Accepted Manuscript

Effect of slide to roll ratio on the micropitting behaviour in rolling-sliding contacts lubricated with ZDDP-containing lubricants

Hui Cen, Ardian Morina, Anne Neville

PII: S0301-679X(18)30125-7

DOI: 10.1016/j.triboint.2018.02.038

Reference: JTRI 5137

To appear in: *Tribology International*

Received Date: 3 January 2018

Revised Date: 21 February 2018

Accepted Date: 24 February 2018

Please cite this article as: Cen H, Morina A, Neville A, Effect of slide to roll ratio on the micropitting behaviour in rolling-sliding contacts lubricated with ZDDP-containing lubricants, *Tribology International* (2018), doi: 10.1016/j.triboint.2018.02.038.

Effect of slide to roll ratio on the micropitting behaviour in rolling-sliding contacts lubricated with ZDDP-containing lubricants

Hui Cen*[a], Ardian Morina*[b], Anne Neville[b]

a- School of Mechano-Electronic Engineering, University of Xuchang, Xuchang, Henan 461000, P.R.China.

b- School of Mechanical Engineering, University of Leeds, United Kingdom.

Abstract

An automated micropitting test rig was applied to study the effect of slide to roll ratio (SRR) on micropitting behaviour in rolling-sliding contacts lubricated with Zinc Dialkyl Dithiophosphate (ZDDP) containing lubricants. The tested specimen surface was examined under an optical microscope and Scanning Electron Microscope(SEM) to study the micropitting behavior of the surface, followed by applying X-ray Photoelectron Spectroscopy(XPS) to study the related tribochemistry behavior. The results show that the increase of SRR can reduce the number of micropits on the worn surface while wear increased and friction did not change much. XPS results indicate that the increase of SRR resulted in the increase of oxide concentration while the decrease of film thickness on the worn surface.

Key words: Slide to roll ratio; Micropitting; ZDDP; Tribochemistry.

*Corresponding author. Tel.: +86 (0)3742968021.

E-mail address: hui.cen@foxmail.com (H. Cen).

a.morina@leeds.ac.uk (A. Morina)