



Picture cans moving down a line where they are filled with various chemicals, eventually being capped and packaged for sale. Does this sound like the manufacture of sodas or other drinks? Well, it's also the process by which batteries are made. Battery components are assembled using a fairly highly automated process.

The outer case of a battery is termed the can, and the chemicals inside ultimately undergo electrochemical reactions that liberate electrons. These electrons move from the negative terminal of a battery to the positive terminal, creating a current that can power anything from a light bulb to a motor starter. Batteries are a necessary part of life—they run any number of products, from radios, computers, and flashlights to watches, cell phones, digital cameras, and hearing aids. Most people keep batteries on hand just in case “the lights go out.”

Given their necessity in our everyday lives, you might think that battery makers needn't worry about competing in the same sense that makers of commodity products do. After all, we *need* batteries. But like many other manufacturing businesses, the battery business is also facing pressure from globalization, and cheap labor and raw materials in other parts of the world.

Energizer's manufacturing plant in Bennington, Vermont, is part of its miniature battery business unit. The miniature battery business is divided into batteries for watches and electronics, which are silver–manganese oxide batteries, and those for hearing aids, which are zinc–air batteries. Both types of batteries are made at the Bennington location.

So why did Energizer decide to go lean? “Lean is not entirely about cost reduction,” says Steve Prumo, general manager of the miniature battery business unit. “The focus is on growing our business by creating value for the customer and creating better flow.” Steve Hockridge, director of global lean manufacturing, concurs: “We recognized that we needed to do things differently to be competitive in a global marketplace. We needed to look at how we deliver value to our customers and do it better than the competition.”

In late 2002, the vice president of operations decided to introduce lean to all of Energizer's manufacturing operations worldwide. One result of that decision was creation of the position now held by Hockridge. The company also put lean coordinators in each manufacturing site to facilitate the start of the transformation. The company came up with a unifying vision that would help to drive the lean transformation: Energizer is an organization committed to perfection.

Hockridge and Prumo participated in a public kaizen event held at the Wiremold Corporation. Hockridge notes that their participation opened their eyes to the opportunities at Energizer. Hockridge remembers that the Wiremold event created even more passion in Prumo about what he could do within his own business unit and its lean transformation. They also learned the value of a sensei-type relationship with a lean expert to help guide the transformation and see opportunities that may be overlooked by those involved in the day-to-day running of the business.

Prumo adds, “It turns out that the event at Wiremold was one of Nakao's [Shingijutsu founder Chichiro Nakao] last. [I was] lucky to be able to spend a week with Nakao. At the end of the week, I had a much better understanding of lean, especially the guiding statement ‘just do it.’ At Energizer, moving equipment could take months. By the end of one day at Wiremold, we moved seven or eight pieces of equipment.”





Did you Know?
Energizer invented the first commercially viable alkaline battery in 1959.

The company recognized that realizing that vision meant converting from a batch-and-queue organization to one that lives and breathes continuous flow. Prumo remembers consultants from that early period commenting that the company was one of the best batch-and-queue operations they had ever seen.

When you're really good at something (like batch-and-queue), it's that much harder to make the decision to change and then follow through on that decision, but Energizer was determined to do just that.

Currently it takes many weeks for batteries to flow "from dock to dock" through the plant.

Energizer sees this as a huge opportunity: By creating better flow through lean, it hopes to reduce that time. In the normal batch-and-queue system batteries moved a lot throughout the process. They were manufactured and placed on racks to age, moved to a testing area and tested, placed back on the rack and moved to a packing area, packed and placed back on racks to be shipped. The aging and testing areas were not co-located with the manufacturing process, which means that batteries were moving all over the plant. All that movement is non-value added and ripe for leaning.

According to Jeff Schroeder, plant manager at Bennington, workplace organization and 5S were a big part of the initial lean efforts. Although the ultimate goal of the lean effort was to improve flow, they needed to be able to see the flow at the plant before they could do something about improving it.

"We're counting on flow improvements to remain competitive," says Schroeder. "We expect to be able to cut throughput times and inventory by 90 percent, while doubling productivity."

Kaizen events held early on at Energizer achieved the usual spectacular results. One of the first things the company did to deal with the excessive movement issue was to move the battery aging and testing processes back to the manufacturing cells. But this is just a first step in Prumo's desire to

see his processes flow faster. The kaizen events were going well, but Prumo says that when he walked out on the floor, he couldn't see the sustainment: "I was wondering where the continuous improvement was." Bringing in outside coaching help was the answer.

Part of the problem with lack of sustainment was a communications issue. By incorporating daily leader report outs, Schroeder notes that keeping track of continuous improvement is much easier. Kaizen week report outs are also now posted so that all employees can view the results. He adds that taking a more disciplined approach to managing 30-day lists, QCDS boards, and hour-by-hour charts has also enabled the Bennington plant to improve sustainment.

One important benefit of the lean transformation is the chance for employees to continue to learn. "It's been a pretty great experience so far," says Schroeder. "It adds some fun to our business."

One advantage Energizer has in bringing about the necessary cultural transformation that goes hand-in-hand with the lean transformation is its very loyal workforce. Employees join Energizer and stay for years, moving up through the ranks to positions in senior management. Says Hockridge,



keep going

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“Our people are all very capable, but almost all of them have been working for the company for many years, and that’s one reason we wanted to bring in outside help for our lean transformation—an outside eye might see things we overlook.

“Our maturity and longevity are assets, but they are also a potential liability,” he adds. “We have all been part of a very successful organization for a long time, which makes change more difficult. But we’ve effectively communicated the need to change across the organization. We’ve seen other companies, even other industries, pack up and move out. Success depends on our ability to change, becoming faster, more agile and more responsive to our customers’ needs. And that’s what lean is all about.

“Shop floor acceptance of change has been the least of our worries. In fact, communication with and engagement of shop floor workers has been the most rewarding aspect of our lean journey. Our employees have become owners, believers, and advocates for the lean transformation.”

Energizer’s objective is to get all employees at all plants involved in lean. In the beginning, the company picked high-profile projects that could sell themselves. Those early successes encouraged greater involvement of all employees.

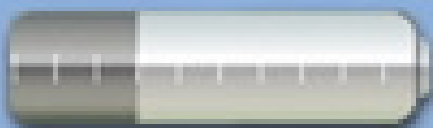
At the Bennington plant, plans are underway to fully utilize standard work, incorporating value stream managers and plant managers. They will also be working to streamline new product development and new processes. Bennington has become something of a flagship for the company’s global lean effort. As Energizer’s other plants see the successes gained and sustained there, they will be that much more energized in their own lean journeys.

Says Prumo, “Last year, 2005, was a year of learning to see the flow at the Bennington plant. In 2006, the big push will be to improve that flow. For years we focused on making better batteries, now we are focused on making batteries better.” With the positive attitude that’s evident throughout the company, it should be quite successful achieving that goal. ■

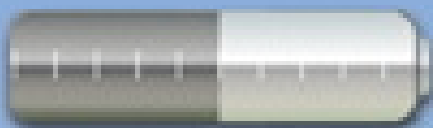


Productivity Improvements in Hand Packing

Kaizen Event 1



Kaizen Event 2



0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

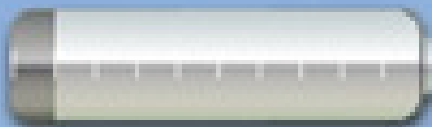
More than 30 safety and ergonomic changes were implemented in the past five months as a result of kaizen activities.

Kaizen Results: WIP Reduction

Cell Manufacturing



Hand Packing



0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

A single kaizen event resulted in a 50 percent reduction in set-up time for one process.

Energizer