PRIMETALS TECHNOLOGIES

Press

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# Primetals Technologies to install Automated Tapping systems at two BOF converters of Jiangsu Shagang

- **First commercial implementation of Primetals Technologies' Automated Tapping system**
- **Reduced tapping time**
- **Minimal slag carry-over will improve phosphorous refining**
- **Optimal tapping performance independent of individual operators**
- **Improvement of working safety**

Chinese steel producer Jiangsu Shagang Group Company Limited (Jiangsu Shagang) placed an order with Primetals Technologies to install automatic tapping system on two BOF converters in its converter steelworks in Zhangjiagang in Jiangsu Province. This modernization project marks the first commercial implementation of Primetals Technologies´ Automated Tapping system in a steelworks. The package will reduce tapping time and minimize slag carry-over, improving subsequent phosphorous refining. Automated tapping sequences will optimize tapping performance and make it independent from the operator's experience. In addition, working safety will be largely improved. Start-up of the new Automated Tapping systems is expected for the third quarter of 2019.

Jiangsu Shagang is the largest private steel producer in China. Its annual production capacity is 31.9 million tons of iron, 39.2 million tons of steel and 37.2 million tons of rolled products. The range of products includes heavy plates, hot-rolled coils, steel wire, ribbed steel and special round steels. Steel is produced by means of BOF converters.

The upgrade of BOF operation by Primetals Technologies encompasses the hardware and sensor system for Automated Tapping, the safety system to prevent ladle overfilling, the implementation of Automated Tapping sequences, the installation of additional features for safety tapping as well as the integration of the existing slag stopper system.

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The Automated Tapping system developed and installed by Primetals Technologies acts as a “Digital Assistant” and allows for a safe and fully automatic converter tapping procedure, including the control of vessel position, ladle car movement during tapping, as well as the positioning of the chute for ladle alloying. In combination with an installed slag identification system, e.g. optical or magnetic slag detection and a slag stopper system, there is minimal carry-over of converter slag in the teeming ladle.

At the end of converter treatment, the operator initiates the Automated Tapping procedure by just pressing one button. The converter is automatically tilted to the initial tapping angle and a fully automatic tapping procedure is executed. During the tapping procedure, all of the equipment involved is coordinated simultaneously. The primary task of the operator is to monitor tapping progress. The position of the vessel and the ladle car, the ladle alloying system, the installations for slag detection and the slag stopper are controlled by the software module. Multiple safety functions such as maximum tilting speed, online weight monitoring, and ladle fill level detection are included with Automated Tapping. There is always the possibility for the operator to intervene at any time, either to meet special requirements resulting from exceptional tapping situations or to maintain operational safety. Automated Tapping is available for all converter types and for slag pouring at the end of the tapping procedure.

The understanding of a fully automated converter operation is to execute the entire sequence of all required process steps for converter steelmaking charging - blowing - tapping and alloying in an autonomous manner. Thus Automatic Tapping is one cornerstone in achieving a fully digital, i.e. smart steel plant.

Tapping of a BOF converter. The newly developed Automated Tapping system from Primetals Technologies improves productivity and work safety. The first commercial implementation of this type will be installed at Jiangsu Shagang in the Zhangjiagang steelworks.

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.

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