

Thermodynamic modelling of the BOF process with Chemapp: Progress and Future work

L. De Vos¹, I. Bellemans¹, K. Verbeken¹

¹ Department of Materials, Textiles and Chemical Engineering, Ghent University, Belgium.

“Make the slag and the steel will make itself” is an old phrase in steelmaking. The converter or basic oxygen furnace (BOF) process is a necessary step in the steel production during which carbon, phosphorus and other impurities present in the hot metal, coming from the blast furnace, are removed to produce steel. Gaining insight in the process, the working principle and the interactions between the slag and metal phase are difficult to unveil due to the complexity of the process and the limited possibilities for on-line measurements. Even though there is general agreement on the importance of the slag and its functions in steelmaking, a complete understanding of slags is hitherto lacking. Thermodynamic modelling of the process with Factsage and Chemapp, provides an opportunity to gain insight and gather more knowledge about the mechanisms involved.

At the 2018 GTT users’ meeting, the outline of a collaborative PhD between ArcelorMittal Ghent and the Sustainable Materials Science research group at Ghent University was presented. Now, two years later, the development of the thermodynamically based BOF model in Chemapp is discussed. The general model, advantages of working with Chemapp and the outline for future work are covered in the presentation.