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## Primetals Technologies receives first order for a selective waste gas recirculation system (SWGR) for a sinter plant in China

- **Waste gas recirculation rate up to 40 percent**
- **Reduces waste gas emissions to atmosphere by 770,000 m<sup>3</sup>/h**
- **Reduces coke consumption for sintering by approximately 5 percent**
- **Downstream gas cleaning facilities can be designed 30 percent smaller due to reduced waste gas flow rate**

Chinese steel producer Shandong Iron & Steel Corporation Limited (Shansteel) has ordered a selective waste gas recirculation (SWGR) system from Primetals Technologies for its new sinter plant in Rizhao, Shandong Province. It is the first order for Primetals Technologies from mainland China for this well proven environmental solution after several units have previously been installed in Austria, South Korea and Taiwan, which have successfully demonstrated the positive impact on environmental emission reduction and operation cost saving. With a waste gas recirculation rate of up to 40 percent, the SWGR reduces waste gas emissions to the atmosphere by 770,000 m<sup>3</sup>/h. In addition, coke consumption for the sintering processing is reduced by approximately 5 percent. Due to the lower waste gas flow rate, downstream gas cleaning facilities can be designed 30 percent smaller. The startup of phase 1 of the new sinter plant is scheduled for September 2017.

Shansteel is a state-owned company, and listed one of the top 10 steel producers in China. It produces and sells steel products, such as plates, hot-rolled coils, cold-rolled coils, H sections, high-quality steel, special steel, hot rolled ribbed bars, etc. The company is headquartered in Jinan City, Shandong Province. Shansteel ordered the SWGR for its new Rizhao based plant, which will produce mainly products for modern automotive companies. The strategic target of constructing this new steel making facility is to be able to shut down several older production facilities in Shandong Province which do not meet the required environmental standards anymore.

The new sinter plant will consist of two 550 m<sup>2</sup> sinter strands which will be installed in two construction phases. By using the SWGR technology, Shansteel will not only reduce the waste gas emission to the atmosphere and the CO<sub>2</sub> footprint of the overall plant by reduction of coke consumption, but will also be able to significantly reduce the capital expenditures (CAPEX) for the downstream gas cleaning facilities which can be designed for smaller waste gas capacities.

With the SWGR process, a significant portion of the primary sinter waste gas is recirculated back to the sinter strand by means of the necessary ductwork, an electrostatic precipitator for pre-dedusting, a circulation fan and the recirculation hood which distributes the recirculated waste gas on the sinter strand while maintaining proper sealing to the atmosphere to avoid any gas leakages. The system is selective because the waste gas from different wind boxes can be recirculated. The process design is specifically tailored to the customer needs and will recirculate the gas from certain areas of the sinter strand. A smaller quantity of fresh air is added to the recirculation gas stream in order to maintain a certain minimum Oxygen content in the recirculated gas which is required for proper sintering performance.

The key advantages of the SWGR system include a reduction of operational expenditures (OPEX) by reducing coke consumption by recirculation of CO in the waste gas as well as lower utility and agent consumption in the downstream gas cleaning facilities due to reduced waste gas flow rate. The lower flow rate also allows for designing the downstream gas cleaning facilities about 30 percent smaller, thus saving CAPEX. In terms of environmental performance, the waste gas volume released to the atmosphere is reduced by 30 percent as well as are emissions of CO, SO<sub>2</sub> and NO<sub>x</sub>. Furthermore, the reduced coke consumption results in less SO<sub>2</sub> generation and a smaller CO<sub>2</sub> footprint of the sinter plant.

The project will be executed by Primetals Technologies China Ltd. with Shandong Province Metallurgical Engineering Co., Ltd (SDM) being the EPC main contractor for the sinter plant package. Primetals Technologies will be responsible for engineering, supply of key equipment and automation systems as well as advisory services for erection and commissioning of the SWGR system.



Selective waste gas recirculation (SWGR) system from Primetals Technologies

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