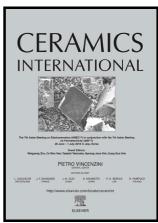
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ACCEPTED MANUSCRIPT

Slag foaming practice in the steelmaking process

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Abstract

Slag engineering (i.e. conditioning and foaming practices) is becoming an essential issue

in many companies due to the increasing need felt by the end-users to cut costs and produce

high quality steel. Slag foaming has been mainly used in electric arc furnaces (EAF) in order to

protect the refractory materials from the high energy intensity (radiation) generated by

electrodes, decrease the noise level, improve productivity and the energy efficiency of this

equipment. Nevertheless, the correct control and optimization of the foam generation are still

limited and some of the main factors (basicity, viscosity, surface tension, presence of suspended

solid particles, FeO content and injection rate of carbon particles and oxygen, and others) that

affect this complex phenomenon are discussed in this review. Considering the data presented in

the literature, there are various conditions and opportunities to be exploited, and a standard

procedure for the experimental evaluation of the foam formation is still required.

Thermodynamic calculations can be an alternative tool to help understand the phase

transformations related to slag foaming at high temperatures.

Keywords: slag, foam, energy, steelmaking.

1. Introduction

1

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