Teamcenter

Baosteel Group
Iron and steel maker optimizes maintenance, repair and overhaul operations with Teamcenter

Industry
Metals and mining

Business challenges
Improve and prolong the service life of mission-critical spare parts
Reduce downtime, improve equipment productivity
Improve the quality of equipment maintenance services
Reduce maintenance costs
Improve product price competitiveness

Keys to success
Effective configuration management
Life characteristics status of equipment and parts
Establishment of service knowledge environment

Results
Improved equipment efficiency and productivity
Reduced maintenance and repair costs for crucial parts
Increased casting equipment availability

Baosteel virtually eliminates downtime, reduces costs and improves part availability

New product strategy, new challenges
Shanghai Baosteel Industry Technological Services Co., Ltd. (Baosteel), part of Baosteel Group Co., Ltd., adopted product lifecycle management (PLM) technology from Siemens PLM Software for its maintenance, repair and overhaul (MRO) needs. Teamcenter® software is now used to help the company optimize MRO on its continuous casting production line and crucial spare parts. The results have been excellent, enabling significantly lower costs and improved service levels.

After over 30 years of development, Baosteel has become one of China’s most competitive iron and steel enterprises, with the highest level of modernization. Baosteel offers three major series of products: carbon steel, stainless steel and special steel. Achieving Fortune Global 500 status for the ninth consecutive time, the company ranked 197th in 2012.

Continuous casting production is a key part of the production capacity, quality, logistics and costs for steel producers. The functional status and precision of the continuous casting equipment operation in the plant are key factors influencing production. Effective and timely offline overhaul and maintenance of the plant’s equipment is required to maintain production levels and decrease downtime.

Baosteel introduced continuous casting production equipment in the 1980s, and has successively built eight continuous casting production lines, including slab continuous casting and square billet continuous casting. New premium products include automotive sheet metal, silicon steel and steel for energy applications. Baosteel’s strategy of producing excellent products on a large scale is in response to challenging market dynamics, including competitive and cost pressures, plus increased customer requirements.

The new product strategy has meant new challenges. On the one hand, it requires that the service life of crucial spare parts be continuously improved to reduce downtime and increase equipment productivity.
On the other hand, the quality of equipment repair services must be improved to guarantee the production of high-level continuous casting slabs. In addition, product pricing and repair costs must be aggressively balanced to survive and thrive considering the fierce competition in this market.

To address these challenges, and achieve full lifecycle management services for its operations, Baosteel selected Teamcenter.

**Evaluation and selection based on advanced capabilities**

Teamcenter was one of the two system solutions Baosteel evaluated. Teamcenter was chosen because it has advanced equipment management capabilities and models, and the system’s management of turnover spare parts is highly aligned with the company’s primary requirements.

Baosteel’s MRO project was formally started in February 2011. The project implementation unit formulated a detailed project plan and organizational structure. In spite of challenges, including a complex business operations structure and a huge amount of basic data, the project was implemented smoothly and as-scheduled.

Baosteel’s management team notes that through the use of Teamcenter, the company has improved its MRO operations significantly.

**Equipment history and configuration management**

Baosteel engineers manage the configuration status of the continuous casting equipment using the configuration management functions of Teamcenter. The system is used to effectively organize, within a structure, important equipment such as crystallizers and support guide segments, and fan-shaped segments such as copper boards, widening equipment, speed reducers, electromagnetic brakes, hydraulic cylinders, drive rollers, driven rollers and bearings.

Crucial spare parts are identified by serial numbers. With online, offline or other service events recorded, this enables configuration status to be updated in a timely manner. “In the past, configuration information about equipment spare parts was recorded in manual reports,” says Chen Lei, director of Technical Service Center for Continuous Casting Equipment at Baosteel. “It was very hard to trace the historical status when problems arose. However, now using Teamcenter, the configuration information of equipment spare parts is clear – at a glance and anytime requested – simplifying management efforts.”
Customer’s primary business
Baosteel is China’s most competitive iron and steel enterprise producing carbon steel, stainless steel and special steel products that are widely used in many industries. www.baosteel.com

Customer location
Shanghai
China

“Teamcenter for MRO helps provide the enterprise with comprehensive digital solutions of equipment management and information-based integration technologies, as well as important technical support for the enterprise. This has enabled us to expand our core strengths in manufacturing to manufacturing services.”

Chen Lei
Director of Technical Service Center for Continuous Casting Equipment
Baosteel

Tracking spare parts
The part management functions of Teamcenter help Baosteel manage the status of spare parts. The system is used to trace the residual life of every machine and applicable spare parts. This is accomplished by defining the life characteristic values, or “furnace numbers,” for all equipment and parts. The number is recorded in online and offline service events of each equipment spare part, and life characteristic values are automatically propagated to the life characteristics of the replacement spare parts in use.

“There are a huge number of turnover spare parts in continuous casting equipment,” says Lei. “With a production line containing more than 1,600 continuous casting rollers, the life characteristics of each important spare part could no longer be effectively recorded using manual reports. Using Teamcenter, life characteristics are now digitally and automatically recorded on each spare part. Spare part life can be updated accurately and in a timely manner, enabling a powerful reporting basis for follow-up analyses of spare part life.”

In addition, the system is used to help configure spare part status and spare part areas as required, including the management of new product, online, offline, to-be-repaired, outsourced, and complete spare parts. This helps to ensure the supply of complete spare parts, reduce the stock and inventory of spare parts, and maintain equipment status.

Closed-loop management
Using the document management and differentiated service management capabilities of Teamcenter, Baosteel is now optimizing its quality and fault treatment processes for spare parts. The technical standards of equipment overhaul are organized through the document folder under the equipment structure, while the bills of repair quality reports are stored in the service event folder. The service difference and fault codes are selected under each offline event, while the fault analyses, corrective measures and fault codes of new faults are managed in a closed loop.

Use of Teamcenter has enabled the company to fully meet its planned objectives. Lei notes that after the system went live, the company’s ability to manage its continuous casting equipment improved significantly. Repair costs for crucial spare parts are down, casting machine status is better understood, and slab quality is up.

According to Lei, the system has caught the eye of Baosteel’s equipment management department, which is planning to apply the system to manage spare parts knowledge across other metallurgical equipment. Leaders of Baosteel’s equipment department are impressed with the results of using Teamcenter for the management of continuous casting equipment, and hope that it will bring similar positive outcomes to its other equipment applications.

Lei concludes, “Teamcenter for MRO helps provide the enterprise with comprehensive digital solutions of equipment management and information-based integration technologies, as well as important technical support for the enterprise. This has enabled us to expand our core strengths in manufacturing to manufacturing services.”