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The Revival of the KOBM Process

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The green transition of the iron and steel industry is well underway, with new production routes—such as the use of Electric Arc Furnaces (EAF)—being implemented in numerous plants. This transition is also bringing new requirements for the existing oxygen steelmaking route –this route needs to focus in future even more on high quality steel and a further push to increase the scrap rate will happen. Both challenges can be handled well by the KOBM converter –thanks to the intensive mixing the metallurgical process in this converter is close to the equilibrium and lowest concentration of Carbon, Oxygen and Phosphorus at the end of the blow are easier to reach. The combined blowing also supports the melting of scrap that can be further pushed by dual-flow post combustion lance or coal injection.

Primetals Technologies has recently implemented two new KOBM converter projects: one at HBIS Handan, where an existing 260t BOF converter was revamped to KOBM, and a new 120t KOBM converter at a greenfield project in Longfengshan. Both converters feature a combined blowing process with a top lance and a detachable converter bottom, along with bottom blowing and lime injection systems. Additionally, Primetals Technologies' advanced converter process model and LOMAS off-gas analysis system were implemented.

After the start up and the optimization the full advantages of the KOBM with higher yield, highest phosphor removal and lowest CxO product could be realized in both projects! Reference figures from HBIS Handan show that total iron content in slag was reduced to around 11%, enabling the highest yield. Consistent [C] x [O] product values as low as 12 at tapping have allowed for the elimination of RH treatment for certain grades, resulting in significant cost savings.

This paper will present selected references, the results achieved, and improvements compared to BOF operation.

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