



Customer's Name, Customer's title

How This Giant Is Light on Its Feet

Korean steel giant POSCO achieves Six Sigma performance with the help of SAS®

Industry

Manufacturing

Business Issue

Make the most of Six Sigma performance strategy to enhance production quality and improve earnings.

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Leading industry analyst WSD called this company “the most competitive in the world,” while BusinessWeek dubbed it “the Masters of the Web.” And Fortune magazine has honored this organization with the title “globally most admired company.”

You might be excused for thinking that we are talking about an online bank or some other “new economy” sensation. But no, we are talking about traditional, heavy industry: The company in question is POSCO, the world’s largest steel manufacturer, which has its headquarters in Pohang, Korea. Despite the accolades, POSCO is a gentle giant, modest about its achievements, even though its products are everywhere. As it says in one of its advertisements, “We move the world in silence.”

Founded in 1968, POSCO has two large production plants with around 19,000 employees working to produce 28.5 million tons of steel annually. POSCO has reported a net profit of more than US\$3.6 billion on revenues of nearly \$19 billion and is well represented internationally, with 24 subsidiaries and 17 offices around the world.

On this enormous scale, a performance management strategy – such as Six Sigma – can have a tremendous impact on profitability, provided it has executive buy-in and is supported with scalable software. “Six Sigma was a strong companywide campaign initiated and led by our CEO, Mr. Ku-Taek Lee,” says Ill-Chul Shin, Manager and “Master Black Belt” at POSCO’s Six Sigma Academy.

“The philosophy behind Six Sigma can be summarized as working smarter, but not harder,” says Shin. “It is a problem-solving methodology, applied to the whole company.” Six Sigma indicates the performance of a process according to a given metric; the higher the process sigma level, the greater the number of process outputs that satisfy the customer. Six Sigma is nirvana: almost zero defects – actually, 3.4 defects in 1 million opportunities. In Six Sigma, speed and quality go hand in hand – you identify the most significant issues as “critical to quality” and analyze them to find the “vital few” 20 percent of factors that cause 80 percent of problems.

A process innovation (PI) program to update 30-year-old business practices has been essential to improving efficiency and competitiveness at POSCO over recent years. Both the first and second PI programs have been built with SAS software. First, POSCO used SAS to extract, transfer and transform its enterprise resource planning and legacy data into a SAS data warehouse, allowing data to be compared on a like-for-like basis and quality checked.

In the second PI program, SAS explained to POSCO the importance of implementing a Six Sigma Project Tracking system, together with SAS to analyze processes. “Now, to find out what’s going on with a particular project, all we have to do is enter the Six Sigma portal and select the project title and CTQ name. Data is gathered

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automatically by SAS, enabling daily and monthly monitoring, also done with SAS software,” says Shin. Everyone in the company can access the information to see how the company is performing.

The first PI phase achieved a more than 50 percent reduction in lead times for standard hot coil production (from 30 to 14 days), and a 60 percent reduction in inventory (from 1 million to 400,000 tons). It also enabled POSCO to introduce new processes and Web-based techniques such as e-procurement, thereby reducing its planning and sales cycles.

The market was already impressed by this first round of process innovation, but POSCO was keen to innovate further. When the company entered its second PI phase, it extended and deepened the first and added Six Sigma with the aim of aligning business processes with the corporate strategy to satisfy customers and stakeholders.

The results of Six Sigma at POSCO have been nothing short of astounding. The total implementation costs were roughly \$35 million, and the total financial savings were nearly \$450 million.

“SAS was a good choice, because most packaged Six Sigma software tools have problems dealing with large volumes of data like ours and offer very limited analytical capability. And we were looking to uncover relationships that are mostly nonlinear. Likewise, some reporting tools are not up to the task of uncovering new information,” Shin explains. “Therefore, if we had opted to not use SAS, we would have needed to bolt several products together. By contrast, SAS enables us to carry out data manipulation and analysis seamlessly, managing it through a single flow diagram that is implemented in the user interface. SAS allows you to choose the best model on a case-by-case basis, making it very flexible to use.”

As an example of a Six Sigma project, Shin explains how POSCO addressed the issue of unacceptable scrap losses on hot coil. “Traditional statistical analysis could not really help us. Only SAS and its analytical power empowered us to discover fundamentally new insights into our physical processes. The end result was that we could decrease the scrap ratio from 15 percent to 1.5 percent, giving us a \$150,000 return on the investment on this part of the process alone.”

Another project, this time in cold roll steel, identified the reasons for large variations in profitability by plant, item and specification. By using SAS to identify the reasons for these variations and isolating the factors critical to high profitability, POSCO was able to improve its strategy, delivering an annual return on investment for the project of \$1.2 million. “SAS not only improved the quality of our analytical results, but equally important was the dramatic reduction in analysis cycle times, which enabled us to make rapid progress on these projects,” says Shin.

“Moving forward, our aim is to embed Six Sigma culture throughout the company, so it really will become a way of life. We want real-time insight into the quality of POSCO’s performance. We are already deploying an ‘intelligent concept’ in our production system, whereby we predict problems and correct them before they happen.

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