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Quantification and Mitigation of Direct CO2 Emissions EAF Steelmaking

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Electric Arc Furnace (EAF) steelmaking generates CO₂ emissions from both direct process-related sources and indirect electricity consumption. While indirect emissions associated with grid electricity dominate overall emissions, direct process emissions—primarily from carbon additions used for slag foaming and refining—remain a significant and addressable source.

This paper will quantify direct CO₂ emissions from EAF steelmaking in Europe and evaluate practical strategies to reduce or eliminate these emissions through improved process control and alternative operating practices. The potential impact of these strategies includes substantial reductions in carbon consumption and associated CO₂ emissions, representing significant economic value for the European steel industry through reduced material usage and carbon compliance costs.

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