

Phone: +49 211 881-4449
Fax: +49 211 881-774449
Mobile: +49 151 40226502
E-mail: thilo.sagermann@sms-group.com
Thilo Sagermann

PRESS RELEASE

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Increased slab sizes and improved slab quality

NLMK Group, Russia, commissions SMS group to supply a thick slab caster

NLMK Group has contracted SMS group (www.sms-group.com) to supply a new thick slab caster for its steel mill no. 2 in Lipetsk in Central Russia.

The new plant will replace a two-strand caster, which was supplied by SMS group in 1976, and will be built in the same place. The continuous caster is to be completely rebuilt from the ladle turret to the exit section, and will be equipped with state-of-the-art continuous casting technology. A few steel structures and foundation areas will remain as they are. The new plant will be designed as a bow-type caster and offer a host of benefits, particularly for the casting of slabs which are made from crack-sensitive steel grades and are over 300 millimeters thick.

SMS group's scope of supply comprises the basic and detail engineering, and the mechanical and electrical systems for the continuous caster. It also includes a ladle turret, adapted to the existing foundation and shop configuration, molds with hydraulic oscillation, strand guide with 25 segments, the relevant interchangeable parts, and the exit section. The supervision of the erection and commissioning is also part of the scope of supply.

The first cast is scheduled for December 2019.

The width range produced on the continuous caster is to be extended from a previous maximum of 2,200 millimeters to 2,800 millimeters, and the thickness range from 355 to 400 millimeters. The plant will be designed for an annual production capacity of max. two million tons.

The plant will be equipped for twin casting, which is used for slab widths between 900 and 1,290 millimeters, and a maximum thickness of 250 millimeters.

The hydraulic-powered oscillation system, together with the mold with remotely adjustable narrow sides including X-Pact[®] Width Control for optimal width changes during casting, ensure both maximum plant productivity and slab quality.

The molds will be prepared in advance for the use of an electro-magnetic stirrer. This will enable NLMK to improve surface quality even further for specific groups of steel grade. Hence, the plant will be ideally equipped to satisfy future requirements, too.

The continuous caster will also feature the HD mold system. The use of HD mold is a key factor when it comes to higher plant availability and improved product quality. The installation of reliable sensors, which are suitable for use in harsh working environments, provides the basis for sound temperature measurements. The Breakout Prevention Assist system reliably prevents breakouts resulting from stickers in the mold, and thus ensures the effective protection and high availability of the plant. The Mold Temperature Assist provides 2D and 3D information on the distribution of the dissipated heat, alignment of the submerged entry nozzle, and the contact between the strand shell and copper plates.

Segments 2 to 25 will be fitted with STEC-Rolls[®]. The STEC-Roll[®] optimizes the casting process and, thanks to its long service life and the possibility of re-using the rolls, is setting new standards in cost-effective maintenance and servicing.

The continuous slab caster is to be equipped with technological control systems and process models from the X-Pact® range of electrical and automation equipment.

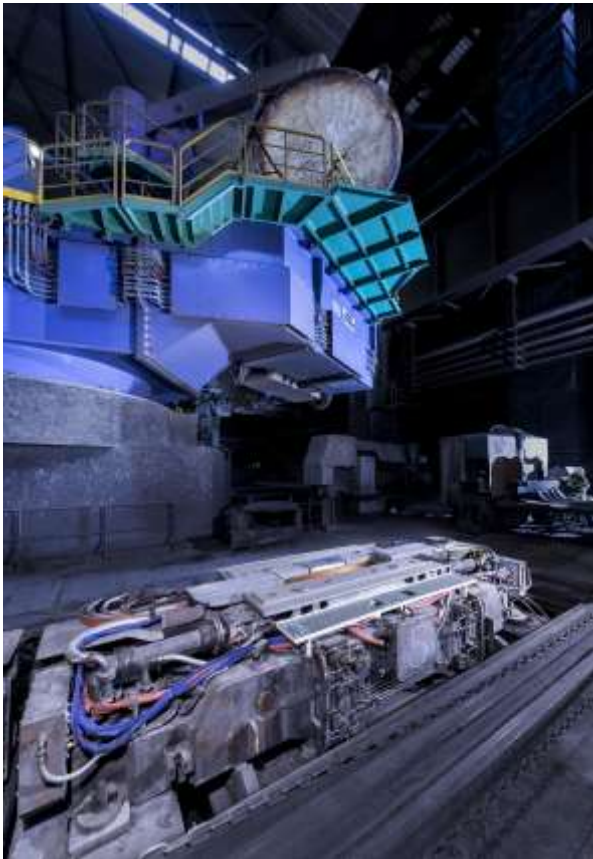
What's more, SMS group plans to implement a new secondary cooling concept with a width-dependent air-mist cooling system and X-Pact® Solid Control (solidification model). The X-Pact® Gap Control system with Dynamic Soft Reduction® enables the slab to be specifically compressed in the final solidification section so as to improve its inner structure. The X-Pact® Solid Control system provides the model with data on the desired amount and correct location for the compression. The segment load compensation system installed ensures more precise positioning. Monitoring of the strand forces also offers additional segment protection.

The secondary cooling system in the continuous caster will be perfectly designed for high-quality slabs and the thick slab size range. The whole curved section will be equipped with width-dependent air-mist cooling. The water volumes in each circuit will be individually adjustable. Depending on the steel grade, among other things, dry casting will be performed in certain sections of the strand guide. Inactive nozzles will be protected by a non-cooling flow of air.

The workshop at NLMK will be fitted with HD LASr (mold) and HD LASr (segment), which are digital plant assistants specially developed by SMS group. Thanks to the high quality of the laser measurement, as well as the exact and reliable recording and descriptive evaluation of the measured objects, HD LASr is far superior to the systems used up to now. Given the high sensitivity to cracking of the steel grades to be cast and the extended thickness format, the precise alignment of the strand guide system plays a significant role in preventing the formation of cracks in the slab.

The NLMK Group is one of Russia's largest steel producers and is active in markets around the world.

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Increased plant availability and improved product quality thanks to HD mold for thick slab casters.



The STEC-Roll[®] optimizes the casting process and is setting new standards in cost-effective maintenance.

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 13,500 employees who generate worldwide sales of more than EUR 3 billion. The sole owner of the holding company SMS GmbH is the Familie Weiss Foundation.