

PRESS RELEASE

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Jiangsu Shagang Group (Huaigang) orders modernization from SMS Concast for their six- strand billet caster to enter production of high quality steel

Innovative solutions for billet producers in high-end markets



Billets cast on a SMS Concast continuous caster.

Huaigang Special Steel, a subsidiary of Jiangsu Shagang Group based in Zhangjiagang, China, has awarded SMS Concast, a company of SMS group, an order for the modernization of their existing six-strand billet caster. The main motivation for this project is the move towards special bar quality (SBQ) steel grades serving the automotive and mechanical engineering industries.

In cooperation with Huaigang, SMS Concast developed an innovative solution, which will allow the production of high-end products on only five strands but with the same annual production capacity.

In order to achieve the required SBQ steel qualities, the technology of dynamic mechanical soft reduction (DMSR), which enables the reduction of the strand thickness as early as in the final solidification stage, will be applied. Huaigang is the first customer in China to use this process specifically for billets.

In order to be able to install the required seven (D)MSR modules per strand, additional space is needed between the individual strands. To achieve this, the innovative concept foresees a new section size of 210 millimeters square and the creation of additional space by converting the caster from six to five strands, whilst keeping the caster's current productivity.

“The DMSR technology is typically applied with bigger bloom sections. However, sometimes innovation takes place by integrating known technology to new application areas. The solution is suitable for both new casters and upgrades of existing casters. It makes it possible to achieve highest-quality products by being able to even better control and further reduce centerline segregation and porosity. This means great progress and success for producers of billets aiming to move towards special steel bar qualities”, says Pierpaolo Rivetti, Deputy EVP Sales & Marketing SMS Concast.

The DMSR system consists mainly of the MSR modules and the COOL real-time solidification model developed by SMS Concast, which dynamically controls the MSR modules. By accurately calculating the liquid core of the billet at a specific position of the solidification and

applying the suitable forces, the reduction ratios are optimized and the inner product quality improved.

The existing 10.28-meter-radius caster at Huaigang currently operates without MSR modules on six strands. It is designed for billets of 150 to 200 millimeter square. After the modernization, the caster will produce billets of 210-millimeter square section on only five strands, but these will be fitted with DMSR. The additional steel grades to be cast will include bearing, gear and free-cutting steels, and alloy structural steels.

In addition to the DMSR system, the upgrade of the continuous casting machine will include the introduction of further technological and digital solutions from SMS Concast. The CONLFOW Stopper control mechanism for closed casting ensures precise control of the steel flow to the mold. The CONVEX mold tube technology enables homogeneous heat transfer and thus optimal solidification in the primary cooling zone. The state-of-the-art electromagnetic mold stirrer (CONSTIR MEMS) is notable for its robust design and efficient stirring effect for best quality results. A compact oscillation system in combination with the electric CONDRIVE oscillation drive enables highly accurate oscillation control with online adaptable stroke and frequency. CONDRIVE combines all the advantages of a hydraulic oscillation drive with the simplicity of an electromechanical drive.

For re-stranding, a rigid dummy bar system will be provided, which enables fully automatic dummy bar insertion and includes a liftable storage unit. The system is designed for high productivity and low maintenance, whilst ensuring precise alignment of the strand.

Operation of Huaigang's modernized billet caster complete with the DMSR system is scheduled to start by the end of 2021.

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 more than EUR 2.9 billion. The sole owner of the holding company SMS GmbH is the Familie Weiss Foundation.