THE CONFERENCE BOARD

Executive*action* series

No. 172 December 2005

Mid-Market Management Trends . . .

Making It in Manufacturing: Becoming Lean to Compete Globally

by Theresa Sullivan Barger

Being lean, taking time to know your customers, and maximizing the advantages of technology are some steps companies in higher-wage countries can take to remain competitive globally.

Festo Corporation needs highly skilled labor to help manufacture its automation equipment. Compared to labor costs worldwide, the Long Island, NY, company pays its workers well. But in the last two decades, the worldwide company has expanded its plant twice, its profits are rising, and it has no plans to use overseas labor for its North American business.

How can that be?

"Based on having optimized the entire manufacturing process, the cost of labor is minimal," says Scott Schuler, marketing manager at Festo's U.S. subsidiary, which is part of Festo AG & Co, a $1.8 billion company. "The highly skilled labor, which is what we need, is more plentiful here. And labor is not a significant portion of our cost because we are automated."

The 33-year-old manufacturing company also employed an "enterprise resource planning system" in which all data on every aspect of manufacturing, such as how quickly things are moving and how many people are touching a particular piece, are compiled and analyzed. Using that data and common sense, waste is eliminated and functions that can be automated are.[1]

Spreading the Lean Gospel

While there is no single secret to their success, mid-size companies share several practices that help them keep at least some operations in the United States while staying competitive in a global market. Those practices include implementing lean principles throughout the company, then bringing lean principles to suppliers and customers—to as many tiers as possible. Cross-training manufacturing staff, using automation and technology, outsourcing less-specialized, commodity functions, and diversifying over multiple industries are other measures that successful businesses use to solidify and grow.

1 For a counter argument that focuses on the adoption of the "extended enterprise" model of outsourcing and offshoring to stay competitive, see The Conference Board Executive Action No. 171 *Globalization: Will Your Company Be Left Standing?* by Ram Iyer.

Whether manufacturing wind-measuring devices, automation equipment or medical systems, successful manufacturers have found their strength in:

- the specialty of their products;
- their investment in technology, automation, research and development; and
- their ability to work closely with suppliers and customers to continuously reduce waste and increase quality principles.

"There has always been a role for the small- and medium-size manufacturer. [But now,] it's almost like the plight of the small retailer competing against Wal-Mart," says David F. Ross, Ph.D., education group manager at Intentia Americas, a publicly traded, Sweden-based supplier of enterprise resource planning software. Just as small retailers can compete with Wal-Mart by offering specialty products and superior service tailored to their customers, he says, "manufacturers must be able to offer the products and services that a Wal-Mart [of the manufacturing industry] can't offer."

You Can Never Be Too Thin

After medical device manufacturer Baxa Corp. freed up resources through lean practices, company leaders sent staff to its suppliers to work with them to help them reduce waste and improve efficiencies.

In a face-to-face meeting, a representative of the Denver-based manufacturer talked with a supplier about how the plastic made by the supplier could be improved. The supplier thought of a minor modification and wondered out loud whether it would help. It sure would, the rep said. The idea was implemented, making for a better-designed product.

On the other end, Baxa representatives visited pharmacies that use their products and observed their customers in action. After seeing that it took their customers 1 ½ hours to hand-label syringes, the company invented an automated labeling system.

"People love it. It's been a great product," says Greg Baldwin, CEO of Baxa, a global company with $93 million in sales. "And there's obviously some crossover. We've gotten new customers."

Privately held companies like Baxa and others credit their growth to bringing lean and Six Sigma practices to deeper levels. Once manufacturers have incorporated lean practices in every aspect of their business, they've worked with suppliers and customers to help them become lean. The savings have been dramatic.

Take Baxa and its IV solution, for example. "In three years of working with suppliers and through continuous improvement, we've been able to bring the cost down to half of what it was. We've been able to improve the reliability over 400 percent," Baldwin says.

The ultimate goal of lean is to use it to free up people, equipment, floor space, and cash so that those resources can be directed at operations that help businesses connect with their customers.

In the past two years, Baxa's sales grew by 30 percent while its direct labor costs grew only 5 percent. After clearing half its floor space through lean practices, the company moved into a building twice as big. "What we've done with that money is put it into a supplier management program and product development," Baldwin says. "We're really working as partners now with our suppliers to help them become lean."

And it's really paying off. Suppliers are learning about Baxa's customers and working with the company to develop products that help its customers.

That's exactly what every manufacturer should be doing, consultants say. Gary Hourselt, managing director of strategic practices for Durham, NC-based TBM Consulting Group, which provides LeanSigma® consulting and training services globally, advises his clients to observe their customers using their products.

"Watch the customer use it through lean eyes. In doing that, they will help discover ways to help the customer reduce waste," he says. Next, look at it through innovative eyes, searching for opportunities to make it easier for the customer to use the product or do business with you.

Hourselt had a client who makes stump grinders. While watching a customer with a tree-care business use the stump grinders, the manufacturer could see they were difficult to maneuver and unsafe. The company went back to the drawing board and improved the design to ease operation. "You're creating differentiation and you're creating connections with your customers that make it very difficult for them to go to someone overseas," he says.

Loyalty vs. Bottom Line

Many American-based manufacturers are an integral part of the communities in which they're located, so they are constantly reevaluating how they do things to ensure their long-term strength.

Markem Corp., a global manufacturer of specialized product identification systems with about $400 million in revenue, is committed to the Keane, NH, community where the business started.

"We have our roots here," says Mark Salsbury, vice president of human resources. Supporting the community of Keane is a basic company value. But it's not so imperative "that we will forsake our profitability. These are important philosophical beliefs, but it doesn't mean that we're not going to make good business decisions."

U.S. manufacturers that employ careful hiring practices can generally depend on their workforce's loyalty and reliability. In some countries, such as India and China, where the work ethic also is strong, heavy turnover poses a challenge.

"Our people here in our company— we have a fairly strong level of years of service—know our products in a way that is beyond just assembly operation," Salsbury says. "There are certain elements that we do that are core to making our products special; those are things we're going to want to maintain and keep in-house."

While this concept has been around for years, it bears repeating because so many thriving companies mentioned it as a key to their success: They cross-train employees so that the work is more interesting, the variety is better for employees' health, the staff is kept productive by responding to the ebb and flow of orders, and morale is higher.

Looking Long Term

Knowing that it saves money in the long run to hire the right people and keep them, one privately held, award-winning Vermont company has found that taking the long-range approach has paid off.

At NRG Systems, each person hired, regardless of level, is interviewed twice and sometimes three times to ensure that the person has the right qualifications, diversity of skills, and the potential for growth within the company. Businesses have to be willing to go through that entire process and not hire anybody if they don't find the right person, says Jan Blittersdorf, CEO of the manufacturer of wind-energy measurement systems based in Hinesburg, VT. "It's expensive on the front end, but choosing the right person will save you a lot of money," she says. "The amount of voluntary turnover is almost nonexistent."

Automation and Technology

One common denominator in many businesses experiencing strong growth is the constant improvement in automation and technology. Companies that can overcome the sticker shock and employee resistance discover fewer errors, improved quality and reduced costs.

U.S. manufacturing plants invest far less in capital equipment and IT than do manufacturers in China, says Intentia Americas' Ross, citing a Deloitte and Touche survey. U.S. manufacturing plants spent 3 percent of sales on capital equipment in 2004, compared to China's 20 percent investment; while U.S. manufacturers increased their investment in IT by 42 percent that year, their counterparts in China increased IT spending by 75 percent.

"At a lot of public companies, you get the feeling that senior management try to eliminate costs because it's part of their compensation package. That's a short-term view," says Ross. When faced with the choice of investing in more equipment or showing a better return, some executives choose short-term profits. "It keeps the stock investors happy, but ruins the organization."

Whether it's concern for annual profits or reluctance to change, experts say not taking advantage of technology is shortsighted.

"Most small- to mid-size companies (in fact, over 80 percent of them) have done little to automate their existing processes," says Andrew Anagnost, Ph.D., a senior director of product and solutions management for Autodesk, a software and services company. "As a result, errors, re-work, poor re-use of existing designs and cost overruns are stifling innovation. Engineers have less time to innovate if they're recreating designs that have already been created or following up on errors or quality problems."

Information Sharing Is Critical

Several experts, including Ross, author of *Introduction to e-Supply Chain Management* (St. Lucie Press, 2003), say mid-range companies should have a software system that allows information sharing. "All parts of the business, from sales to manufacturing to inventory, should be integrated on the same database," Ross says.

Businesses should automate the communication between engineering and manufacturing, Anagnost added. By using software tools to control what information is released to manufacturing, and when it's released, manufacturers can minimize mistakes on the shop floor, improve quality and reduce costs—leaving more time for innovation. By automating this way, they ensure that changes to design that came up in the manufacturing process are recorded and captured for future designs. This process increases time-to-market and frees up time for innovation.

For example, one of Anagnost's clients, Unverferth Manufacturing, a farm equipment manufacturer, uses Autodesk's mechanical design software to create, manage, and share design information.

"Unverferth has been able to reduce time-to-market by 50 percent and build physical prototypes that worked the first time," Anagnost says. "Instead of taking months to create a design, it took a matter of hours. Unverferth was able to make better, more complex products in the same amount of time or less."

Leading companies employ technology that allows them to communicate and work together online with their suppliers and customers, and some are linked so they can see inside each other's businesses—obviously through a secure system in which participants control access.

"Now you can work lean, not just in-between the suppliers," says Bill Angeloni, CEO of Exostar, which provides a secure collaborative business network to more than 20,000 trading partners in the manufacturing industry. As companies become increasingly global and work across time zones, allowing suppliers, manufacturers, and customers to connect through a central network improves productivity and turn-around time. The 3D software allows engineers from different parts of the world mark up a design and work collaboratively in a secure environment.

After years with Six Sigma and lean operations, businesses are continually asking themselves how they can improve quality and efficiency and get closer to their customer. "Technology allows you to see three levels down in your supply chain," which gives companies the chance to help their suppliers improve efficiencies and reduce costs, Angeloni says. Sharing information allows suppliers to see when their customer receives an order, so the suppliers can start working on meeting customers' needs that day.

Overcoming Resistance

While this all sounds good once it's working, companies have to overcome resistance both internally and from their suppliers and customers. Sometimes suppliers don't want their customers to know their costs.

Companies that have been successful in implementing technology and surmounting opposition to change have chosen tools that have a clear and immediate return to the employees using them —and the software works closely with the tools their employees are already using. "Large, complex, top-down initiatives fail because they cannot galvanize the rank and file members of the team," Anagnost says. "Instead, corporate leaders need to look for solutions that offer incremental ROI [return on investment] one step at a time and evolve to more complex solutions as the employees fully exploit each change in work processes."

Strengthening Your Core

Just as fitness experts are advising us to strengthen our core muscles for long-term health and well-being, economists and business consultants say manufacturers' future health will come from bolstering their foundation.

Figure out what your core strengths are, what sets you apart from your competition, and focus your resources on improving that area of your business. Manufacturers that want to ensure the quality of their product and protect their copyrights keep their core, specialized functions in-house. By outsourcing the manufacturing of non-specific parts, you can channel your energies into the technology that makes you special.

Companies that can't produce a part they need in a cost-effective manner are outsourcing it, establishing their own overseas manufacturing operations or automating. They are weighing quality, service, and overall customer satisfaction issues.

When deciding whether to outsource or automate and keep operations in-house, the right answer depends on each company's answer to these questions:

- Does the quantity justify the expense of automating?
- Are the drastically lower wages paid to foreign labor offset by the hidden costs associated with foreign operations?
- Is the level of skill required so precise that it's too risky to outsource the task?
- Are you willing to risk exposing your company's technology secrets in a country that doesn't have satisfactory patent protections?

Markem Corp., which has 17 locations worldwide, outsources peripheral work. “We’re not sending our newest technology offshore,” Salsbury says. “The growth engine for our company, which includes the manufacture of new technology, is typically going to be manufactured in our key manufacturing centers, including in the U.S.”

Successful manufacturers are taking their core skills and improving upon them and looking for new applications and new customers. “A lot of companies are diversifying,” says Peter Gioia, economist with the Connecticut Business and Industry Association. “If they were aerospace before, they may be doing precision medical devices, cellular devices. … They’re also expanding their export market. They know that they need more buffers than they have had in the past.”

Going Green

Another way to lower expenses long-term is to go green. As the cost of energy continues to rise, companies are looking to reduce operating costs. A survey of architects released in November by Anagnost’s company, Autodesk, predicts a 100 percent increase in green design practices by architects by 2010.

NRG Systems, the manufacturer of wind-energy devises, is already reaping the benefits of its award-winning green building. The $8 million building received the LEED (Leadership in Energy and Environmental Design) gold-level certificate, one of only four manufacturing facilities in the world to receive that designation.

Building to green standards cost $13.81 per square foot or 8.2 percent more than the cost of a conventional building. NRG expected these additional expenses to be paid for in five years, but if energy costs remain high, the break-even point may come sooner. “Our electricity bills are as low as $150 a month for a 46,000 square foot building,” says Jan Blittersdorf, the NRG president.

Five years ago, when the 23-year-old company knew it was time to move out of its little sheet metal building, the owners predicted that energy prices could go up, create shortages and hinder their ability to operate. “I figured, maybe it’s time we started walking our talk. We don’t want a sheet metal building that hogs energy,” she says. They hired an architect with 20 years of experience designing green buildings and set out to create a building that was super-insulated, used as much daylight as possible and had low energy consumption.

"Everybody asks, 'What's the payback?' " Blittersdorf says. With the new building, the air quality is better, daylight streams in from windows on all sides, and workers in the manufacturing operation can see into the boardroom so that workers feel connected to each other and the outdoors.

"It's not just an economic payback. Productivity, air quality, morale," all have improved, she says. "It's dynamic."

Six Steps to Staying Alive

These approaches are designed to help medium and small manufacturers thrive in a fast-paced, global market.

1. Create and maintain a product that is difficult to copy. Develop a unique competence that allows for growth.
2. Build a process within your business that allows you to make your product better than anyone else's. Invest in capital equipment.
3. Build an organization centered on learning and value generation. Make education and training your mantra.
4. As yourself how you can provide higher levels of service at a lower cost that the competition can't match. Work with your customer to ensure that you deliver your product to them as quickly and as cost effectively as possible.
5. Be nimble. Have equipment and people who are flexible; turn away from the old-style compartmentalization and move to a flatter organization, where everyone focuses on the customer, not keeping their turf.
6. Invest in technology that breaks down walls. For example, Web sites should move beyond serving as marketing tools and allow customers to order directly and monitor the status of their order.

Source: David F. Ross, Ph.D., author of *Introduction to e-Supply Chain Management*

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