

Thermochemical Modelling in the BOF DePhos Project - What did we learn?

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Abstract

An extensive study of the key aspects of the de-phosphorisation thermodynamics and kinetics has been performed in the scope of the European RFCS-funded Project: *BOF DePhos* (2014-2018). It was carried out as a cooperation between 6 project partners: VDEh Betriebsforschungsinstitut BFI, Düsseldorf; SMS-Group, Düsseldorf; GTT-Technologies, Herzogenrath; KTH, Stockholm; Minkon, Erkrath; Tata Steel, Port Talbot and Ijmuiden.

An extensive new thermodynamic database for steel slags containing P₂O₅ has been established using relevant phase diagram and other experimental information from the literature. The major phase diagrams have been investigated with respect to their correlation to known practical information about BOF-slags. Useful information as to best practice in slag control could be derived.

Furthermore, a flowsheet-type of process model has been developed the results of which have been checked against information from industrial practice. It is found that a 4-zone model containing a bath, a hot spot, a slag and a metal-slag interface reactor is required for a proper simulation of slag formation and elements removal (C, Si, Mn, P) as observed in the industrial process. Furthermore, it is found necessary to include a barrier for CO-nucleation in some reactors for specific blowing intervals during the process.

The talk should be seen as an introduction to the presentation of S. Khadhraoui which follows suite.