PRIMETALS TECHNOLOGIES

Press

London, November 23, 2021

Fujian Dingsheng starts up first eco-friendly minimill for flat products combining EAF Quantum and Arvedi ESP by Primetals Technologies

- **First minimill for flat products with lowest environmental impact in operation**
- **85% CO_2 savings compared to integrated production route**
- **Coils for sales market directly produced during first heat**
- **New products for further CO_2 savings by omitting cold rolling process**

Recently, Chinese steel producer Henan Yaxin Steel Group Co., Ltd. (Henan Yaxin) has started up its eco-friendly minimill for flat products consisting of two EAF Quantum electric arc furnaces and an Arvedi ESP line at its Fujian Dingsheng plant. Tapping weight of each EAF unit is maximum 115 metric tons. This set-up allows for 85% CO_2 savings compared to integrated production route. The Arvedi ESP line has a design capacity of 2.5 million metric tons per year and a reproducible strip thicknesses down to 0.8 mm. This enables Henan Yaxin to produce high-quality, ultra-thin strip to enter new market segments with direct application products omitting cold rolling. Coils for the sales market were directly produced during first heat.

This is the first environmentally friendly minimill installation worldwide where EAF Quantum and Arvedi ESP are combined. The extremely low requirement of electrical energy of this minimill for flat products contributes to a reduction of CO_2 emissions as well as reduction of operating costs. The new EAF Quantum expedites a transition of the existing production to a more environmentally compatible electric steelmaking process. The Arvedi ESP process uses the heat of the cast strand for the first rolling step. An induction heater supports the second rolling step with minimum electrical energy and ESP rolls with zero direct emissions.

The given maturity level of Arvedi ESP technology allowed coil production right from the first heat. Thirteen coils have been produced in endless operation during start of hot commissioning by first heat.

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The plant operated in stable endless operation and hot rolled ultra-thin direct application material. These products allow Henan Yaxin to better serve the highly attractive local and export markets for high-quality, thin-gauge strip products.

The privately-owned concern Henan Yaxin operates integrated and compact steelmaking plants in five provinces and cities in China, and can produce more than ten million metric tons of steel each year. Primetals Technologies supplied the entire mechanical and electrical process equipment for both new EAF Quantum electric arc furnaces and the Arvedi ESP line. “Balance of plant” equipment and services have been provided by a local design institute.

Developed by Primetals Technologies, the EAF Quantum combines proven elements of shaft furnace technology with an innovative scrap feeding process, efficient preheating system, new tipping concept for the lower shell, and an optimized tap system to attain significantly reduced tap-to-tap times. The electrical energy requirement is considerably less than that of a conventional electric arc furnace. In conjunction with reduced consumption of electrodes and oxygen, a cumulative benefit of around 20 percent is achieved for respective conversion costs. Overall, reductions of up to 30 percent of CO_2 emissions per metric ton of crude steel can be attained when compared to conventional arc furnaces.

The 180-meter-long ESP plant is far more compact than conventional casting and rolling mills. The new plant is designed for an annual production capacity of 2.5 million tons of high-quality, ultra-thin, hot-rolled strip products with widths of up to 1,600 mm and thicknesses down to 0.8 mm. Carbon steels, high-strength low alloyed (HSLA) grades and dual-phase steels will be produced for the direct application market, omitting cold rolling processes. Hot rolling of direct application products optimizes not only the single process but the whole steel production route by eliminating unnecessary product steps, thus reducing energy consumption and CO_2 emissions.

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Coils produced directly during first heat of the minimill for flat products by Primetals Technologies

This press release and a press photo are available at www.primetals.com/press/

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