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Salzgitter improves LD converter (BOF) process with automation upgrade from Primetals Technologies

- **Process optimization system upgrade including the Slag Expert module results in optimization of lime quantities and increased number of successful heats**
- **Lower reblow rate boosts effectivity at the plant**

Primetals Technologies has recently implemented an upgrade of the LD converter (BOF) process optimization system at Salzgitter Flachstahl in Salzgitter, Germany. The new Slag Expert model has optimized the use of lime, improved the hitting rate – i.e. the amount of successful heats in terms of carbon content and steel temperature – and reduced the number of reblows.

Slag Expert is a new module for Primetals Technologies' process optimization system (Level 2) that calculates the target value for the required basicity of the slag at the end of the blowing process. Additionally, it provides the basis for determining the optimum amount of lime.

Exceeding expectations

The process optimization system from Primetals Technologies has already been in use at Salzgitter Flachstahl's three 220-ton LD converters (BOFs) for 15 years. Christian Schlüter, Head of Melting Operations, on the results achieved with the new Slag Expert module: "We were able to meet the identified improvements after just a few weeks, and we even exceeded them in some cases. The most important aspect for us is to optimize the input of lime in order to meet the required phosphorus levels." Startup, fine-tuning, and the initial monitoring of the production process were largely accomplished remotely by the team from Primetals Technologies.

Slag Expert calculates the desired slag basicity at the end of the blowing process based on the amount of silicon in the feedstock, a pig iron analysis, and the targeted parameters of temperature, carbon, and phosphorus content in the crude steel composition. The availability of stirring plugs and the age of the converter are also taken into account. Furthermore, the Slag Expert module calculates the values for lime saturation, phosphorus capacity, and viscosity of the slag.

Eliminates interruptions

The main objective with Slag Expert is to provide operators with exact data on the amount of feedstock and oxygen required to produce the desired steel quality on time. This is ensured by combining Slag Expert with the Dynacon process model and an off-gas measurement system for LD converters (BOFs) to determine the optimal timing of the end of the blowing process. With the support of these systems, interruptions to the blowing process caused by the taking of measurements and samples are largely eliminated.

Long-term collaboration

The Slag Expert module is a result of many years of close collaboration between Salzgitter Flachstahl and Primetals Technologies. For more than 10 years, the process optimization systems have been maintained and improved as part of a services contract. In addition to the Level 2 systems at the LD converters (BOFs), this cooperation also focuses on automating the complete secondary metallurgical process as well as topics related to intralogistics and, for example, scrap management.

The largest steel subsidiary in the Salzgitter Group, Salzgitter Flachstahl, employs 5,480 people and produced around 4.3 million tons of crude steel in 2021, while generating sales of 3.2 billion euros. The most important customers for flat products are vehicle manufacturers and their suppliers, tube and large-diameter pipe manufacturers, cold-rollers, the trading sector, and the construction industry.

Key Facts: The Level 2 automation system at Salzgitter's LD converters (BOFs)

The system enables the production of a certain steel quality at a high productivity level while optimizing costs. The Level 2 automation system takes numerous factors into account, including:

- Variations in feedstock
- Steel grades produced
- Condition of the converter vessel
- Different blowing, purging, and material addition schemes for the process flow



Converter charging at Salzgitter Flachstahl. Primetals Technologies has recently implemented the Slag Expert module at two LD converters (BOFs) in Salzgitter, Germany.

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

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