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Primetals Technologies supplies new Arvedi ESP line to Henan Yaxin

- **Casting-rolling plant produces high-quality, ultra-thin strip to enter new market segments**
- **Rolling of reproducible strip thicknesses down to 0.8 mm**
- **Total production capacity of 1.6 million tons per year with potential for 2.5 million tons per year**
- **Energy consumption and related costs are reduced by up to 45% compared to conventional casting and rolling processes**
- **First mini mill combination of Quantum EAF and ESP with major reduction in CO₂ and NO_x emissions**

Chinese steel producer Henan Yaxin Steel Group Co., Ltd. (Henan Yaxin) has placed an order with Primetals Technologies for the supply of an Arvedi ESP (Endless Strip Production) line. The casting-rolling facility will be part of a new steelmaking facility currently under construction in Fuding City, Fujian province. The liquid steel will be produced by two EAF Quantum electric arc furnaces ordered from Primetals Technologies earlier this year. The Arvedi ESP line has a design capacity of 1.6 million metric tons per year with the potential to produce later 2.5 million tons per year. It is capable of rolling strip to a reproducible strip thicknesses down to 0.8 mm. This will enable Henan Yaxin to produce high-quality, ultra-thin strip to enter new market segments. Compared to conventional casting and rolling processes, energy consumption and the related costs are reduced by up to 45%. This also results in a major reduction in CO₂ and NO_x emissions, minimizing environmental impact. This is the first environmental friendly mini mill installation worldwide where EAF Quantum and Arvedi ESP are combined. The plant is scheduled to go into operation in 2020.

The privately-owned company 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. The Arvedi ESP plant will allow Henan Yaxin to better serve the highly attractive local and export markets for high-quality, thin-gauge strip products. The 180-meter-long plant is far more compact than conventional

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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.

Primetals Technologies is responsible for the engineering of the Arvedi ESP plant and will supply mechanical equipment, media-control systems, technological packages and automation systems. The entire line is controlled by a completely integrated basic (Level 1) and process optimization (Level 2) automation, which fully controls all casting and rolling operations.

In the Arvedi ESP process, hot-rolled coils are produced in a linked casting and rolling plant directly from liquid steel in a continuous and uninterrupted manufacturing process. The line commences with the casting of a thin strand that is subsequently rolled to an intermediate thickness of 8 to 20 mm in a 3-stand high-reduction mill positioned at the end of the caster. After reheating in an induction heater, rolling of the transfer bar to the targeted end thickness is performed in a 5-stand finishing mill followed by laminar strip cooling. Strip cutting is then carried out by means of a high-speed shear immediately prior to coiling to coil weights of up to 32 metric tons. The full range of steel grades can be flexibly produced on Arvedi ESP plants.

As a result of the endless strip-production mode of Arvedi ESP lines, repeated threading into the individual rolling stands is not necessary. This is the basis for the production of ultra-thin strip gauges down to 0.8 mm thicknesses. The tolerance values for the required strip geometry are fully met along the entire length of the rolled product. Endless production is also decisive for assuring the homogeneity of the steel microstructure, grain size, yield strength and tensile strength. Because the strip is continually under tension, the cobble rate is below 0.1%, even when producing more than 50% below 1.2 mm thickness. Yield values exceeding 98% are reached because cropping of the strip head and tail ends is not necessary.



Arvedi ESP plant in operation

This press release and a press photo are available at
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Primetals Technologies, Limited headquartered in London, United Kingdom is a worldwide leading engineering, plant-building and lifecycle services partner for the metals industry. The company offers a complete technology, product and service portfolio that includes integrated electrics, automation and environmental solutions. This covers every step of the iron and steel production chain, extending from the raw materials to the finished product – in addition to the latest rolling solutions for the nonferrous metals sector. Primetals Technologies is a joint venture of Mitsubishi Heavy Industries (MHI) and Siemens. Mitsubishi-Hitachi Metals Machinery (MHMM) - an MHI consolidated group company with equity participation by Hitachi, Ltd. and the IHI Corporation - holds a 51% stake and Siemens a 49% stake in the joint venture. The company employs around 7,000 employees worldwide. Further information is available on the Internet at www.primetals.com.

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