MATHEMATICAL APPROACH IN DETERMINING THE DEGREEOF OVERHEATING OF THE LIQUID IRONAND TECHNICAL PARAMETERS INFLUENCING THE RUNNINGOF THE CUPOLA WITH HOT AND COLD WIND

Hamoudi D.E* ;B. Khatemi, A. Lemmoui

Laboratoire de Métallurgie Physique et Propriétés des Matériaux (LM2PM), Université Badji Mokhtar d'Annaba B.P12, Algérie
* Corresponding author. E-mail: hamoudi566@hotmail.com

Abstract

Walking optimal cupola depends on several factors such as quality of raw materials, coke rate, the temperature of the liquid iron, the amount of wind, height, the sophistication of the cupola, etc... . In this article, we suggested a mathematical approach in determining the parameters characterizing the cupola with a series of simple relations which are rigorous and very general while others take into account simplifying assumptions and approximations only give results approximate, but sufficient in practice to assess the effect of changes in phenomena. For special cupola furnaces, hot wind, with the addition of O2 in the air, some of these formulas are valid, others are adapting. Remains that the perfect control of these parameters allows undoubtedly act in the way of improving not only the thermal efficiency of cupola but especially the significant increase of its performance schedule. The aim of course by the smelters is to obtain the highest melting temperature of the liquid to ensure proper flow of molten metal and therefore healthy parts. However, controlling and assessing the performance of the cupola are really possible only through the establishment of a mechanism for measuring and monitoring of operating parameters of the cupola.

Keywords: Cupola; Materials; Thermal efficiency; Fluidity; Alloys; Sound pieces.