Manufacturing Business Technology
IT FOR MANUFACTURING EXECUTIVES

Lean, in the most general sense

Serious lean adopters move initiatives beyond the factory cell to maintenance, the front office, and the supply chain

By Nancy Bartels

"Lean thinking always works when applied in a comprehensive way," say James P. Womack and Daniel T. Jones in a 1996 Harvard Business Review article titled Beyond Toyota: How to Root Out Waste and Pursue Perfection. While most lean initiatives start on the factory floor, experts say smart manufacturers eventually apply the basic philosophies of lean—continuous improvement and elimination of waste—to other parts of the enterprise.

In fact, a 2004 survey from Boston-based analyst firm **Aberdeen Group**, The Lean Strategies Benchmark Report, concludes that when a manufacturing operation successfully applies a lean strategy across the entire organization, it is as much as three times more likely to be an industry best-in-class performer than the so-called "laggards." It's also 2.5 to six times less likely to be as severely affected by customer pricing and service demands and the related squeeze on profits.

While a lean philosophy doesn't require significant investment in technology, software solutions that support lean thinking, ensure its integration into enterprise systems, and ease its movement well beyond the manufacturing floor are now readily available.
Other areas of the enterprise that can benefit from lean include asset management, front-office operations, and the supply chain.

Lean maintenance

The **Eaton Electrical Division** plant in Fayetteville, N.C., makes motor control centers and control equipment, all the while processing 6,000 tons of steel a year for its product enclosures. Fayetteville is part of a corporatewide initiative called the Eaton Lean System.

Says Joe Crist, manufacturing manager at the Fayetteville facility, "EAM [enterprise asset management] is just a piece of this system."

Eaton's approach to lean asset management is in some respects quite simple: Fayetteville has outsourced all but daily maintenance operations to **Advanced Technology Services (ATS)**. "We wanted to focus on what we're good at—assembling, engineering, and fabrication," says Crist. "We didn't want to become experts in managing the maintenance part of the business."

ATS has maintenance support on-site every day for all three shifts at Fayetteville to handle regularly scheduled maintenance—involving, among other things, calibration of some 5,000 pieces of Eaton equipment—and emergency repairs.

Proactive maintenance and calibration schedules are automated, says Crist. ATS maintains a database with information about every piece of Eaton's equipment, and when work is required, both Eaton and ATS are automatically notified. Eaton personnel do the daily maintenance; ATS staff handles less frequent activities.

On a Web site maintained by ATS, Crist can access a pictorial view of the Fayetteville factory floor from any on-site PC. A single glance indicates any machine in need of work. When a piece of equipment breaks, Crist or one of his staff simply enters a work order on the Web site, and ATS personnel respond.

ATS also delivers metrics that are basic to a successful lean operation. "ATS tracks the number of hours spent on both proactive and reactive maintenance," says Crist. "Its goals and objectives are aligned to those of the plant, which are then aligned with corporate goals."

The results for Eaton include reliable maintenance with metrics aligned to corporate goals; staff freed up to devote attention to core competencies; and $134,000 in savings driven right to the company's bottom line last year alone.

The lean front office

Quincy Ortman—an 85-year-old, Quincy, Ill.-based manufacturer of reciprocating and rotary screw air compressors, vacuum pumps, and air treatment components—has been successfully using lean principles on the manufacturing side of its operations for at least five years.

But one area of opportunity remained untapped: its sales, order-entry, and engineering processes. Build-to-order products, such as Quincy's compressors, require labor-intensive, error-prone order configuration.

To address these inefficiencies, Quincy went to **BigMachines**, a supplier of what it calls Lean Front End (LFE) software that supports Web-based configuration, quoting, and ordering capabilities. BigMachines created a global platform for Quincy that integrated the company's comprehensive knowledge of compressor configuration, specifications, and tools into a single system.

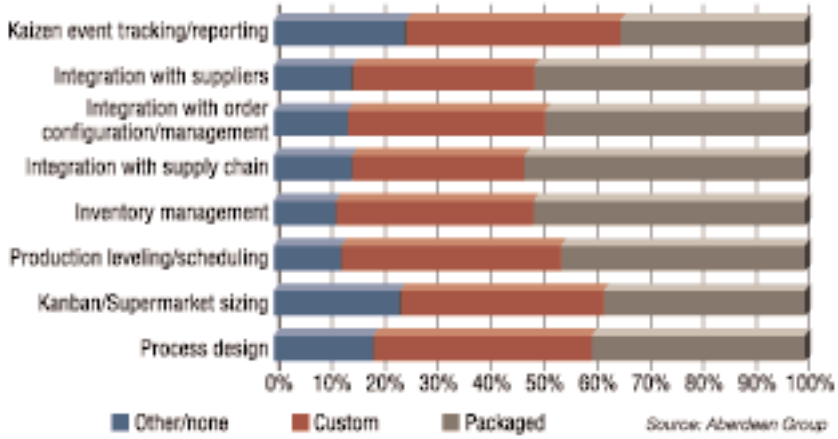
"LFE is configuration and beyond," says Lynn Degand, Quincy's VP of finance. "It creates a quote for the distributor to present to a customer. The distributor can then click a button to convert the quote to an order. At that point, it links to our ERP system to create a bill of material. It also creates shop orders, and in that way supports the manufacturing process."

One main benefit for Quincy has been knowledge capture. "LFE offered us a way to standardize and synchronize our front-end processes," says Degand. "The old process required a lot of redundant order checking and batch-processing. We always needed very knowledgeable people to do the orders. This software allowed us to standardize the knowledge and make the system mistake-proof."

Quincy's LFE rollout began with its Bay Minette, Ala. plant. Now it's taking the system to the Illinois operation, and eventually to its plant in Kunshan, China.

Since implementing the system at Bay Minette, Quincy's inside sales has achieved a 20-percent productivity improvement. Order processing time also has been cut from 36 hours to two, while orders that had to be routed through engineering were cut by 60 percent. Updates to bills of material are simple and done in real time, and redundant checking and hand-offs have been eliminated. The staff has more time to devote to informing customers about accessories, new products, and value-add services.

Predicted IT solution choices for lean support, 2004-2006



The use of IT solutions to enable lean practice across the enterprise will continue to grow over the next 12 to 24 months. Less than 30 percent of manufacturers surveyed by Aberdeen Group will use manual methods, down from nearly 60 percent that currently use them for parts of their lean initiatives.

The lean supply chain

"Kaizen—continuous improvement—is our way of life," says Tom Mathis, VP of supply chain management at **Danaher Controls**, Gurnee, Ill. "There is no area of our business that is not improvable on an ongoing basis."

No wonder then that the company has applied lean principles to its supply chain, starting with replenishment on the shop floor and moving out to vendors.

"We've been doing lean for a long time," says Mathis. "We run a just-in-time program, and we found that the manual nature of that program drives a lot of activity into the front and back offices. We have higher-value things we want those teams to be doing—like supplier development and global sourcing—but there were too many transactional things we were doing. "To free up time, Danaher went back to lean basics and replaced its manual kanban card system with an electronic one that is part of **SupplyWorks MAX**, a suite of Web-based supply chain solutions from **SupplyWorks**.

To start, a bar code was attached to each parts bin in a manufacturing cell. When parts run low, all a worker has to do is scan the bar code on the bin with a handheld reader, which notifies the system that the bin needs replenishment. The same information goes into a database accessible through the **SupplyWorks MAX** portal, where suppliers can check part-orders status.

On the bin level, the automated system eliminates problems associated with manual kanban cards. Cards don't get lost because they always stay at a particular cell. Scanning eliminates errors and manual data entry. Because the information in the **SupplyWorks MAX** system is updated in real time, concern about obsolete information is eliminated.

Suppliers can check incoming orders immediately by logging into the secure site. "If we release a part, that goes into the system," explains Mathis. "When a supplier logs in and sees the kanban notice on the screen, that constitutes the order. On large orders, instead of sending a bunch of purchase orders, the system notifies the supplier when the time comes to renew the order."

Mathis appreciates this early warning system. "If a supplier can't fill the order, it can let you know right away. Basically, this is a better way of taking a mountain of information and defining what is going to hurt you. The system eliminates that first round of calls to notify people of a problem," he says.

The system has been in place at the Gurnee plant since June 2004, and now handles nearly 60 percent of the facility's purchases. Mathis says it has reduced nonproductive time filling inventory orders by 50 percent—time that now can be spent communicating with suppliers and strengthening relationships with them.

Lean experts consistently say lean is not a single technique or strategy, but a way of thinking that should pervade the entire operation. With the advent of software solutions that incorporate lean philosophies, moving lean out of the manufacturing cell and into the rest of the enterprise becomes easier. It also gives manufacturers the option of starting their lean journey not at the manufacturing cell, but at the place in their operations where the biggest payback can come in the fastest amount of time.

For more information on SupplyWorks please visit www.supplyworks.com or call 781.301.7000.