

Accepted Manuscript

An Energy Apportionment Model for a Reheating Furnace in a Hot Rolling Mill-
A Case Study

Biao Lu, Demin Chen, Guang Chen, Weiping Yu

PII: S1359-4311(16)32377-8

DOI: <http://dx.doi.org/10.1016/j.applthermaleng.2016.10.080>

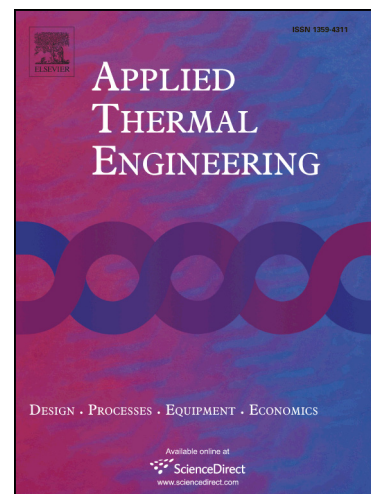
Reference: ATE 9282

To appear in: *Applied Thermal Engineering*

Received Date: 3 August 2016

Revised Date: 13 September 2016

Accepted Date: 12 October 2016



Please cite this article as: B. Lu, D. Chen, G. Chen, W. Yu, An Energy Apportionment Model for a Reheating Furnace in a Hot Rolling Mill-A Case Study, *Applied Thermal Engineering* (2016), doi: <http://dx.doi.org/10.1016/j.applthermaleng.2016.10.080>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

An Energy Apportionment Model for a Reheating Furnace in a Hot Rolling Mill-A Case Study

Biao Lu^a, Demin Chen^b, Guang Chen^c, Weiping Yu^{a*}

^a School of Energy and Environment, Southeast University, Nanjing 210096, China

^b School of Civil Engineering, Anhui University of Technology, Ma'anshan 243032, China

^c School of Energy and Environment, Anhui University of Technology, Ma'anshan 243032, China

Abstract: To master the rules of energy consumption for different types of steel billet in a reheating furnace, this paper establishes an energy apportionment model based on the actual production performance and energy source data of a walking beam reheating furnace. And the cumulative energy segment is defined, and the time period, which spans from the billet loading time to the billet unloading time, is divided into k cumulative energy segments. The formula is discretized in integral form, and the energy allocation ratio is determined in every cumulative energy segment. A case study shows that the energy allocation is different due to differences in width of the billet, the production rhythm and steel grade. The higher the width and the slower the production rhythm are, the higher the energy allocation of the steel billet is, and vice versa. Meanwhile, the energy allocation is also different in individual steel grades. The results show that the energy allocation model has significant implications in the formulation of the steel billet loading plan, the control of the production rhythm and the energy assessment and can be used to achieve energy-lean operation.

Keywords: Reheating furnace; Energy consumption; Energy apportionment model; the cumulative energy segment

1 Introduction

Download English Version:

<https://daneshyari.com/en/article/4991694>

Download Persian Version:

<https://daneshyari.com/article/4991694>

[Daneshyari.com](https://daneshyari.com)