them within hours."

In Beverlin's mind, that collaboration is key to SEA's success. "Embraer and Eclipse are thinking about joining and people have asked if I have a problem with that because both are competitors to Cessna," he says. "I don't. If we accelerate improvement in the supply base, it's going to help us all. The company that's going to have the advantage is the one that fully leverages the supply base."

The roadmap

"We have a different formula for being globally competitive," says Michael Beason, SEA board chairman. "According to traditional manufacturing models, competition is the best way to get the best price. And, we all know that doesn't always work." He and others point to the auto industry as an example of that.

Changes occurring within aerospace and defense spurred founding members of SEA to take a more collaborative approach to improving supplier performance. On new aircraft models, purchasing is rationalizing its supply base and looking to suppliers to provide kits of parts or assemblies, and, in essence, to manage supply chains of their own. So, it's important to take as much waste—and cost—out of the process as possible.

"Early on, we started talking to suppliers, homing in on those that are successful," says Beason. "We learned that to be a success, the supplier had to build a company, focusing on management, employee development and operational improvement."

It was by concentrating on building up these three areas within a company that Beason and the founding companies developed the SEA Lean Enterprise System.

Recently, SEA added a certification process through which it audits supplier facilities' adherence to the roadmap. Those that are certified are listed in a database that aerospace companies may refer to during the sourcing process. SEA also recognizes suppliers for outstanding performance at an annual awards event. The first was held in November.

Other ways suppliers gain visibility with potential customers is through quarterly meetings. SEA members and suppliers gather at a host facility, where speakers share industry news and suppliers tell of their experiences with SEA and tout improvements to their companies. Members call it a recruiting event.

Beason acknowledges that SEA is not for everyone. "Suppliers have to perform at a new level," he says. "That's where the investment comes in. There's a whole conversation process that is no small deal. It's bigger than what any supplier really has ever done." Beason likens the cost to that of hiring one person experienced at Lean for one year. And he adds that the effort takes time, energy and leadership.

What suppliers say

Ken Marcia, vice president of supply chain management and process innovation at Dresser-Rand Group in Houston, first became involved with SEA in 2003 when he was working at United Technologies. He's been with Dresser-Rand for two years, and although the company is not a household name in aerospace, it provides parts to the U.S. Navy. He serves on the SEA advisory board.

"We've fully embraced SEA throughout our business," says Marcia, who has mandated that Dresser-Rand suppliers become Lean, and, in May, started writing in the company's contracts that it recognizes the SEA roadmap as an accepted part of that process. Many suppliers have since joined SEA. One has implemented the Lean enterprise system at seven locations worldwide.

A supplier on the board of directors is Cristi Cristich, president of Cristek Interconnects, designer and manufacturer of interconnect devices for the military and aerospace industries in Anaheim, Calif.. Cristich became involved in 2004, at the invitation of some customers.

"They recognized we had hit a bit of a wall," she says. "We are a good supplier that's come a long way on tribal knowledge. But once a company reaches a certain size, it needs more structure."

So Cristich signed on with an SEA-authorized consultant for training. It helped her company improve delivery to nearly 100% on-time from below 60%. Quality, which dropped to 80% plus, improved to well over 90%. And, they've sustained these rates for three years. She credits developing standard work for the success.

Randy Fry, president and CEO of Photo Etch Co. in Ft. Worth, Texas, also is on the board. A customer, Rockwell Collins, suggested he learn about SEA in 2005. A year later, he signed on for training. Photo Etch designs and manufactures displays and control panels for navigation systems.

Photo Etch began with a kaizen event on its order-entry process. "We learned it took anywhere from 3 to 21 days to get an order to production—for an item without engineering," he says. Removing waste got it to 27 hours.

The company also reduced time it takes to produce the item from 18 weeks to 10 weeks and it's moving toward 4 to 6 weeks. "We'd like to get it down to two."

Fry is sharing what he's learned with his company's suppliers. "That's the essence of SEA, developing a new culture," he says. "As a supplier, we're going to solve our problems and get our products to customers on time with zero defects."

What it Means to Buyers:

- In the aerospace and defense industry, purchasing takes the lead on supplier development efforts through an organization called the Supplier Excellence Alliance.
- Small to mid-size suppliers that become involved with SEA and follow its roadmap to Lean manufacturing are seeing results in quality, on-time delivery and inventory levels.
- Now, the suppliers are starting to share what they've learned with their suppliers.

The road to Lean

The Supplier Excellence Alliance's mission is to make the aerospace and defense supply chain in the U.S. more globally competitive by creating a single Lean enterprise system.

The SEA Lean Enterprise System, in simple terms, provides the framework to promote a common language and an integrated approach to continuous improvement in all areas of a supplier company, from the production floor to the front office. It features three tracks: leadership and culture, workforce development and operational excellence. "It was designed to be simple and fast to implement," says Michael Beason, SEA chairman.

To implement the SEA Lean enterprise system, the organization drew up a roadmap, which is a collection of best practices arranged in a proven step-by-step process for implementation by small supplier companies. There are three steps and each takes 6–18 months, depending on maturity of the processes at the beginning of the step and how quickly the company manages the change.

- **Step one** is about accomplishing the basics of establishing a process management system with standard work, process owners and master trainers.
- **Step two** describes suppliers that have basics of process management in place and can participate with their suppliers in establishing more advanced capabilities based on partnering and managing a value stream for their customers that spans two or more suppliers. These suppliers, for example, are capable of kitting components for their customers.
- **Step three** is focused on establishing the continuous improvement system as standard work within the company. It also establishes advanced techniques for controlling and reducing process variation.

SEA has also built a tool called the process maturity model (PMM) that suppliers can use to assess and manage improvement. For more on SEA, go to www.seaonline.org.

For more information: [How the aerospace industry buys](#) an online archive of best practice case studies in the aerospace supply chain.