Maryland's Move To Manufacturing Excellence

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The Maryland World Class Manufacturing Consortium has been helping state manufacturers become world-class competitors since 1996. Lean, Kaizen, Six Sigma and other strategies are part of a program that guarantees its members will improve.

If someone told you they would help your manufacturing operation achieve world-class standards, pay half the cost of high-level consultants, and help you network with other manufacturers _ all for a nominal annual fee _ you would probably question their credibility. Manufacturers in the state of Maryland received just such an offer, however, from the Maryland World Class Manufacturing Consortium, a state-supported group whose goal is to assist Maryland manufacturers become globally competitive. The Baltimore-based Consortium does this by providing its members access to the best training and implementation resources it can find, and working with them every step of the way. It guarantees improvement.

Founded in 1996, the not-for-profit Consortium is composed of 54 manufacturing members, a director, a consultant, and a small administrative staff. It is supported by the Maryland Department of Business and Economic Development. John Zyrkowski, the Consortium's senior consultant, helped develop the group by enlisting state support for his belief that he could help Maryland manufacturers improve their operations by a factor of 10 or more. A Six Sigma black belt, Lean Master, ISO assessor and expert in CAD/CAM and TPM, Zyrkowski was able to craft an agreement with the state whereby state funding helps cover 50% of all consultant and training fees for Consortium-member companies. Members pay the rest. Annual Consort-ium dues of $2,000 cover advertising and promotion costs.

Zyrkowski and Roger Satin, director of the Maryland World Class Consortia _ an umbrella group that includes the Manufacturing Consort-ium and the Maryland Software Industry Consortium _ agree that keeping the state's profile low is important. Satin says companies can be skeptical when they learn of the Con-sortium's public/private agreement, says Satin. But the bigger challenge to recruiting new members, says Zyrkowski, is convincing them it can deliver the improvements he promises, especially at the advertised cost. "When I start talking, they often feel it sounds too good," he says, "that it's not costing enough, which is true."

Zyrkowski states his case with passion, though. He firmly believes most U.S. manufacturers not only have the ability to improve, but that they can compete directly with _ and beat _ offshore sources on price and service.

"We believe that touch-labor manufacturing in the United States is dead," he says, "unless you make a 10-times improvement over traditional techniques. Otherwise, you cannot compete against offshore sources or even have a chance to compete against them. I tell companies, you can make it, but you can't do it only by doing Lean," he says. "That's 2 to 3X. You can't only do it by working on some front-office activities. That's another 2X. You can't do it by Six Sigma only. That's another 1 to 2X. You can't do it solely by automation. That can actually add costs. You need to bring in simple equipment that doesn't increase depreciation costs. When you start

multiplying those Xs," says Zyrkowski, "you get to 10X." Compa-nies that choose not to focus on this scale of improvement today, he warns, leave themselves vulnerable to competitors based in China and other low-cost areas.

Zyrkowski's belief in the simple, Lean approach excludes support for automated systems like MRP (material requirement planning) and others. "We don't use MRP systems and we don't use high-end financial accounting systems," he says. "Most successful companies are unencumbered by many items like this that we call 'technology' these days. Great companies are turning off these systems and going to simpler systems that work better."

Zyrkowski admits that this and other Consortium tactics fly in the face of accepted practice. "Everything we're promoting is heresy," he says. "Going to China? Doesn't make sense for most industries. Outsourcing? Doesn't make sense. MRP? Heavy capital investment in bits and bytes? Doesn't make sense. Most of this information is available for free or almost free on the Internet."

To date, Zyrkowski and the Consortium have kept, and bettered, their guarantee. In 1999, members enjoyed 10X improvement, based on their training expenditures; in 2000 and 2001, improvements reached 35X. How does it happen? Using Lean doctrine and his abilities as a production-improvement expert, Zyrkowski takes a simple approach. His job is facilitated by world-class consultants the Consortium has screened and approved. And progress is guided by benchmarked information from other Consortium members and recognized world-class companies.

Prospect-ive members start with a copy of the Consortium's "Guide to World Class Manufacturing," which includes a required self-assessment process. After the assessment, if Zyrkowski and Consortium members and staff think the group can help the company, a program is developed. Programs are usually constructed around Lean Enterprise and Six Sigma guidelines, a process known as Lean Sigma. But before changes can begin, companies must first determine precisely what their customers want.

"We ask our members to do a customer value analysis," says Zyrkowski. "We look at innovation, features, delivery schedules and repair parts, for example. All of these elements are used to complete competitive research for their industry. We then come up with a customer-quality index, which we can statistically relate to pricing. The higher the customer-quality index verses competition, the higher the price that can be charged. When we do that, we can come up with a value proposition."

This is fundamental to Zyrkowski's belief that any given market "is not about parts, it's about solutions. If you're talking about world class," he says, "you've got to be great at delivering on your value proposition and great at your cost thesis. Without that, you can't create enough value in the market to hold on to business."

With this focus determined and agreed upon, changes can begin on the plant floor. Zyrkowski, whose services are free to Consortium members, starts by videotaping existing operations for analysis. "This is part of a baseline," he says. "I take different operations, videotape them, then come back and say, here's what a world-class company would do. Lets apply those principles here to help your company become globally competitive."

Ray Seward, president of Harbor City Plastics, a 14-year-old, custom injection-molding and tooling business in Abingdon, MD, north of Baltimore liked what he heard from the Consortium. Just not right away. He attended an early Consortium meeting in 1996 to expand his knowledge about business improvement, he says.

The one-day Lean demonstration in Baltimore "was nice, but I didn't think it was real-world," he says. It reminded him too much of other initiatives he had tried at Harbor City, none of which had lasted long enough or gained enough support to be effective.

But Seward was intrigued by the Consortium members' positive attitude and hands-on approach. And after two more meetings, he says, "I realized this could really work." He was won over by a Kaizen demonstration that stressed the importance of videotaping. Seward was inspired enough to purchase a video camera on his way back to the plant. On his return, he made a 10-minute video of an assembly/packaging process that he sensed incorporated too many duplicated steps. He then invited three operators, an engineer and an operations manager to watch the video with him. Their curiosity about Seward's plan turned to active involvement when he then asked the workers to describe problems they were having with the process. "The flood gates opened," says Seward. "I filled many pages. When they finally slowed down, I asked what they thought we could do to improve the process."

The team quickly noted the wastefulness of having expensive process machinery sit idle while the operator assembled parts. Then automation was discussed, which led an operator to ask if Seward's experiment would mean the end of his job. "I assured them they would never lose their job at this company because of this process," says Seward. "I said it will make their job easier and allow them more time to get involved with additional work as we bring it in, which is good for growth."

Seward's impromptu Kaizen session led to a new, partially automated machine the company designed and built in-house. "It paid for itself in five weeks," says Seward, by enabling more units to be built in less time.

The success was significant. Seward joined the Consortium, and immediately enlisted a Consortium-certified consultant to conduct a Kaizen event on a process that was returning an unacceptably low profit margin of 5%. At the end of the two-week session, the margin was pushed to 50%, and Seward had found a key to his business' longevity.

Since then, Seward, now a Consortium board member, has used the group's assistance to not only make Harbor City Plastics more efficient, but to help his customers improve their businesses. In doing so, he has been able to create mutually beneficial partnerships that have made his company a preferred alternative to offshore sources. "Now, instead of being reactive to customer requests for quotes, I'm pro-active," says Seward. "I go into their businesses and identify additional value we can add."

Seward says he still has a long way to go to reach the Consortium's Certified World Class level. "But if we had not been involved in this Consortium," he says, "if we had not been making the improvements we've made, we would not have survived. We're in business today because we have knowledge, and we're making improvements."

Harbor City Plastics and other Consortium members have benefited from Zyrkowski's help in finding ways to free up production time, which affords increased flexibility. One way he has done this is through the use of what he calls "lights-out manufacturing," a strategy using a CNC machinery's ability to run 24 hours a day with little or no human intervention. "You don't need people standing around with a rag in their hand holding the door shut on a big piece of CNC equipment watching chips being made," says Zyrkowski. "That's the average activity that takes place in

most machining arenas. One of my goals is to teach you to run your CNC machine like a video game. Most people trained in machining never learn this," he says. "The amazing thing about these machines is that they run themselves." They don't need to be re-set after each procedure, he says, even though most operators do. This under-utilized feature of CNC equipment can allow lights-out manufacturing for significant portions of time, freeing up workers and resources for more important tasks.

In assembly operations, Zyrkowski encourages members to consider autonomation, the integration of people and machines. "The idea is that you have a simple machine doing a simple, repetitive process, and you have people moving parts in between. It's called 'chukka chukka,' meaning that it's a repetitive, low-load task." Typically, autonomation allows one employee to perform two or more tasks simultaneously, sometimes using more than one machine. With autonomation, says Zyrkowski, material costs stay about the same as without it. But labor and overhead drop off dramatically, not only from the volume that can be gained, but because MRP software and other tracking systems are not needed for such predictable processes.

"You don't need routing cards, and all labor-reporting can be dropped," says Zyrkowski. "When the amount of labor gets so small that it's less than a certain percentage of your materials, why even try to measure it? You can create all kinds of overhead to make sure the routing cards and labor tickets are correct, but [with Lean] the teams handle this themselves. You can get rid of a lot of your overheads." Zyrkowski points to benchmark companies Genie Industries and Wiremold who have pursued this strategy. Many who have not, he says, have simply "pulled up stakes in the United States and gone to China."

Help in resisting the pressure to move offshore is a common reason Maryland companies turn to the Consortium, and the driving force behind the group's formation. Pace, Inc., a Laurel, MD-based manufacturer of soldering and desoldering equipment, became a founding member of the group when it needed help dealing with something it had never experienced: a drop in market share. The 44-year-old company, known for high-quality products, experienced little competition until the 1990s when lower-priced, lower-quality units made overseas began to pose a threat.

"When we saw a 3% dip in market share, we knew we had to cut costs," says John Walter, vice president of manufacturing. "But we didn't have a vision of what we wanted to do. That's where the Consortium became involved." Walter says with the Consortium's help, Pace learned about Lean Manufacturing and how to gauge a company's value. "We learned the importance of strategic planning," he says. "You begin to understand what you're all about, who your customer is, and what value you bring to the table."

After 14 months of planning, self-evaluation, customer interviews and benchmarking activity, Pace executives learned things about the company, its products and its customers they had never known. The good news was its name: Many customers said they would buy a Pace product, regardless of price, because they knew it was well made. But they were surprised to learn that many customers also believed that Pace products had become too complicated.

"We learned that our customers wanted simple," says Walter. "The world was changing. They didn't want equipment that you needed a high-skilled technician to run. Since then, our strategy for all of our designs is that they must be simple to

use."
The shift did not come without a price. "It was a total cultural change," says Walter. Company engineers had been designing equipment that way for years. Some wanted no part of the change and resigned over the disagreement. Those who stayed, says Walter, came to realize that "we used to have them isolated in the back room with blinders on." Now, with the aid of benchmarking programs and partnerships, the company has both expanded and improved its product base without depending entirely on unique designs from its own staff.
Pace also took the Consortium's suggestion to adopt Lean Manufacturing, but had to sell that idea as well. "About 20% of our high-level managers didn't want it," says Walter. "So we had to get buy-in from the top to make it work." And company executives agreed it was worth the effort, especially since the Consortium's aid had so far been on target. Pace's Lean transformation began in January 1999 when a Consortium consultant was signed on to train a core group of 25 individuals in Lean enterprise.
"We started a pilot program in one cell area to do the transformation from raw-material procurement to how we manufacture the product and ship it to the customer," says Walter. "We did that for about three months, then we saw that the gains were enough to allow us to expand it throughout the whole facility." The realization changed the course of business for Pace. Since 1999, developments at the company have been dramatic. Among other improvements, it has:
&#149 Realigned product flow from design to launch.
&#149 Introduced a pull (Kanban) system so customer orders determine how much raw material is used and how much product is made.
&#149 Introduced a Web-based integrated-supply program that allows approved suppliers to view in real-time Pace's manufacturing needs.
&#149 Built continuous-improvement practices into company strategy.
&#149 Used regular Kaizen events to further continuous improvement.
&#149 Used the 5S process (sort, straighten, shine, standardize, sustain) to accomplish Kaizen goals.
&#149 Introduced lean accounting methods which eliminate or simplify traditional accounting procedures.
&#149 Used TPM to decrease machinery breakdowns and product defects.
Pace has also reduced waste by 60%; improved productivity by 64%; cut lead times from eight weeks to two; and adopted Lean processes so thoroughly it was able to consolidate operations at two separate facilities into one, a process that was being finalized at press time.
Last month, the Consortium recognized Pace as its most accomplished member, bestowing on the company its World Class Certification in a ceremony at its quarterly meeting. Reflecting on the company's gains, Walter is quick to credit the Consortium's help. "If we had not adopted Lean through this exercise," he says, "we would not be around." Also key, he says, has been the affordable access to world-class consultants and companies. "I can't get that anywhere else." The best news for Pace, he adds, "is that our biggest customers are in China and we can supply them from Maryland."
Other Consortium members are following in Pace's footsteps, says Zyrkowski, making gains in "every industry there is," from aerospace and fuel-cell manufacturing to chemical production and commercial printers. The group's 54 members represent $3.5 billion in total sales, a figure Zyrkowski expects to grow as

he enlists new members from the 800 manufacturers in the state he estimates could benefit from Consortium support (out of some 1,600 that operate there). Joining now makes perfect sense to Ray Seward, though he admits "you come in with blinders on. But when you get this diverse group of people together and someone turns the light on for you and you see a different way, that's when things start to happen," he says. "One individual can't do that."

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