

CASE STUDY | SIEMENS

Siemens Industry Uses eLearning to Evolve Lean Six Sigma

Imagine you're a business leader in a multi-billion dollar division of a global engineering conglomerate, and you've achieved some great operational improvements and financial results over the past five years. Then imagine that you hit a wall—the same wall so many companies hit after they harvest the *low-hanging fruit* (jargon for easier improvement projects that yield larger paybacks).

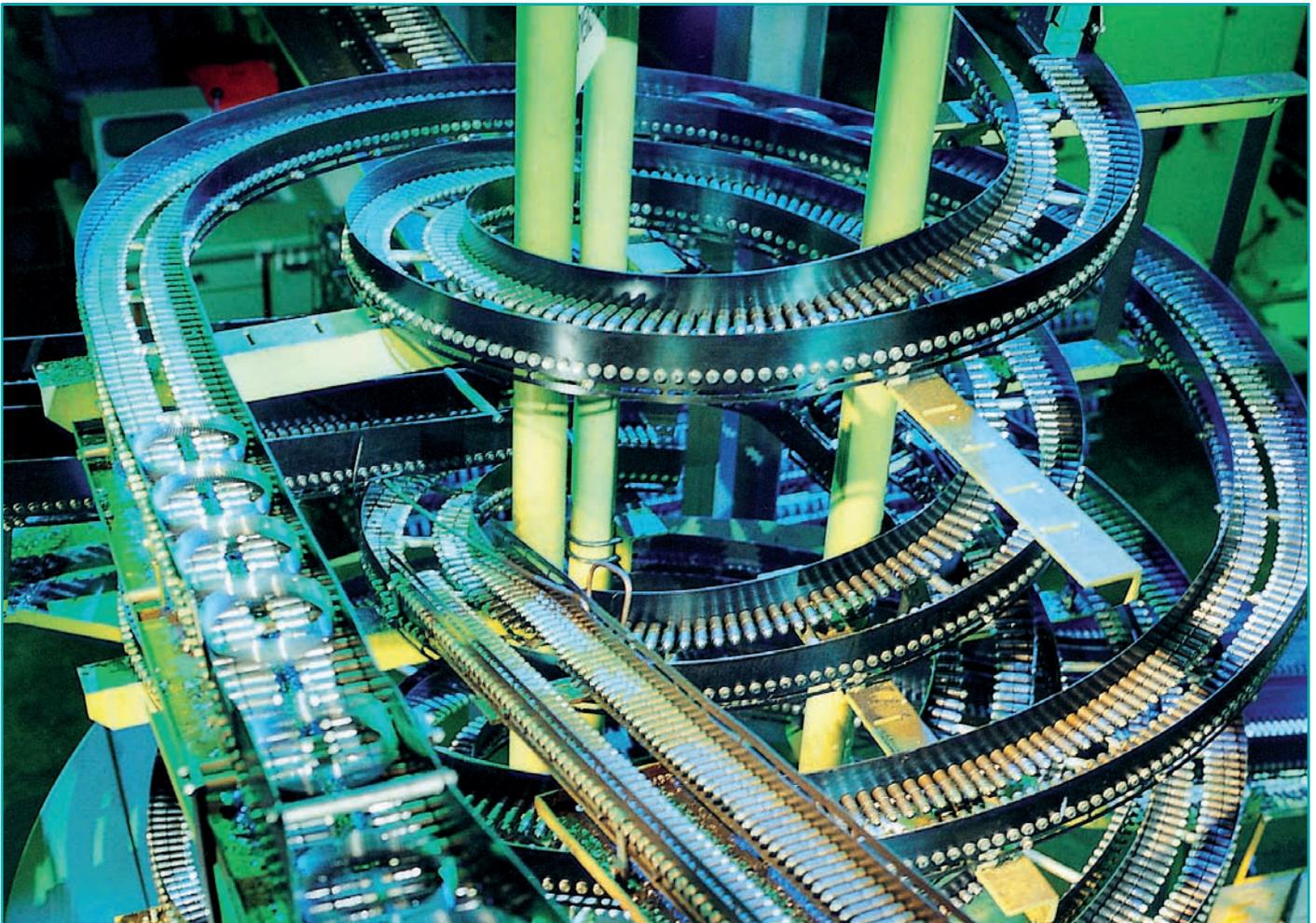
Now it's harder to solve more quality problems, root out more waste and become even more efficient. It's harder, in short, to create more value.

On top of this, imagine that the economy is in the greatest recession since 1929, spawned by a financial crisis that pushed the limits of leverage so far as to nearly collapse the credit markets. With all the ensuing cutbacks in corporate

programs, amidst such limited resources, how do you keep the drive for continuous improvement alive and still producing breakthrough results?

This scenario isn't theoretical; it's real. Just ask Karry Kirchner and Joseph Dumford, both process-improvement leaders at Siemens Industry. "After our eighth wave of Six Sigma training, we started to plateau in terms of the savings we were getting," says Kirchner, "so we needed to advance the program."

Usually this is the time when companies make further investment to refresh their operational-excellence journeys—adding more technology and tools to the program, or developing more people inside the company (rather than using outside consultants) who can teach those tools.





“We had a lot of discussion about what to do,” says Kirchner. “We made so much progress and even changed the operating culture to a large extent. But our Six Sigma budget got smaller, and yet we still needed to evolve, and we needed to evolve despite the challenging economic and financial climate in our company, in all companies.”

As part of their diligence, Kirchner and Dumford turned to BMGI, a global consulting firm with a longstanding reputation for helping companies initiate, implement and sustain structured improvement initiatives. Siemens has had an active partnership with BMGI since 2003, when it launched its initial Six Sigma deployment.

“All the consultants and facilitators I’ve known at BMGI are excellent, truly dedicated and very professional in how they go about their work,” Dumford says. “The support you get from BMGI, if there’s something we ask for or that we need, they’re very responsive to that.”

Dumford knew that BMGI had an eLearning system, and along with Kirchner and other colleagues, he thought this system might be the answer to the current challenge of evolving the continuous improvement journey. Using an eLearning model, as opposed to classroom training, Siemens could save considerable costs in travel, lodging and class fees—while not necessarily compromising any efficacy in developing improvement leaders or in achieving project results.

So Dumford tested BMGI’s eLearning platform and content with some questions in mind. Could this be what we need to

evolve? Can online training really be as or more effective than classroom training? Does the online learning environment foster the application of real tools to solve real operational problems? How much money can we save by training online?

There were more questions. How interesting is the eLearning content? How engaging is it? How easy or difficult is the learning platform to operate, manage and maintain? Can we monitor the efficacy of the system relative to classroom-based training? Can we customize the content to meet our specific needs?

Siemens Production System demands change

All these questions were important, even mission-critical, but the last question was especially important. Earlier this year, Siemens began pushing out a major worldwide initiative called the Siemens Production System (SPS), which looks to increase the company’s already longstanding commitment to operational excellence. To a large extent, the SPS is modeled after other world-class production systems, which incorporate extensive elements of Lean.

Of course Lean is classically a discipline for taking waste out of all business processes and streamlining them with the goal of removing non-value-added work steps and activities. Such terms as *kaizen*, *just-in-time*, *5S*, *go to the gemba*, *the eight types of waste*, *value stream mapping*—these are just a sample of what’s in the lean toolkit.

Six Sigma classically seeks to optimize process performance by uncovering difficult-to-find root causes of problems, which can span across every operating element of an organization. The Six Sigma toolkit includes such terms and techniques as *Black Belt*, *DMAIC*, *hypothesis testing*, *sigma level*, *SIPOC diagram*, *failure mode and effects analysis*—to name a few.

Despite their differences, the long lineages of Lean and Six Sigma have essentially merged together in today’s progressively-minded companies. The two approaches have the same overall goals of improving processes, reducing

Trajectory of an Initiative: Continuous Improvement at Siemens Industry

- ▶ Launched a Six Sigma deployment in 2003
- ▶ Trained 200+ Six Sigma practitioners (10% of workforce)
- ▶ Completed 100 Six Sigma projects by June, 2010
- ▶ Realized \$32 million in hard benefits from Six Sigma
- ▶ Currently ramping up Lean capabilities corporate-wide
- ▶ Designed an eLearning system that integrates Lean and Six Sigma
- ▶ Launched first wave of Lean Six Sigma eLearning in late 2009
- ▶ Now realizing benefits from initial training waves
- ▶ Planning to run additional eLearning waves



defects, errors and waste, and saving time and money. And their respective toolkits compliment each other very well when you know how and when to use them together.

Dumford, Kirchner and others at Siemens Industry felt that the learning system was robust enough to meet their need, so they worked with BMGI to configure the courses that would maintain their Six Sigma heritage while evolving into Lean, in accordance with the SPS.

Dumford says the content of the BMGI eCourses was excellent, and the flow was very well organized. “The courses really explain the topics well, and the system provides a clear structure and supports for having students actually implement projects,” he says. “I think it’s a best-in-class system, and the price is competitive.”

Dumford and Kirchner are of the mind that good eLearning programs can be as effective, sometimes more effective, than traditional classroom training. One reason they say this is because their experience with BMGI enabled them to customize their eLearning content and maintain its flexibility over time. “We thought it would be a great time to integrate some Lean tools with the Six Sigma tools, bringing new life and opportunity for value creation at the perfect time,” Kirchner says.

So that was that, and Siemens Industry launched its new eLearning-based extension of continuous improvement within its ranks. “We had already trained over 200 of our employees in the ways of Six Sigma in the classroom,” Kirchner adds. “And we were optimistic about what adding Lean and eLearning could be and do for us.”

“Since we started the program in May (2009), we’ve completed two waves of eLearning, and we’re planning a third to start in September,” Kirchner says. Each wave so far has had about 10 people, but Kirchner and Dumford think they could handle up to 20 people in each wave.

Even with eLearning, you still have capacity limits because every student gets individual attention, and all of their implementation projects are focused on some important aspect of improvement within the division. “You want to give these students and their projects the time and respect they deserve,” Dumford stresses.

Transparency drives accountability and results

As future Lean Six Sigma leaders move through the concepts and tools, they’re tested for knowledge retention with regular quizzes, and a final exam at the end. Along the way, as students implement their projects, they present progress report outs—status reports delivered via phone and the Net. In this way, everyone’s progress reports are available for all to see, question, encourage and evaluate.

“We like the system because it’s very transparent,” Kirchner and Dumford say. “If someone is falling behind, we know it and can do something about it. We can go in and see that the student is actually going through the learning modules and taking the quizzes, and we know they’re not just logging in and out. And we can also monitor their tangible progress with projects.”

This gets at the accountability piece of Lean Six Sigma, and how it can be enabled in a structured, organized eLearning environment. Quizzes, final exams and project progress reports are readily available to all, so it’s a very open system that fosters peer review, and peer pressure if need be.

Kirchner and Dumford report that there have been few if any problems with students falling behind, or with their ability to use and benefit from the eLearning system. “People like the system, and in all cases of our first two waves (about 20 people), everyone said on a survey that they highly recommend this learning approach and content to others.”

Maybe one critical reason this is true is because Siemens Industry blocks the calendars of students every Thursday so they can focus on learning. The day starts with a conference call to outline the modules that will be covered, and often a demo is provided by the live instructor, or by leaders like Kirchner and Dumford. This encourages some interaction and dialogue, and then the students spend the rest of the day going through the modules.

Without this approach, more often than not Dumford says, people would intend to work through a few modules only to get sidetracked by everyday events and demands. Or folks would try to squeeze their learning into their evenings or weekends. “This just isn’t realistic,” Dumford adds. “Invariably, if the calendar isn’t cleared, something comes up and it just doesn’t get done.”

But when the eLearning program is well designed, and well supported, it works. One team from the first learning wave, led by engineer and Green Belt Trin Gu, significantly reduced work-in-process and saved Siemens Industry about \$600k a year. The project focused on improving the water-cooled sub-assembly process for an electronics product—with emphasis on utilizing Lean techniques to balance work in the manufacturing cell, shorten order cycle times and improve information flow to smooth production across the process.

Another first-wave team, led by engineer and Green Belt Sumit Singhal, focused on reducing rework on a particular electric motor that had been causing problems for years. Singhal and his team revisited this problem with the power of Six Sigma and Lean. Types of failure were measured and analyzed, and the process was reconfigured to address the

problem's true root causes. Plus techniques like 5S were employed to reduce lead time and process time. The project is saving about \$76k on an annually recurring basis.

BMGI eInstructor Renee Snell, who taught the first two training waves and is planning the third, emanates pride about Sumit's project: "I just love it when I can help people solve long-time problems. The enthusiasm is contagious."

Success breeds expanding participation

Perhaps this success is why Siemens people outside of Siemens Industry have expressed interest in taking advantage of BMGI's eTraining. "We've already seen a lot of diversity in the program," Snell points out. "In the first wave of training we had 12 students from eight different locations, ranging in age from recent college grads to people with many years of experience."

The system is not only flexible in terms of students and Lean/Six Sigma integration, but it's also flexible in terms of curriculum depth. "That's how we're able to train both Green Belts and Black Belts in the same waves," Snell says. In some cases new people become Green or Black Belts, while in others Green Belts can extend their skills to become Black Belts—all plugging into the same wave when needed to learn designated modules.

Robust as the system is, Kirchner reports having some trouble working with both Green Belts and Black Belts at the same time. What are the Green Belts and Black Belts going to learn and do, respectively, on an ongoing basis? Since the eLearning is so tightly tied to practical project application, and since Green Belt and Black Belt projects are different, they require different skill sets, even though there is overlap.

"Any confusion was mostly due to logistics and schedules," says Kirchner, "so we fixed that. The first two waves had about 80 percent Green Belts and 20 percent Black Belts, and that proportion should be about the same for the upcoming third wave. So we have some great experience now, and we've ironed out the kinks."

Kirchner and Dumford do demand the best. Green and Black Belts in their organization, for example, must complete a real company project for the student to be considered bona fide or "certified"—along with successfully completing the eCoursework. Kirchner and Dumford also expect students to take their continuous improvement calling seriously as it pertains to achieving the division's strategic goals, and not just view it as a box to check for their resumes.

On the other hand, Kirchner and Dumford know that people are people, and they need to feel motivated, supported and appreciated. To this end, they've been encouraging students to post their biographies and some personal information on the eLearning portal.

"We've taken the lead along with Renee Snell to post our bios," Kirchner says. "Some folks don't even really know who we are and haven't met us to this day. So now at least maybe

they can see a face, a picture, and can know a little bit about us. It's little things like this that bring a human element to what we're doing."

Kirchner and Dumford know the value of great people, and know that there's more to improving operations than simply pulling various technology or training levers. "We want continuous improvement to stick and make a difference, so we're doing everything in our power to make it continue working well."

With this kind of commitment, no one should be surprised that Siemens Industry has achieved so much so fast, and has aligned its Six Sigma heritage with the new Lean thrust at Siemens. Others are sure to walk the same eLearning path as the workforce becomes more Lean Six Sigma savvy.





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BMGI

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