Contribution ID: **447** Type: **Oral Presentation**

SmartKnB: Artificial Intelligence tools for EAF Optimization

Wednesday 8 October 2025 17:50 (20 minutes)

SmartKnB is an innovative programming platform engineered for advanced control of the Electric Arc Furnace (EAF) steelmaking process. By integrating diverse data sources—from sensor arrays and PLCs to historical logs and real-time imagery—SmartKnB enables the development, testing, and validation of sophisticated control algorithms in a modular, node-based graphic environment. As the core of AMI SmartFurnace technology, all the control algorithms are implemented through SmartKnB. SmartFurnace is a comprehensive optimization system that dynamically adjusts electrical and chemical energy inputs based on real-time process data, improving process safety, efficiency and reduced emissions.
In addition, SmartKnB can be used to implement from traditional control methods to the most modern machine learning models. Including advanced image processing capabilities it can use pre-trained models facilitating automated image classification and anomaly detection—crucial for monitoring raw material issues and furnace conditions. Together, these integrated functionalities can contribute to enhance process efficiency, better energy management, and greater operational safety, allowing a smarter and more sustainable steel production.

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Session Classification: Digitalization, AI & Process Modeling

Track Classification: Steelmaking - Electric steelmaking