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Logistics Simulation for the Green Steel Transition: Optimizing Production and Sustainability

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The transition to carbon-free steel production presents significant challenges for the industry. Adapting to new processes, production routes, and logistics is a central aspect of this transformation. Particularly notable is the shift from traditional Blast Furnace (BF) / Basic Oxygen Furnace (BOF) route to electric steelmaking route. This change requires not only a comprehensive restructuring in secondary metallurgy but also significant modifications to the primary equipment, disrupting established workflows. Additionally, production facilities need to be reconfigured for new material flows such as scrap, pig iron, hot metal, DRI (Direct Reduced Iron), and HBI (Hot Briquetted Iron).
To make these transition processes more efficient, logistics simulations are used. These helps optimize processes in melt shops and adjacent areas, such as scrap yards, and specifically support investments that facilitate the transition to electric steel production.
A particular focus is on simulating transport logistics to facilitate the integration of an electric arc furnace into existing BOF melt shop. A practical example of these challenges and solutions is provided by the case study of voestalpine in Linz, which serves as a model for the successful implementation of such processes.

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