

Fundamental Considerations on Noncontact Guide System Using Electromagnetic Forces for Changing Traveling Directions in High-Speed Traveling Steel Plate Process

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Abstract

Recently, along with high-end products, users demand steel plates with high quality and high added value manufactured by a continuous steel plate process. In the factory, the continuous thin steel plate subjected to iron and steel processes is supported by a series of rollers during processes such as rolling. In the plating process, the steel plate is conveyed 20-50 m in the vertical direction for drying, during which the steel plate is not supported by rollers and other mechanisms. Therefore, plating nonuniformity due to the generation of vibration and other factors prevents the increase in productivity. To solve this problem, we developed a noncontact guide system for fast traveling steel plates in which electromagnetic forces are applied at the edges of the steel plates in order to change the traveling direction. Efficacy of proposed system was verified by experiments.

Keywords: Steel Plate, Traveling, Noncontact Guide, Vibration Control, Elastic Vibration, High-Speed Traveling

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