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Inert Gas Stirring in Electric Arc Furnaces: Metallurgical Benefits with a focus on medium- and high-alloyed steelmaking.

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Minimum conversion cost of alloyed steel production in the electric arc furnace require optimum mixing of the molten metal during melting and refining. Improved heat transfer accelerates the melting of larger scrap pieces for time and energy savings. Homogeneous distribution of alloy elements and carbon in the melt decreases the unwanted oxidation of alloys, e.g. Chromium for better metal yield and slag characteristics.
Inert gas stirring is an established method for improving process control, energy efficiency, metal yield, melting time, and metallurgical performance in EAF steelmaking areas such as oxygen control and dephosphorisation. To support these benefits and meet the increasing demands of larger EAFs in integrated steel plants, the portfolio of purging plugs has been expanded to meet the higher flow rates. The improvements in EAF process efficiency and metallurgy achieved with inert gas stirring are presented in industrial case studies.

Speaker Country

Austria

Speaker Company/University

RHI Magnesita

Primary author: KIRSCHEN, Marcus (RHI Magnesita)

Co-authors: SIPOS, Daniel (RHI Magnesita); HÖCK, Matthias (RHI Magnesita); FREILER, Michael (RHI Magnesita); SUNDARAM, Sumit (RHI Magnesita); DIEGUEZ SALGADO, Uxia (RHI Magnesita)

Presenter: HÖCK, Matthias (RHI Magnesita)

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