Contribution ID: **6** Type: **Oral Presentation**

Improved EAF performance by optimized high current system design

Tuesday 7 October 2025 14:30 (20 minutes)

Badische Stahl-Engineering GmbH developed and applies the most sophisticated simulation tool available in steel industry today: the Farschtschi Network Method (FNM). With this unique simulation tool the optimal design of the EAF high current system is feasible in terms of electrical symmetry, forces on high current cables, torques on mast system and power input performance. The capability of very accurately simulating the existing situation and comparing it to a new design is crucial for EAF performance. As an application example the revamping approach of Badische Stahlwerke GmbH is presented. BSW plans to modernize the EAF #2 in a stepwise process by first exchanging the high current and hydraulic system and only much later the complete furnace gantry and shell. The challenge is to predict the performance of the first step modification that will operate with the old, mechanically weak furnace mast-gantry-system and thus justify if the first revamping step alone is benefitial or not. Concretely, the torques on the masts need to be known for the new design to see if the mechanical stability improves (system excitation by magnetic forces and torques).
To show more benefits of FNM, a comparison between a non-sophisticated design of a high current system and a FNM-simulated modification is presented for a large stainless steel EAF. There the very limited arc coverage by slag on flat bath operation requires the best electrical symmetry of the high current system to avoid refractory wear. With FNM the required modification of the asymmetric system can precisely be simulated. Other furnace manufacturers are not capable to design the optimal symmetry by lack of accurate simulation tools.
BSE also offers the optimization of high current systems of „Consteel“, „Quantum“and as well of DC furnaces (to reduce arc deflection).

Primary author: RIEDINGER, Dirk (Badische Stahl-Engineering GmbH)

Presenter: RIEDINGER, Dirk (Badische Stahl-Engineering GmbH)

Session Classification: EAF Design & Power Supply Optimization

Track Classification: Steelmaking - Electric steelmaking