Siemens VAI Slab Caster at Cosipa, Brazil: First Caster in South America with LiquiRob Robot on Casting-Platform and “Thickness-On-Demand” Capability

Siemens VAI started up a new slab caster for the Brazilian flat-steel producer Companhia Siderúrgica Paulista (Cosipa) equipped with design features unique in South America. This caster, which is capable of producing approximately 1.2 million tons of high-quality slabs per year, is equipped with the LiquiRob robot system as well as with thickness-on-demand capability. Installation of the new slab caster took place simultaneously with ongoing operations of two adjacent slab casters. Plant start-up proceeded smoothly and all systems were fully operational right from the first heat.

The new one-strand slab caster of Cosipa – a company of the Usiminas Group – casts both high-quality carbon and low-alloyed steel grades. Slabs can be cast in thicknesses between 210 and 260 millimeters and in widths ranging between 1,000 and 1,900 millimeters. For the first time in a South American steel mill, a LiquiRob robot is in operation on the casting platform to automatically perform steel sampling and temperature measurements in the tundish. This activity no longer has to be carried out by caster personnel and is an important step for considerably improved operator safety.

Another South American first was the installation of “thickness-on-demand” capability to allow the strand thicknesses and widths to be quickly and flexibly adjusted. This is made possible by the combination of a series of equipment and system solutions from Siemens VAI. With the use of a cassette-type Smart Mold, the mold narrow sides can be exchanged to alter the strand thickness without the need to replace the entire mold. With the hydraulically width-adjustable mold (DynaWidth) the narrow sides can be laterally shifted to change the strand width during casting. In the bending, straightening and horizontal zones of the caster the use of the Smart Bender and Smart Segments, which are controlled by DynaGap automation, allows the roller-gap settings to be remotely adjusted for the casting of the required slab thicknesses. Other special equipment and
technological packages installed in the Cosipa caster include LevCon for improved automatic mold-level-control, MoldExpert for enhanced strand-break-out protection, DynaFlex for the on-line adjustment of the mold-oscillation parameters and I-Star Rollers (intermediately supported trans-axle rollers) for improved strand-shell support and slab quality. With the fully automatic and dynamic Level 2 Dynacs secondary-cooling model, the stand-temperature profile and the required secondary cooling-water quantities can be calculated at any position along the strand as the basis for precisely defining the optimum secondary-cooling setpoints and final point of strand solidification. Improved internal strand homogeneity for the production of highest quality slabs is made possible with DynaGap Soft Reduction technology. This is achieved through the precise adjustment of the roller taper in the area of final strand solidification according to the Dynacs-calculated setpoints. The integrated VAIQ quality management rounds off the Siemens VAI scope of supply.

Following start-up of the caster in the second quarter of 2008, a total of nearly 100,000 tons of steel were cast during the hot-commissioning period and all single performance tests were successfully carried out. The LiquiRob robot system was continually in operation from the start, fulfilling all of the required temperature measurements and steel sampling in the tundish. All other casting equipment functioned as designed during the performance test period so that already eight weeks after the casting of the first heat the Provisional Acceptance Certificate (PAC) was issued.

Cosipa, located in Cubatão, State of São Paulo, Brazil, is the largest flat-steel production facility in Latin America. The company produces a wide range of uncoated flat-steel products, including slabs, hot- and cold-rolled sheets and coils and also heavy plates for a wide variety of industrial applications. With the objective of improving caster performance, operational flexibility and personnel safety, the company had previously awarded a contract to Siemens VAI in November of 2005 for the dismantling and replacement of the No. 3 Slab Caster. The project was carried out by the Siemens VAI Brazilian-based company Voest Alpine Indústria Ltda (VAI-MS). The Siemens VAI headquarters in Linz, Austria, was technologically responsible for the project. The contract included the engineering, supply and turnkey installation of the new single-strand slab caster.

Please find further information on solutions for steelworks, rolling mills and processing lines at http://www.siemens.com/metals

Start-up of the Slab Caster at Cosipa, Brazil

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