

**T**he last time you visited your physician and had a diagnostic procedure, did you think about what happened to your sample once it left your doctor's office? Did you fret over the amount of time it took to receive your results? If your doctor has taken cells or tissue samples from you or a loved one for clinical testing, chances are your sample was processed through a Ventana instrument.

In the spirit of technological entrepreneurship from decades past, Ventana Medical Systems, Inc., was established by University of Arizona pathologist Thomas Grogan, M.D. Grogan recognized that patients could receive better and more prompt diagnoses for cancer and other diseases if the tissue-testing process, which historically was more art than science, could be automated. In 1985, Grogan founded Ventana, and with the help of a few engineering friends, brought its first automated staining system to market in 1991.

Ventana has been historically known for automating slide staining for clinical and research anatomic pathology laboratories. In the past couple of years it has also solidified its presence in the life sciences field, turning greater attention to offering more competitive and innovative diagnostic solutions to clinical customers. Unlike many manufacturing enterprises, the company has been growing rapidly. So why go lean?

One of the main reasons for embracing LeanSigma® states Mike Gaul, vice president of manufacturing operations, was “to continuously improve quality, which is paramount for us — our reagents and instruments have to work every single time because we have a huge impact on whether someone is correctly diagnosed.



“As we continue to grow and improve our margins, we are using lean to utilize space more efficiently, to be competitive and to help us manage our increasing demand and momentum.”

The company is growing at 20–25 percent per year. That rate of growth can't be sustained without changing significantly how the company does business.

Like many companies starting the lean journey, at first Ventana didn't have a clear focus on the exact goals of the initiative. The company heard and acted on the buzz in the late 1990s that lean was going to be the key to competitiveness in the US. But, says Gaul, “We didn't have the right focus. We didn't expect specific results; we were just jumping in and getting our feet wet.”

That was in 2001. In early 2002 T.J. Johnson (now senior vice president of corporate development and manufacturing operations) was brought onboard specifically because of his extensive lean experience gained during his tenure at Hill-Rom, a subsidiary of Hillenbrand Industries. Johnson's arrival provided Ventana's fledgling lean movement with the focus and vision it needed to move forward.

One of the first production issues Ventana tackled with lean was its dispenser cell unit. Ventana's razor/razorblade financial model is built upon the initial sale of instrumentation (the razor) and the subsequent purchase of the consumables, or reagents, (the razor blades) needed to perform the processes on that instrument.

Many reagents are stored in dispensers designed to deliver precise amounts of product to each patient sample. Prior to 2002, Ventana bought the dispensers from an outside vendor, and even after in-house testing, the dispensers still had a high failure rate and were the number one customer-complaint category for the company. These issues drove Ventana's decision to bring production of this vital component in-house.



In keeping with the lean strategy, it made sense to run a kaizen event (in fact, multiple kaizen events) on the process to address the quality issues. As a result, the dispenser defect rate now runs at 0.1 percent. Says Gaul, “We significantly reduced our costs, and improved quality of our products. The entire conversion, including the many kaizen events, led to a notable increase in production volume as well. We now produce more product with fewer people and have higher quality and better accuracy — it’s like a case study of what lean can do for you!”

Between 2002 (before lean) and 2004, the lead time for the dispenser unit dropped from 92 minutes to 3.6 minutes. Cycle time decreased by 61 percent and yields improved from 83 percent to 99.98 percent. Quantity built per person per day rose from 162 to 607. The dispenser unit results were so dramatic that it became the “poster child” for future events, encouraging even the fence sitters to try lean.

Ventana has completely embraced the top-down philosophy of leaning an organization: All senior management staff have attended Quest for the Perfect Engine (QPE) training. The company has also put most of its marketing staff through QPE training and has 21 kaizen leaders throughout the organization. But going lean isn’t just about training and kaizen events. The entire factory has been reorganized for leaner operation, going from vertically integrated work to horizontal flow.

The horizontal integrated work teams are based on product lines or families, and teams include operations and quality control staff as well as the water spider. This reorganization included reagent manufacturing, instrument manufacturing and support teams such as warehouse, global supply and distribution.



Horizontal integration has been a great improvement according to Norma Maughan, team lead for detection in the reagent manufacturing group. Says Maughan, “We own our product from beginning to end. The horizontal [model] has had many benefits, including improved attitudes among employees who can now grow and cross-train and take on more responsibility for their products.”

Having responsibility for a product from start to finish encourages buy-in among the staff and feeds proactive behavior when addressing problems and solutions. Teams meet at the start and end of each shift to review their Quality, Cost, Delivery, and Safety (QCDS) boards to assess their goals and see where improvements need to be made. In the horizontal work environment each team member is expected to lead team meetings, an example of Ventana’s belief that communication and knowledge lead to true employee ownership of products.

On the practical side, Ventana follows standard lean methodologies. In addition to numerous kaizen events, standard work, visual management, one-piece flow and kitting on the manufacturing floor, the company manages daily improvement audits, uses QCDS boards and has a very active and dedicated LeanSigma Office. At monthly meetings, policy deployment metrics and progress reports on delivery, service and cost goals are discussed. The ultimate goal of policy deployment is for everyone to understand cause and effect — people can’t act on information unless they understand it. Says Gaul, “All of our employees know their specific contribution and how they are helping the company grow.”



In the past two-and-a-half years Ventana has reduced floor space by 50 percent, inventory by 75 percent and lead time by more than 50 percent. Labs are focusing on reducing turn around time for tests while reducing their inventory of materials. Patients are anxious and want to know their test results. On-time delivery is critical. Through lean, delivery has been improved from 98.2 percent to 99.8 percent since 2002. If a customer calls in an order by 1 p.m. Pacific Time, it will be shipped that day. Likewise, with the roll-out later this year of the company's newest product, called Symphony, Ventana is setting up a rapid response service network to assure labs that if there's an instrument failure, field service technicians will have the instrument back up within hours.

On a larger scale, Ventana's variable conversion cost as a percentage of sales has been cut in half compared with what it was three years ago. Fixed manufacturing costs as a percentage of sales have also dropped substantially. Quality costs, including regulatory costs (as a Class III medical device manufacturer, Ventana is subject to FDA regulation), have dropped as a percentage of sales even while Ventana has been investing heavily in a new quality system.

As Ventana delves deeper into its lean journey, the company is also taking the lean philosophy to its entire value chain. Because of the mutual benefits to be gained, the company offers to help its key vendors become lean, and lean is a criterion for any new suppliers.



At the other end of the chain, Ventana is taking lean to its customers as a way of adding value and "living" its complete lean laboratory solutions and customer care philosophy, known as Experience Ventana. Marketing and sales staff visit customer labs to help them become leaner, using tools like value chain mapping and work-flow analysis.

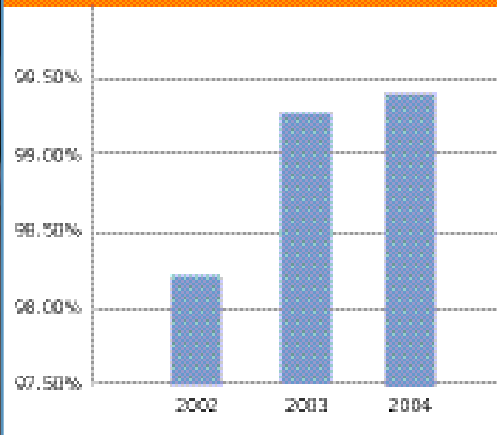
"We are absolutely following a solutions provider strategy," says Gaul. "That's what's going to differentiate us from our competitors. We have had a clear product advantage in automation for some time but competition is always trying to catch up. As a company, our response has been to continue to innovate our products and services and move beyond competing on point solutions."

The Ventana experience wouldn't be complete without mentioning its people. "What makes us different from other companies is that everyone here is dedicated to what we are doing," comments Gaul. Take a stroll down halls hung with original art and talk to anyone: The sense of collegiality and single-minded purpose is clear. Ventana employees realize that their choices and their work have a direct and significant impact on people's lives, perhaps even the life of a loved one, and it's easy to see why they recognize the benefits of lean and embrace it wholeheartedly. ■

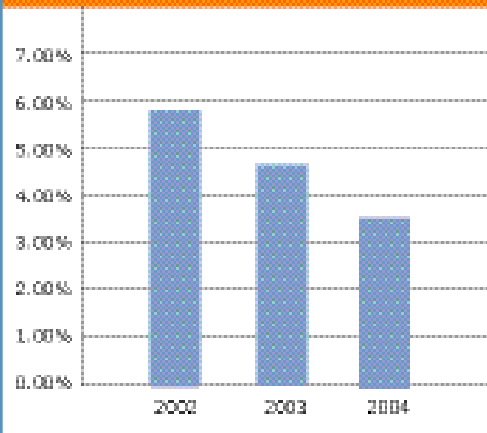
### Improving Metrics

	2002	2003	2004
Cost of Quality	8.12%	6.73%	5.33%
Days of Sales Inventory	148	113	65
Delivery	98.2%	99.3%	99.4%
Variable Cost	4.9%	3.9%	3.7%
Fixed Cost	5.8%	4.4%	3.6%

### On-Time Delivery



### Fixed Cost



### Variable Cost

