

Quality Isn't Just for Widgets

Six Sigma, the quality control and cost-cutting power tool, is proving its worth on the service side

By Michael Arndt in Chicago

In the world of manufacturing, Six Sigma has become something akin to a religion, with none other than John F. Welch as its charismatic apostle. The former chairman and CEO of General Electric Co. (GE) came late to this rigorous, statistical approach to quality control. But once he embraced it in 1996, he quickly assembled an unprecedented army of employees to pinpoint and fix problems throughout GE using the number-crunching skills they learned in Six Sigma training. The results were awesome: In the past three years alone, these troops saved the company \$8 billion, according to GE. Little wonder, then, that Welch has won so many converts preaching the cost-cutting power of this methodology.

So what is GE doing with Six Sigma under Welch's successor, Jeffrey R. Immelt? More than ever. The \$125.9 billion conglomerate is spending \$600 million on Six Sigma projects in 2002--mostly for the salaries of 4,000 full-time Six Sigma experts, plus 100,000 employees who've undergone basic training. Altogether, they have a target of finding an additional \$2.5 billion in savings in the Fairfield (Conn.) company. On top of that, GE is sending out its Six Sigma squads to customers such as Dell Computer and Wal-Mart Stores to help them root out what GE estimates to be more than \$1 billion in inefficiencies and waste--and help GE win more business.

GE may be preeminent, but it's certainly not unique in pushing Six Sigma into new corners of its business. Originally conceived by Motorola Inc. as a quality-improvement device in the mid-1980s, Six Sigma soon morphed into a cost-cutting utensil for manufacturers of all stripes. Now, it's fast becoming the Swiss army knife of the business world. Goods producers still make up the bulk of users, who typically rely on statistics to uncover and then reduce product variance in order to boost quality and efficiency. But increasingly, manufacturers are applying Six Sigma to functions as varied as accounts receivable, sales, and research and development. And their success in these nonfactory domains has inspired Six Sigma projects at financial institutions, retailers, health-care concerns, and in other areas of the service sector. Says Gregory H. Watson, a consultant and past president of the American Society for Quality in Milwaukee: "Six Sigma might be the maturation of everything we've learned over the last 100 years about quality."

It's easy to see why Six Sigma works well in large-scale manufacturing. For one, factory processes tend to be both repetitive and easy to track as goods move along the line. Also, companies usually quantify what happens at each step. So, by measuring defects per output, they can quickly assess how a different way of doing things at any stage affects productivity or profits.

Generally the gains add up swiftly as Six Sigma squads discover ways to reduce personnel, capital spending, or overhead. Bosses can then redeploy staff or take the gain to the bottom line. At Dow Chemical Co., for instance, each Six Sigma project has freed up an average of \$500,000 in the first year. In one case, the discovery that an additive was causing imperfections in packaging materials enabled Dow to reduce defective items on that line by 70%. Managers claim that in total, such improvements have saved the company more than \$750 million since 1999.

Increasingly, however, manufacturers are racking up their biggest savings far from the factory floor. Dow Chemical, for example, projects it will save another \$750 million by the end of next year as it applies Six Sigma to such areas as procurement and sales. And Six Sigma experts at 3M Co. have employed the methodology to reduce inventories and speed up R&D efforts at the

company's St. Paul (Minn.) headquarters. One team even analyzed the performance of sales reps in 3M's orthodontic-products division to identify exactly why its top agents sold so much more than others. And it doesn't stop there. By judging how well employees run fix-it projects, company leaders are hoping to spot their successors. "Six Sigma is about developing tomorrow's managers," says Chairman and CEO W. James McNerney Jr. "It gives them a shot to show what they can do."

Six Sigma isn't a cure-all, to be sure. In the first few months of a project, up-front training costs always outweigh any savings. And through the life of the project, the expense of compiling and analyzing data may also exceed what is saved, particularly in areas where a process cannot be easily standardized. Even GE, which does thousands of Six Sigma projects a year, concedes it hasn't yet made much headway in applying Six Sigma to its legal operations. Companies also stand to lose if top management doesn't buy into the program and implement the fixes recommended by its top Six Sigma analysts, known as "black belts."

But that said, GE is still pushing the envelope. Its GE Capital subsidiary recently dispatched a couple of black belts to Dell Computer Corp.'s headquarters in Round Rock, Tex., to analyze its accounts-payable process. After mapping the procedure step by step, they discovered that Dell was getting buried in paper invoices because its just-in-time manufacturing operations required that the company purchase some types of parts as often as 12 times a day. To solve the problem, the GE Capital team moved Dell from its slowpoke manual system to an Internet-based electronic filing setup. Estimated savings: \$2.4 million a year.

Although Dell pockets the cash, GE can come out ahead, too. If GE customers are more productive and profitable, GE wagers that the goodwill generated through Six Sigma advice will translate directly into contracts. "When you think about GE Capital at the end of the day, we lend money. So do a lot of other people," notes Margaret Keane, chief quality officer at GE Capital. "This is really a way to differentiate us." Jack Welch may have moved on. But to more and more companies, Six Sigma is gospel.