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## Slag changes in future steelmaking scenarios: simulation investigations

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Achieving the climate neutrality by 2050 is the main goal of the European Green Deal, which fosters decarbonization of CO2-intensive industries, including steelworks. Deep transformations are ongoing to improve sustainability of steel production. Moreover, emerging markets and countries significantly affect availability and quality of raw materials. Therefore, steelmaking process changes and implementation of breakthrough technologies must face also this challenge: C-lean and green steel must be produced also in case of highquality material shortage. Indeed, steel quality must be ensured also when introducing novel technologies, modifying well-known process conditions, or intensifying the implementation of circular economy concepts connected to by-products such as slag. In particular, knowing in advance the effects on slags of the transition toward C-lean steel production processes is fundamental to ensure valorisation of future slags in the overall value chain. The European project entitled "Investigations of Slags from Next Generation Steel Making Processes" (ref. InSGeP -G.A. 101112665) that is co-funded by the Research Fund for Coal and Steel addresses this topic. Among the different activities, an electric arc furnace flowsheet model has been adapted and is being used for simulations on the effects of charging different amounts and qualities of Direct Reduced Iron and Hot Briquetted Iron in electric arc furnace on slags as well as on the main aspects of product and process. Process modifications are also under investigations to compensate undesired variations (e.g. in terms of basicity index of slags). In addition, a smelter flowsheet model is under development to carry out investigations on slags obtained from this process. The present contribution focuses on the results of these simulations.

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