Contribution ID: **46** Type: **Oral Presentation**

Closed-Loop Optimization for Energy Efficiency and Scrap Utilization in Steelmaking at Marcegaglia Sheffield

Monday 11 May 2026 16:10 (20 minutes)

This paper presents the deployment and benefits of a comprehensive closed-loop process optimization system at Marcegaglia Sheffield, UK, covering Scrap Yard, Electric Arc Furnace (EAF), Argon Oxygen Decarburization (AOD), and Ladle Furnace (LF) operations.
The paper focusses on Scrap Yard and EAF as key stages, and discusses how advanced sensor systems in combination with closed loop control enable significant improvements in energy efficiency and raw material utilization. By leveraging model based algorithms and dynamic process adjustments, the system optimizes scrap mix composition and minimizes energy consumption during melting. This paper highlights the potential of digitalization and intelligent control strategies to transform traditional steelmaking into a more sustainable and resource-efficient process.

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Session Classification: AI and Machine Learning in Process Optimization I

Track Classification: EEC 2 - Process Optimization: EEC 2.A Energy efficiency and consumption reduction strategies