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## Designing the secondary metallurgy for future steel plant based on Ultimate Electric Arc Furnace

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With the ongoing efforts to reduce the CO<sub>2</sub> emissions of the iron and steel industry the importance of the electric arc furnace (EAF) significantly increased. While in 2020 only 36% of the announced steelmaking capacity used an EAF based route in 2023 it was already 92%. With the shift towards an EAF based steel industry, the question remains, how the typical product mixes from the blast furnace and basic oxygen furnace route can be produced via an EAF based route. The aim of this study was to evaluate how an EAF steel plant must be designed, to be able to produce those product mixes. For the study a product mix including interstitial free grades, non-grain-oriented silicon steel grades, API grades and commodity grades, like S235JR, was chosen. The heart of this steel plant is an EAF Ultimate, as this technology was proven to be very well suited for the transition and chosen by many important players in the steel industry for their transition projects. This study shows the necessary charge mix and how a secondary metallurgy plant needs to be designed, to meet the requirements for a modern steel plant, and the produced steel grades.

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