

POSCO

OPTIMIZING STEEL PRODUCTION TO BETTER MEET CUSTOMER DEMAND

POSCO has long striven to be the leader in steel making. To reach this goal, the company has worked hard to eliminate bottlenecks in production, because like most steel makers, POSCO has to operate its facilities at full capacity to make a profit.

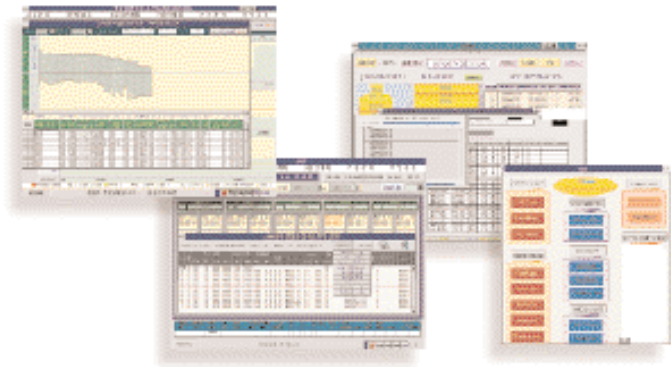
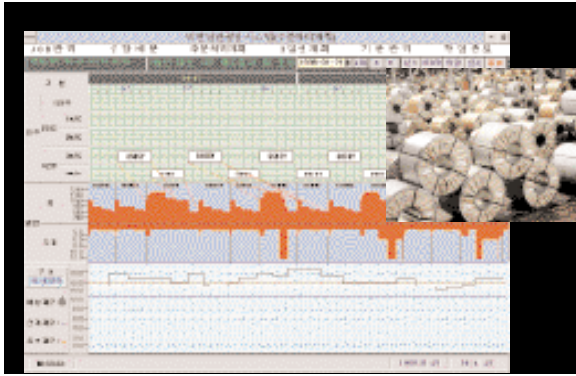
This production rate reduces setup costs and increases throughput, but it also leads to large inventories and delays in filling customer orders. Finding ways to maintain full production while meeting customer demand is a constant challenge for POSCO, and its search for solutions has led to a system based on the ILOG Optimization Suite.

The Suite enables the steel maker to exactly match production to demand in meeting customer orders while cutting its plant's hot coil rolling ratio by 10%.

"The ILOG based application is directly responsible for a considerable reduction in our stock."

○ Jin-Gwon Che
POSCO Production
Systems Manager





The ILOG Views graphical user interface of the POSCO system

POSCO

POSCO (Pohang Iron & Steel Ltd.) is the world's No. 2 producer of crude steel in the world by producing 27.5 million tons in 1997.

In 1996, the company's sales revenues reached 9.6 trillion won (US\$11.4 billion), and net profits after taxes reached 591 billion won (US\$698 million).

Its crude steel production reached 24.3 million tons in 1996, 886 thousand tons more than the previous year. Sales volume in 1996 also jumped by 701 thousand tons to 23.6 million tons.

ABOUT ILOG

ILOG is a leading provider of advanced C++ and Java® software components for graphics and resource optimization. ILOG products deliver high-performance data visualization for 2D and 3D user interfaces; integer, linear and constraint solvers for resource optimization, scheduling, logistics and planning applications; dynamic rule systems for intelligent agents and real-time data flow control, and components for integrating modules with real-time and relational data sources. Founded in 1987, ILOG now employs more than 470 people in seven countries. Visit www.ilog.com for additional information.

GETTING THE MOST OUT OF PRODUCTION

In the POSCO steel plant, there are four types of thin plate rolling: hot, cold, annealing and galvanizing. Each is closely coordinated with the others, and because each has unique technical limitations, POSCO keeps a separate inventory for each mill. This ensures stable production but also results in high inventories, causing low delivery performance and loss in production opportunity. To solve this problem, POSCO needed a highly efficient system for scheduling its mills. The new system needed to schedule every process to satisfy all the variables and fully control the inventories. High inventory levels meant longer processing times and loss of opportunity, while low inventory levels meant insufficient production. A balancing act was needed, and ILOG Solver and ILOG Scheduler were chosen to do the performance. The resulting ILOG-based mill balancing system gathers information on capacity and repair work throughout a production run, and makes schedules meeting the desired inventory levels.

PROJECT

POSCO created the application in two years – a 70% reduction in development time – at a cost of US\$590,000. The main program is run on a UNIX workstation that is accessible through several terminals and a PC with Windows 3.1. The C++ libraries of the ILOG Optimization Suite make the scheduler portable across the two leading computer platforms. ILOG's object-oriented programming environment facilitated development, and the suite's modular structure aided not only creation but enhancement, allowing POSCO to readily change the system to meet new constraints and production methods. POSCO plans to develop a similar system for its thick plate mills once the new system has been fully introduced in its thin plate operations.

BENEFITS

For development purposes, POSCO concentrated on the thin plate rolling mills at its Pohang, South Korea, plant, where the constraints included the number of steel coils fed into a mill and the thickness of the sheet metal produced. The results of the system have been extremely impressive. Based on test runs with the system, POSCO expected to achieve a 30% to 40% reduction in stock. Using ILOG Solver's constraint-based planning and scheduling engine and ILOG Views for a highly responsive real-time user interface, the system optimizes steel production by controlling the plant's inventories and maximizing the total throughput. In other words, it increases the time the steel is rolled without having to be reheated, reducing costs by saving time and energy, and targets customer orders, scheduling them by deadline and volume into the most productive mix.

France ILOG S.A. - BP 85, 9 rue de Verdun, 94253 Gentilly Cedex - Tel: +33 (0)1 49 08 35 00 - Fax: +33 (0)1 49 08 35 10 - E-mail: info@ilog.fr • Germany ILOG Deutschland GmbH - Ober-Eschbacher-Strasse 109 - 61352 Bad Homburg v.d.H. - Tel.: +49 6172 40 60 - 0 - Fax: +49 6172 40 60 - 10 - E-mail: info@ilog.de • Japan ILOG CO., LTD - 3F YS Sanbancho Building, 24-14 Sanbancho, Chiyoda-ku, Tokyo 102-0075 - Tel: +81 3 5211 5770 - Fax: +81 3 5211 5771 - E-mail: info@ilog.co.jp • Singapore ILOG (S) Pte Ltd - 73 Science Park Drive, #B1-15 Cintech 1, Singapore 118254 - Tel: +65 773 06 26 - Fax: +65 773 04 39 - E-mail: info@ilog.com.sg • Spain ILOG SA - Gobelos 21, 28023 Madrid - Tel: +34 91 710 2480 - Fax: +34 91 372 9976 - E-mail: info@ilog.es • UK ILOG Ltd - Gentilly House, Bracknell Beeches, Bracknell, Berkshire, RG12 7BW - Tel: +44 (0) 1344 66 16 00 - Fax: +44 (0) 1344 66 16 01 - E-mail: info@ilog.co.uk • USA ILOG, Inc. - 1080 Linda Vista Avenue, Mountain View, CA 94043 - Tel: +1 650 567-8000 - Fax: +1 650 567-8001 - E-mail: info@ilog.com • ILOG Direct - 889 Alder Avenue Suite 200, Incline Village, NV 89451 - Tel: +1 775 322 7600 & +1 800 FOR ILOG - Fax: +1 775 322 3030 • URL: <http://www.ilog.com> • Representatives and distributors in other countries

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