PRIMETALS TECHNOLOGIES

Press

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Primetals Technologies equips Baosteel CC3 continuous caster with new Integrated Control Center

- **New Integrated Control Center (ICC) for controlling and monitoring the entire continuous casting plant**
- **Fewer workplaces in hazardous zones on the casting platform thanks to relocation to the integrated control center**
- **Automation of standard situations boosts productivity and improves product quality**
- **Casting platform robots make work easier and safer for operating personnel**
- **Access system with automatic facial recognition improves operational security**

At the end of 2019, Baoshan Iron and Steel Co Ltd. (Baosteel) commissioned an integrated control center (ICC) for the CC3 two-strand continuous caster. The work was carried out in collaboration with Primetals Technologies at the company's Steelworks No. 1 in Shanghai. This established an integrated control center for the operation and monitoring of the entire plant. The objective was to reduce the number of personnel working in the hazardous area (liquid steel area) and to relocate the work to the air-conditioned ICC. Standard tasks, which previously had to be performed manually, can now run automatically. These include, for example, fully automatic topfeeding, calibration tasks prior to casting, start-up procedures at the start of casting and automatic end-of-casting procedures.

Primetals Technologies has equipped the new control center with HMI touch panels and equipped the plant itself with modern automation software and innovative technology packages such as LevCon mold level control, DriveCon for controlling the withdrawal drives and DynaGap Soft Reduction for improving the internal quality of the slabs. Work has been made easier by the installation of two casting platform robots, while operational security has been improved by a new access system using facial recognition.

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Integrated control center (ICC) improves safety

Until recently, personnel at the CC3 continuous caster had to perform operating tasks in hazardous zones, for example in the vicinity of liquid steel. Installation of the ICC now permits centralized control and monitoring of the entire plant from the ladle transfer at the turret right through to the exit section. For this purpose, important control functions like for OS5 (Ladle turret control station center including LiquiRob operation), OS1 (caster pulpit), LCP tundish car, HWAM mold and withdrawal strand drives have been mirrored in the main control center. This means that operating personnel now only have to be present at the caster itself in the initial casting phase and for maintenance operations. All other operating tasks can be performed from the integrated control center. For this purpose, the existing HMI terminals in the +OS2 control center were supplemented by six additional touch panels and console elements for the execution of key switching tasks and safety functions. Several additional cameras and a new monitor wall support monitoring of the entire plant. As a consequence, Baosteel was able to decommission the control center in the +OS3 exit section.

State-of-the-art automation boosts productivity and improves product quality

Increased demands on the productivity of the caster and on the quality of the slabs produced made it necessary to replace the outdated automation system. As early as November 2016, Baosteel commissioned its long-standing partner, Primetals Technologies, to convert the plant and modernize the basic (Level 1) and process automation (Level 2). The integrated control center was implemented in a second phase in 2019.

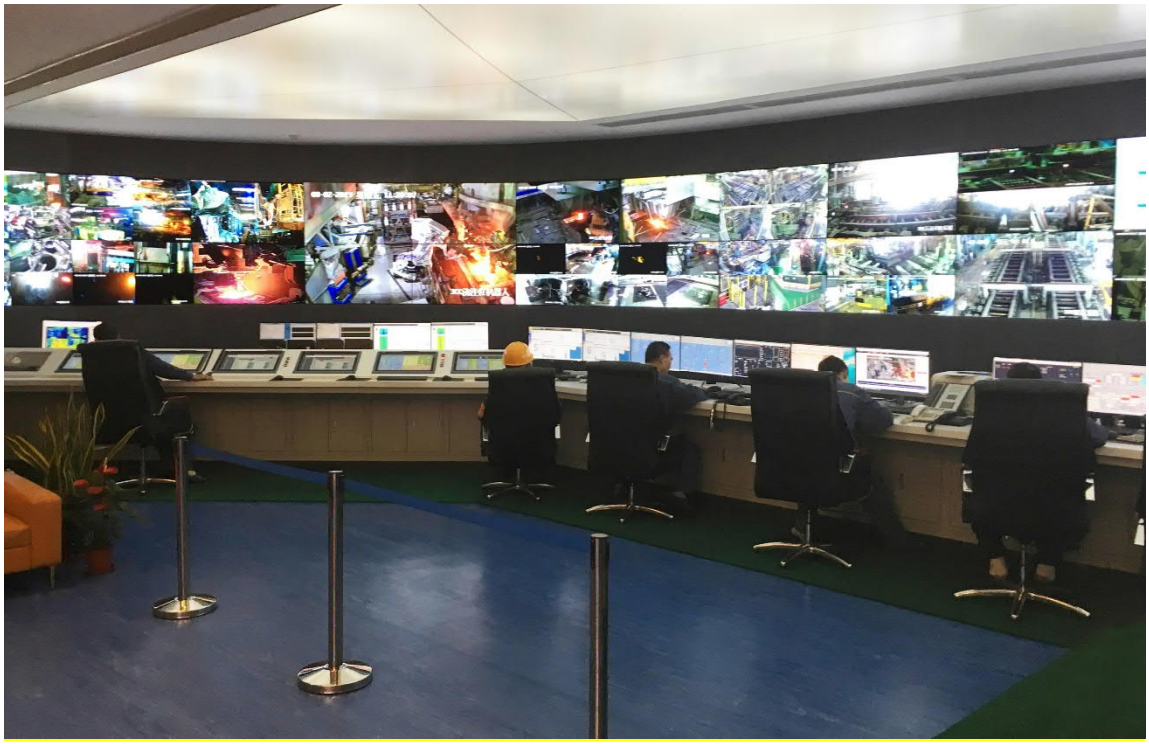
Among other things, modernization of the casting plant comprises LevCon mold level control including auto-start and anti-bulging functions, DynaWidth automatic slab width adjustment, the DynaFlex Osci hydraulic mold oscillator, the Mold Expert breakout detection system, an EMS stirrer and a fully automatic dummy bar insertion system for topfeeding. The "Dynacs 3D" secondary cooling model dynamically calculates the temperature profile over the entire strand length, while DynaGap Soft Reduction improves the internal quality of the slabs.

Workplace safety improved by casting robots and digital access system

Two LiquiRob casting platform robots in the ladle and tundish section are now used for ladle shroud manipulation, temperature measurement and sampling, application of tundish powder, and for lancing. This means that significantly less work now has to be performed in hazardous zones. An additional robot was installed by Baosteel for the automatic application of casting powder.

Baosteel has also installed a digital access system in all areas of the continuous caster. Cameras are installed at every gate. These control access to the individual areas by means of a facial recognition system. This system guarantees that only authorized and appropriately trained personnel can gain access. In addition, it was also possible to implement precise access control for external partners such as Primetals Technologies during the commissioning phases.

Baoshan Iron & Steel Co Ltd. is part of the newly formed China Baowu Steel Group Corp Ltd, the second largest steel producer in the world with a production capacity of 70 million metric tons.
Baosteel produces high-quality products for both the Chinese domestic and world markets. The CC3 continuous caster at Steelworks No. 1 in Shanghai produces slabs in two strands, each with a width of between 1200 mm and 2300 mm, with an annual production capacity of 2.3 million metric tons.



The new Integrated Control Center of the Baosteel CC3 continuous caster at Steelworks No. 1 in Shanghai increases both productivity and safety at work.

This press release and a press photo are available at www.primetals.com/press/

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Primetals Technologies, Limited, headquartered in London, United Kingdom, is a pioneer and world leader in the fields of engineering, plant building, and the provision of lifecycle services for the metals industry. The company offers a complete technology, product, and services portfolio that includes integrated electrics and automation, digitalization, and environmental solutions. This covers every step of the iron and steel production chain—from the raw materials to the finished product—and includes the latest rolling solutions for the nonferrous metals sector. Primetals Technologies is a joint venture of Mitsubishi Heavy Industries and partners, with around 7,000 employees worldwide. To learn more about Primetals Technologies, visit the company website www.primetals.com.

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