High-Quality Steel for the Production of Plates –
Siemens to Supply New Steel Mill at Posco Gwangyang Works, Korea

Siemens VAI Metals Technologies received an order from the Korean steel producer Posco for the installation of a new green-field steel mill at its production site in Gwangyang, Korea. The project scope includes engineering and the supply of key components, systems and technological packages for an LD (BOF) converter, RH degassing plant and slab caster. The project will be implemented in consortium with Posco E&C (Posco Engineering & Construction Co., Ltd.) and Poscon – an affiliated company of the automation division of Posco. The first slab is scheduled to be cast on the new caster in May 2010, which will be rolled to plates in a new plate mill also under construction.

With a crude-steel output exceeding 30 million tons in 2007, Posco is one of the largest steel producers in the world. At its production sites in Korea and elsewhere in Asia the company produces a wide range of carbon, stainless and electrical-steel grades which are sold as coils, sheets, plates and wire rod that are used for a multitude of industrial applications. In response to the growing demand for plates, Posco made the decision to install new steelmaking and plate-rolling facilities at its steel works in Gwangyang. A total of 3.2 million tons of slabs, comprising low-, medium- and high-carbon steel grades as well as alloyed steel grades, will be rolled to high-quality plates for use in shipbuilding, boiler and pressure vessels and pipe production.
Siemens Metals Technologies will provide engineering and key equipment for a 250-ton LD (BOF) converter and offgas system, an RH degassing plant and a 2-strand slab caster with a nominal casting capacity of 3.2 million tons of slabs per year. The converter supply includes the maintenance-free VAI-Con Link suspension system, converter-tilting unit with drive, an oxygen valve stand for the LD lances and slag stoppers for minimized slag carry-over during tapping. The dry-type converter-offgas-treatment system will be designed to cool and dedust up to 200,000 m$^3$ of offgas per hour in accordance with the strict Korean environmental standards. It includes an evaporation cooler, a Siemens four-field, round-type ESP (electrostatic precipitator), ID (induced draught) fan, a gas-switchover station for directing the treated converter offgas either to the flare or to intermediate storage in a gasholder for subsequent heating applications or for the generation of electricity). A feature of the offgas-treatment plant is the installation of a plate-type cooling system which ensures a high cooling efficiency during peak converter-offgas emissions.

The 250-ton RH (Ruhrstahl-Heraeus) degassing plant will reduce the hydrogen and nitrogen gas content of the liquid steel to acceptable values as required for the production of high-quality plates.

The 2-strand slab caster with a casting-bow radius of 9.5 meters will be capable of casting slabs with thicknesses of 250 and 300 millimeters and in widths ranging from 1,400–2,400 millimeters. The caster will be equipped with a wide array of technological packages. This includes DynaFlex for the online flexible adjustment of the mold-oscillation parameters, SmartMold with its cassette-type mold design that allows the copper plates to be quickly exchanged and LevCon 2 for improved automatic mold-level-control. Dynamic mold-width adjustment will be possible with DynaWidth. Furthermore, a SmartBender will be installed as the first segment in the strand-support system to enable fast slab-thickness changes to be carried out. Advanced caster segments of the type SmartSegment will enable the online and fully automatic adjustment of the slab thicknesses. DynaGap SoftReduction technology will allow the strand taper in the area of final solidification to be dynamically adjusted for improved internal strand quality. The Level 2 Dynacs secondary-cooling system featuring dynamic strand-cooling management ensures ideal cooling conditions according to the respective steel grade.
With the employed 3D-Spray system the spray width is automatically adjusted according to the slab width, providing optimum slab cooling.

A key reason for the receipt of this contract by Siemens was the successful cooperation with Posco in previous projects of this type. Since the year 2000, Siemens Metals Technologies has supplied a total of nine slab casters comprising a total of 17 strands to Posco’s Pohang and Gwangyang steel works.

Additional information on solutions for steel works, rolling mills and processing lines is available at http://www.siemens.com/metals.

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