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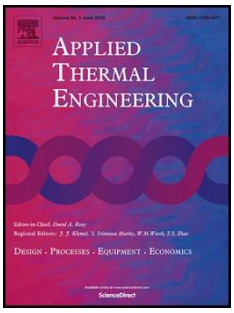

Title: An energy intensity optimization model for production system in iron and steel industry

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An energy intensity optimization model for production system in iron and steel industry

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Highlights

- An energy intensity model for production system is established.
- The Ironmaking stage is the focal point of production optimization.
- The energy saving technologies and measures favors production route re-optimizes.
- Improving the sinter ore grade is very important systematic energy saving measure.

Abstract: To optimize iron and steel production for the goal of energy intensity reduction, this paper systematically analyzed the flow characteristics of ferrite-flows and established an energy intensity production optimization model for production system in iron and steel industry. Production optimization model was calculated for a certain iron and steel company under five different ferrite-flows characters and structures. The results indicated that with the same product order, the energy intensity of the five optimized production schemes are decreased from the original scheme by 0.6%, 1.6%, 1.2%, 0.7% and 2.9%; calculated according to the crude steel production of the company in a month (October 2012, 1128 Kilo metric tons), energy saving of 4399 tce (ton coal equivalent), 111505 tce, 8798 tce, 4963 tce and 20980tce, respectively, can be achieved. Through comparative analysis of the productions of various units under different schemes, it is discovered that the production optimization of the Ironmaking stage is the key and that the energy saving margin in optimized production of Steel-Rolling stage is limited. And then the energy saving technologies and measures, which favors production