

## PRESS RELEASE

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# Nanjing Iron and Steel Group Co., Ltd. orders upgrade for continuous casting machine from SMS Concast

China: Steel bloom caster modernization for greater production flexibility



Contract signing between Xu Xiaochun, General Manager Nanjing Iron and Steel Group Co., Ltd., and Pierpaolo Rivetti, Deputy EVP Sales & Marketing SMS Concast.

Nanjing Iron and Steel Group Co., Ltd., a leading Chinese steel producer with approximately ten million tons of steel produced per annum, has awarded SMS Concast AG an order to upgrade the four strands of continuous caster CCM4 at its Nanjing plant No. 2. The targets of the project are to improve product quality and productivity and also to increase flexibility in the processing of a vast steel grade portfolio and to reach an annual production of more than 800,000 tons of blooms.

The four-strand continuous casting machine with nominal radius of 12 meters will cast two bloom section sizes, namely 250 x 300 and 320 x 420 millimeters. The product mix will include a large proportion of high-carbon grades like bearing and spring steels and the full range of steel grades to serve the automotive industry. This product portfolio will allow greater production flexibility and responsiveness to the market demand.

The casting machine will be equipped with the latest technological design to make this caster one of the most modern installations worldwide. Features, like dynamic mechanical soft reduction (DMSR) shall improve the inner quality of the blooms by means of soft and hard reduction modules designed to reach the necessary reduction ratios for an accurate control of core porosity and segregation.

The complete control of the soft/hard reduction (DMSR) system is delegated to the COOL real-time solidification model. This online simulation tool is a proprietary system developed by SMS Concast. It dynamically calculates the temperature profile along the entire strand and defines the roll gap and the reduction forces in the respective modules of the straightening unit. The spray cooling is also dynamically readjusted in accordance with the calculated cooling profile.

In addition to the DMSR system, the modernization project includes other technological and digital solutions such as CONFLOW tundish stopper mechanism for a precise control of the steel flow to the mold, INVEX<sup>®</sup> mold tube technology with the latest mold cooling features and a hydraulic tandem oscillation system allowing several oscillation parameters. The

electromagnetic mold and final stirrers (CONSTIR M-EMS and F-EMS) together with the SMS Concast CONSTIR-MWS tool (modulated wave stirring) optimize stirring efficiency with an energy saving of 30 percent and more. The list of technological packages is rounded up by air-mist spray cooling and a bloom deburring technology. The installation of a robot-type slide gate manipulator will be also foreseen to increase safety and unmanned operation on the casting floor.

The electrical and automation system has the prime purpose of automatically controlling the operation of the caster (no-man casting). At the same time, the Level 2 computer system tracks and records all parameters relevant to bloom quality and provides a detailed cast report for each bloom. This preventive software module includes automatic sample cutting, slice by slice identification, computerized bloom tracking, a heat extraction mode, optimized residual length calculation and equipment life time recording.

In order to minimize shutdown times, particular attention was paid to project planning and delivery schedule in order to achieve quick implementation. The modernization is scheduled for completion in the fourth quarter of 2019.

*SMS group is a group of companies internationally active in plant construction and mechanical engineering for the steel and nonferrous metals industry. It has some 14,000 employees who generate worldwide sales of about EUR 3 billion. The sole owner of the holding company SMS GmbH is the Familie Weiss Foundation.*