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Tosyali orders EAF Quantum electric arc furnace, secondary metallurgy and continuous slab caster from Primetals Technologies

- **EAF Quantum is designed to produce two million metric tons of liquid steel per year and may be operated with a mixture of scrap of varying composition and HBI**
- **Low electrical energy consumption per metric ton, low operating costs and CO₂ emissions**
- **Twin vacuum-degassing plant for further treatment**
- **Two-strand continuous slab caster with a capacity of two million metric tons of slabs per year, with option to be extended to 3.4 million metric tons per year**
- **Plant is equipped with TPQC and thus ready for Industry 4.0**

Turkish steel producer Tosyali Demir Celik Sanayi A.S. has placed an order with Primetals Technologies to supply an EAF Quantum electric arc furnace, a twin vacuum-degassing plant with oxygen blowing and a two-strand slab caster for a flat steel greenfield project in Iskenderun, Turkey. The EAF Quantum is designed to handle metallic scrap and virgin materials such as HBI, pig iron in different composition and quality. The electrical energy requirement of the electric arc furnace is extremely low, mainly thanks to the scrap preheating system, but also due to many other features of EAF Quantum technology, such as FAST Tapping system, continuous foaming slag and continuous submerged electric arc (Flat bath operation). This reduces both the operating costs and the CO₂ emissions. The EAF Quantum is highly productive furnace that will reach lowest of possible power off times. The twin vacuum-degassing plant provides further treatment and steel quality to the production portfolio of Tosyali Demir Celik. With oxygen blowing possibility Tosyali Demir Celik steel plant will be ready to produce steel grades starting from ULC grades up to high carbon grades, peritectic grades, API grades, dual phase grades and also high strength low alloyed steel grades. The plant will be equipped with TPQC (Through-Process Quality Control) and is thus ready of Industry 4.0. Two-strand continuous slab caster provides a capacity of two million metric tons of slabs per year, to be increased to 3.4 million tons, and is able to process a wide range of steel grades. The new meltshop is scheduled to be commissioned in by the end of 2022.

Tosyali Demir Celik A.S. is part of the Tosyali Group, which already operates another steel plant named TOSCELIK in Osmaniye, Turkey as well as a DRI direct hot-charge melting plant in Algeria named Tosyali Iron Steel Industry Algerie. The company also runs a number of rolling mills and is well established in the markets for flat products and welded pipes. In order to increase their capacity of semi-finished products like slabs for the existing downstream facilities, Tosyali Holding decided to set up a new greenfield facility in Iskenderun, Hatay Province.

For the first phase of this new meltshop project, Primetals Technologies will supply a 150-ton EAF Quantum and a 150-ton twin vacuum oxygen-blowing degassing plant. The scope encompasses the complete mechanical and electrical process equipment and the automation technology. This includes the automated scrap yard management, the automated charging process, automation of the oxygen injection and sand refilling, as well as the Level 2 automation.

The EAF Quantum developed by Primetals Technologies combines proven elements of shaft furnace technology with an innovative scrap charging process, an efficient preheating system, a new tilting concept for the lower shell, and an optimized tapping system. This all adds up to very short melting cycles. The electricity consumption is considerably lower than that of a conventional electric arc furnace. Together with the lower consumption of electrodes and oxygen, this gives an overall advantage in the specific conversion cost of around 20 percent. In comparison to conventional electric arc furnaces, total CO₂ emissions can also be reduced by up to 30 percent per metric ton of crude steel. An integrated dedusting system with modern automatic off gas control fulfills all environmental requirements.

The slab caster has a rated capacity of two million tons of slabs per year, which may be extended to 3.4 million tons per year. Its machine radius is ten meters. The caster produces slabs with a thickness of 225 millimeters in widths ranging from 900 to 1,800 millimeters. The maximum casting speed is 1.6 meters per minute. The plant casts ultra-low carbon to high carbon steels, peritectic, and HSLA steels, as well as API grades. The straight cassette-type Smart Mold is equipped with the Mold Expert breakout detection system, DynaWidth for automatic width adjustment, and the DynaFlex mold oscillator. LevCon automatic mold-level-control system with "autostart" casting functions and auto-adaptive dynamic bulging compensation and the Mold Expert on-line automatic breakout pre-detection will also be implemented. Bender and Smart Segments as well as I-Star rollers are used in the strand-guiding system.

The Dynacs 3D secondary cooling system dynamically calculates and controls the temperature profile along the entire strand. DynaGap Soft Reduction 3D is used to improve the interior quality of the slabs.

The roll gap is dynamically adjusted during the final solidification in accordance with the operating points calculated by Dynacs. This minimizes segregation in the center of the strand.



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This press release and a press photo are available at

www.primetals.com/press/

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