PRIMETALS TECHNOLOGIES

Press

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World record: Ultra-thin hot rolled strip with a thickness of 0.6 millimeters produced on Arvedi ESP line supplied by Primetals Technologies

- **In a world first, a casting-rolling line has achieved a thickness of just 0.6 millimeters**
- **Thin hot strip now covers more than 80 percent of cold-rolled thicknesses**
- **Extended product range, especially for cold strip substitutes**

In October 2018, an Arvedi ESP (Endless Strip Production) line installed in a plant belonging to the Chinese steel producer Rizhao Steel Group Co., Ltd (Rizhao) produced ultra-thin hot strip with a thickness of just 0.6 millimeters for the very first time. Hot strip as thin as this had never before been achieved anywhere in the world. This thin strip can cover more than 80 percent of regular commercial cold-rolled thicknesses. This widens Rizhao's range of products, especially for cold strip substitutes. After the line entered service in April, success was achieved just six months later.

Following on from 10 years of continued development of the endless concept, this latest production record was achieved during a test in which eight coils were produced with strip thicknesses of less than 0.8 millimeters. This production sequence involved first progressively reducing the strip thickness to 0.75, 0.7 and finally 0.6 millimeters, before continuing the sequence with increasing thicknesses. ESP mills are guaranteed to produce strip thicknesses of 0.8 millimeters, which are used industrially and traded on the market for direct applications. Whereas a strip thickness of 0.8 millimeters covers around 50 percent of cold-rolled thicknesses, a strip thickness of 0.6 millimeters can cover more than 80 percent of cold-rolled thicknesses. Conventional hot strip production has a lower thickness limit of 1.8 millimeters, or 1.2 millimeters for special processes.

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This success was made possible by the familiar properties of the ESP process, such as an extremely high process stability accompanied by constant speeds and temperatures. At the same time, advances were made in technologies that, in their original form, had only been used in cold rolling mills for high-quality products, the process being controlled by "ultra-thin rolling technology" based on the control concepts applied in cold rolling technology.

The Arvedi ESP system produces hot strip directly from liquid steel in a continuous, uninterrupted production process in a linked casting and rolling mill. Mills of this type have an energy consumption and associated costs up to 45 percent lower than those of conventional mills with separate casting and rolling processes. They also have substantially reduced CO_2 emissions. Furthermore, the dimensions of these mills, with a length of only 155 meters, are considerably more compact than those of conventional casting and rolling mills. The casting and rolling line is controlled by standardized, integrated basic (level 1) and process (level 2) automation, which ensures finely coordinated interaction of the casting and rolling processes.

Rizhao Steel Co., Ltd. (Rizhao Steel) is a company in the Rizhao Steel Holding Group with headquarters 30 kilometers from Rizhao Harbor in the south of Shandong Province. The company has an annual production capacity of around 15 million metric tons of crude steel. The product portfolio of Rizhao Steel covers hot-rolled coils, wire, rods and small I-beams, which are primarily sold to Chinese customers.

Arvedi ESP mill no. 4 is one of five casting and rolling mills that Rizhao ordered from Primetals Technologies. It is designed for an annual production of 1.7 million metric tons of high-quality, ultra-thin hot strip, in widths ranging from 900 to 1,300 millimeters. The maximum casting speed is seven meters per minute, and the coil weight 28 metric tons.

Arvedi ESP mill no. 4 supplied by Primetals Technologies to Rizhao Steel Group Co., Ltd. in Rizhao, China, produced ultra-thin hot strip with a thickness of 0.6 millimeter for the first time in October.

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

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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.