Converter end-point prediction model using spectrum image analysis and improved neural network algorithm

Hong-yuan Wen, Qi Zhao, Yan-ru Chen, Mu-chun Zhou, Meng Zhang, Ling-fei Xu

Keywords

spectrum, image, neural network, converter, end-point

Abstract

Aiming at the present situation of the steelmaking end-point control at home and abroad, a neural network model was established to judge the end-point. Based on the colour space conversion and the fiber spectrum division multiplexing technology, a converter radiation multi-frequency information acquisition system was designed to analyze the spectrum light and image characteristic information, and the results indicate that they are similar at early-middle stage but dissimilar when approach the steelmaking blowing end. The model was trained and forecasted by using an improved neural network correction coefficient algorithm and some appropriate variables as the model parameters. The experimental results show the proposed algorithm improves the prediction accuracy by 15.4% over the conventional algorithm in $5s$ errors and the respond time is about $1.688s$, which meets the requirements of end-point judgment online.

1.0 MB

Back to list