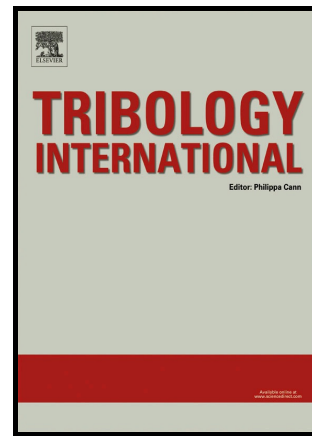


Author's Accepted Manuscript

Correlations between rail wear rates and operating conditions in a commercial railroad

J.F Santa, A. Toro, R. Lewis



www.elsevier.com/locate/jtri

PII: S0301-679X(15)00510-1
DOI: <http://dx.doi.org/10.1016/j.triboint.2015.11.003>
Reference: JTRI3916

To appear in: *Tribology International*

Received date: 23 June 2015
Revised date: 12 October 2015
Accepted date: 2 November 2015

Cite this article as: J.F Santa, A. Toro and R. Lewis, Correlations between rail wear rates and operating conditions in a commercial railroad, *Tribology International*, <http://dx.doi.org/10.1016/j.triboint.2015.11.003>

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 a review of the resulting galley proof before it is published in its final citable 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

CORRELATIONS BETWEEN RAIL WEAR RATES AND OPERATING CONDITIONS IN A COMMERCIAL RAILROAD

J.F Santa^{1,2}, A. Toro², R. Lewis³

¹ *Grupo de Investigación Materiales Avanzados y Energía – MATyER. Instituto Tecnológico Metropolitano, Medellín, Colombia*

² *Tribology and Surfaces Group, National University of Colombia, Medellín, Colombia*

³ *Department of Mechanical Engineering, The University of Sheffield, Mappin Street, S1 3JD, UK*

ABSTRACT

The rail wear rates per traffic unit (mm/MTon) in the curves of a 4.5 km-long commercial line over a period of 9 years were measured and related to specific operation conditions. The rail corrugation was analysed using a Corrugation Analysis Trolley (CAT) and visual inspection was carried out in order to identify the defects in the railroad. Since Rolling Contact Fatigue (RCF), artificial abrasion and corrugation were found to be the most important issues the grinding procedures used during maintenance of the railroad were evaluated to assess their effectiveness on removing the defects from the rail surface. The results showed that the wear rates in the studied railroad were several times higher than those typically found in the literature, mainly as a consequence of inappropriate grinding regimes. White layer formation and only partial removal of cracks emerged as the most relevant drawbacks of rail grinding procedures.

KEYWORDS: Corrugation, Crack Growth Rate, Rail Grinding, Rolling Contact Fatigue, Wear Rate.

Download English Version:

<https://daneshyari.com/en/article/7002662>

Download Persian Version:

<https://daneshyari.com/article/7002662>

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