

Make Manufacturing Strategic To The Enterprise

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Following the rise of finance executives to the top of corporations, manufacturing assumed a reduced role. Now, manufacturing is starting to rise again.

Some of the great companies of the 20th Century were built by engineers. These were people who designed products to solve problems for people, who would then want to buy them. They also knew how to manufacture those products and deliver them to the sales channel to get them into customers' hands. This was true for companies such as General Electric Co. and Ford Motor Co., but it was also true for the more modern high-tech companies such as Microsoft and Intel.

Somewhere along the line, people with spreadsheets began to replace people with slide rules, and manufacturing started a slide into the back room of corporate life. Products, customers and employees were merely numbers. Manufacturing was a black box that caused problems and sucked in cash. The new managers asked a hard question, "Is manufacturing a strategic competitive advantage for the company?" Many answered, "No," and started the infamous trend to outsourcing the function.

There are usually many reasons for a company to slide into bankruptcy, but it is not beyond belief to think that neglect of basic engineering functions of product design and manufacturing were a major contributor to the decline of General Motors Corp. and Chrysler into bankruptcy and U.S. government bailout. Both are showing signs of recovery, with General Motors even talking of an initial public offering (IPO) of publicly traded stock in the company. But one fellow member of the old "Big Three" of manufacturing, Ford, avoided those problems and is proclaiming manufacturing and product engineering as key to its resurgence.

For example, note this paragraph from Ford's last Annual Report: "As Ford introduces a new generation of global products, the company's ONE Ford strategy is clearly evident in its assembly plants. Taking advantage of global demand means scaling up the company's manufacturing operations to produce the first of these global products—the next-generation Ford Focus—with universally high levels of craftsmanship, quality and efficiency all around the world. In Wayne, Mich., one of three North American truck plants is being retooled to build fuel-efficient global small cars, and in Chongqing, China, Changan Ford Mazda Automobile broke ground in September for a state-of-the-art and highly flexible passenger car plant scheduled for completion in 2012 as the new home for Focus in China."

Ford Vice President of North America Manufacturing, Jim Tetrault, discussed the company's manufacturing turn-around to assembled manufacturing executives at the 2010 North American Conference of MESA International, the

manufacturing enterprise solutions association, in Detroit last June. He touted the advances his company has made over the past 3.5 years in terms of worldwide manufacturing systems, quality, flexibility and ability to move quickly to meet changes in market dynamics.

Improvement journey

The Association for Manufacturing Excellence (AME, www.ame.org) was founded in 1984 as a not-for-profit organization dedicated to the journey of continuous improvement and enterprise excellence. AME's membership is comprised of a trusted network of volunteers who are committed to leveraging the practitioner-to-practitioner and company-to-company shared learning experience. Two of those members spoke with Automation World about their experiences in manufacturing excellence.

Becky Morgan, president of Fulcrum Consulting Works Inc., Cleveland, says, "What's the purpose of operations? Even in a service company, I see three. First is to deliver on the brand promise. Next is to provide a competitive advantage. Third is to do both profitably and reliably. Companies spend from thousands to millions of dollars to say what they are, but it is manufacturing that must define that brand promise. Look at Apple. Its strength is product development, design and marketing cool. But without operations delivering the products, it's all without substance."

One problem with operations executives stems from coming up from the shop floor experiences. "Companies that don't have an operations strategy wind up with an 'order/fill' mentality," says Morgan. "It's a reactionary mode. The strategic mode is to figure out how best to provide the brand promise. Operations strategy must be built on business and marketing strategy. The problem is, people in operations are not taught to think and behave strategically. It's been run by the expeditor who rides in on a white horse to save the day. This hero-based strategy just doesn't work."

Ken Rolfes heads KDR Associates, a Carlsbad, Calif., consulting group that "works with manufacturers and service companies to get them on the path to profitability." He focuses on educating management on using tools to strategically help companies align their organizations. "Most of the time, companies get in their own way by having what they call strong strategy but have little alignment within the organization. If you're a company competing on a global basis, you can't afford to waste any brainpower walking in the door every day," Rolfes states.

Having spent about 35 years in operations management, Rolfes has seen some trends. "Over the years, what we've seen was that financial engineering was kind of the forefront of the activity. Consequently, we see a significant stretch on manufacturing to compete on a global basis.

Mostly, the focus was on direct labor. Now, it's not only that, but in some cases, properties, taxes, benefits and regulated costs. If you paid the people nothing, you'd still have difficulty competing unless you take a strategic view of what manufacturing is there for in the first place."

Why outsource?

Rolfes went to California 10 years ago to take a position as chief executive officer of a manufacturing company doing 25 percent of unit manufacturing volume out of China. The board asked why the firm shouldn't outsource all manufacturing to China. "When I looked at the problem strategically, it didn't make sense," says Rolfes. "To answer why, first, you need to have holistic view. You create strategies around the mission of the company and why you exist. As Peter Drucker said, the first order of business is to find a customer. Why you exist is to do something for that customer. If you look all through your value creation process of identifying and qualifying customers, turn that into orders, fulfill the orders, then fill needs through operations process and develop new products through product development, all must be aligned. When I work with companies, what I see is that it's difficult for management to take that mission and vision and turn it into what are the key competencies you must have to achieve them. In most businesses I've been in, what's important to customers translates into some fairly simple things—products that work, fulfill customer needs, be there when they need them and pricing to reflect value."

If you take a strategic look at the business, you need to look at the balance sheet and cash flow statement in addition to the income statement, and you find you need to balance the three. As Rolfes puts it from hands-on experience, "Strategic outsourcing has created long and complex supply chains. So, to make a product change took 45 days to 60 days before it met your dock. If I have a manufacturing plant close to me, I can make changes in a pretty dramatic turnaround. That's a huge advantage. Another part is capital invested. Bricks and mortar may be risky, but a long supply chain is also risky. Plus, you can't take margin to the bank. You take money. If you cut lead times, you improve the business. Every time I did, I had growth. You can also cut working capital. For years, Dell had negative working capital—they had money before they had product."

Wafer manufacturing

Consider the strategy of Nemotek Technologies, a provider of wafer-level optic (WLO), wafer-level camera (WLC) and wafer-level packaging (WLP) solutions for use in a variety of applications, including mobile, electronic, automotive and medical devices. The company is located in Rabat, Morocco, 90 percent owned by a pension fund from the Moroccan government. The fund exists to grow new industrial business in the country to change its economy from one based upon materials to one based on industry. Silicon wafers and wafer-based optics is a well known fast-growing market.

Hatim Limati, vice president of sales and marketing at Nemotek, says the company has in-house capabilities for customization of its ultra-thin WLCs, reducing the long production process and high manufacturing costs associated

with outsourcing to expensive testing houses. Customers from sensor manufacturers to camera module makers are looking for new processes to speed up time-to-market and reliability. Nemotek addresses this need by streamlining the production process from complete design to testing of its high quality and low-cost, wafer-level solutions. It ships to a global array of customers.

"Our biggest advantage is the ability to manufacture. We can do everything in the same fab. We have competency in optics, packaging and camera assembly. Our new fab was completed in mid-2009 and now we have the capability of producing 3,000 8-inch wafers per month. It is important to do the manufacturing. We have very competitive labor rates relative to Europe and the United States, but we don't want to compete on low cost. We are working with customers to produce added value products. We're also looking into new market niches where we can compete—for example, medical device manufacturing is an interesting new market."

Limati concludes, "You would be impressed with the way Morocco has been developing high tech industry." Certainly words for people from every country to ponder.

Tighten innovation cycles

A survey of automation suppliers uncovered a number of ways that they interact with customers to help them maintain manufacturing as a strategic advantage. Mark Symonds, chief executive officer of Plex Systems Inc., in Auburn Hills, Mich., a supplier of on-demand MES and enterprise resource planning (ERP) applications, says, "Manufacturing makes you closer to the customer and tightens innovation cycles. If you don't manufacture yourself, you lose the capability to innovate as quickly. A second reason is to drive down costs. You can create a culture of continuous improvement more readily when you are closer to the action; the more removed you are, the more it gets watered down."

Chris Lyden, president of PAS Inc., a Houston-based operations and automation effectiveness solutions provider to the process and utilities industries, counsels, "You must talk finance to get the attention of top management. They are interested in making money. You can get more money from production and manufacturing through increasing productivity from less waste, less reprocess and reliability. I think safety is on one hand essential to get executive mindshare to make manufacturing strategic. On the other hand, if you have bad safety, management will want to get rid of you."

Lyden cites some research that suggests 3,000 at-risk behaviors equals 300 Occupational Safety and Health Administration (OSHA) reportable incidents equals 29 lost time accidents equals one fatality. So paying attention to risky behavior can pay huge dividends. "If you can do safety well, then productivity and other benefits are worth more," he adds. "I believe that you can't convince someone that manufacturing's strategic if the plant's not safe."

Responding to customer demands is a recurring theme. That shows its importance. Tom Comstock, executive vice president of worldwide marketing, product management and strategy for Long Beach, Calif., supplier of MES applications Apriso Corp., says, "What we're hearing from our

customer's executives is that the first thing is to be able to respond to customer demands. In a world of decreasing ability to forecast demand, the ability to work with customers to get the right products to them quickly is imperative. Another factor is the ability to bring out new products or move to new markets with full brand integrity. They want their products made the same globally. A third thing to do to make manufacturing strategically important is predictability with visibility. No one wants a surprise."

Ettore Soldi, general manager for the United States for MES systems integrator HylaSoft Inc., in Addison, Ill., concurs that money is the root of all persuasiveness to enterprise executives. "When we talk to clients, the first thing is how can they explain the value of an implementation. What does the executive care about? Cost reduction, or, at the end of the story, money. But also improving production. We help them convince senior executives that what they do at the manufacturing level will help achieve corporate targets."

Information roadblock

One roadblock in the way of getting executives and manufacturing on the same page consists of differing information systems. Soldi offers an example of a pharmaceutical company with globally dispersed plants. "The corporate level has tools such as ERP and product lifecycle management. The manufacturing level has tools such as Lean [Manufacturing], OEE (overall equipment effectiveness), SPC (statistical process control), quality compliance and the like. The key point is how these can be integrated. One company produced products in different plants in different countries. When the systems are integrated, though, the PLM system can push the same recipes down to different plants."

Michela Mirone, key account manager in HylaSoft's home country of Italy, adds, "We help customers harmonize what they already have and then provide visibility inside the company so that executives can have a view from inside the plant or an overview of all plants in order to help them make overall supply chain decisions."

More and more voices are adding to the chorus that sings the lament about the problems of outsourcing. Jack Childs, global vice president, Value Management, at ERP supplier SAP, in Sewickley, Pa., adds his voice, "The irony is that everyone pursued low price of the part. But now, the long supply chain has caused them to lose responsiveness. They are focusing on the supply chain instead of demand. Add the shoot-up of oil prices, and people are starting to realize we'll have to reinvent manufacturing in the United States."

Wayne Morris, president and chief executive officer of MyDials, a supplier of operational business intelligence software-as-a-service, located in Louisville, Colo., sees some reactive and some proactive approaches to aligning

manufacturing and enterprises. But it all comes down to information, in his opinion.

"I know of a company that was in a competitive situation and needed to move a new product into the market rapidly to counter the threat. But it may have moved too quickly in terms of getting quality products out," Morris says. "Lots of people are watching the line, so they need lots of information. On the other hand, many companies are using Lean Manufacturing in multiple different ways—sometimes not only to manage themselves but also to manage suppliers. We're also starting to see the inclusion of real-time analytics in the way people look at making decisions rather than waiting for the end of a reporting period."

Marc Leroux, manager for collaborative production management for automation supplier ABB, in Columbus, Ohio, takes a consultative approach when talking with customers. "I don't just talk return on assets when I talk with customers, but I look at coupling the project with corporate strategic objectives. I always look at the annual report before I go in. I look for what the CEO says are strategic drivers. Then I go to manufacturing and talk to line management. There is often a disconnect. If we can help them understand that what they are trying to do aligns with corporate strategic objectives, then we are in a better situation." What Leroux often finds is that executives are looking for ways to optimize the supply chain to shorten the order-to-cash cycle.

Learn new language

Colin Winchester, vice president of operations for Software Toolbox Inc., an automation software supplier in Matthews, N.C., notes—like Chris Lyden above—that engineers often can't speak the language of executives. "They need to talk about ways to improve profitability and understand the company as a process. The engineer needs to understand overall processes about profitability. I'll be talking with manufacturing and they'll say, 'The guys don't understand we need to fix this.' But the engineer doesn't understand that executives need to hear about profitability."

"It's absolutely necessary to produce a pure product," says Sheila Kester, general manager for operations management software at GE Intelligent Platforms, the Charlottesville, Va.-based automation supplier. "Companies need immediate ways to trace anything that happens. They need to say, 'We produce a pure product, and here's the proof.' It is of strategic importance that I can tell you in minutes what used to take days so the company can find it, cap it and replace it before it's a big public event."

From aligning manufacturing with corporate strategic initiatives to getting manufacturing managers and engineers speaking the corporate language of finance, suppliers and users are making manufacturing strategically important to enterprises once again.