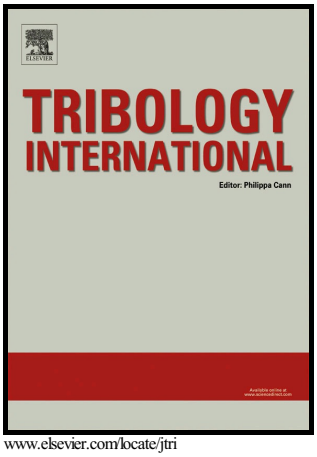
High temperature abrasion resistance of differently welded structural steels

H. Rojacz, H. Pahr, S. Baumgartner, M. Varga



www.elsevier.com/locate/jtri

PII: S0301-679X(17)30048-8
DOI: http://dx.doi.org/10.1016/j.triboint.2017.01.039
Reference: JTRI4579

To appear in: *Tribiology International*

Received date: 28 September 2016
Revised date: 25 January 2017
Accepted date: 30 January 2017

Cite this article as: H. Rojacz, H. Pahr, S. Baumgartner and M. Varga, High temperature abrasion resistance of differently welded structural steels, *Tribiolog International,* http://dx.doi.org/10.1016/j.triboint.2017.01.039

High temperature abrasion resistance of differently welded structural steels

H. Rojacz[*,a], H. Pahr[b], S. Baumgartner[b], M. Varga[a]

[a]AC2T research GmbH, Viktor-Kaplan-Straße 2C, 2700 Wiener Neustadt, Austria

[b]voestalpine Böhler Welding Austria GmbH, Böhler Welding Straße 1, 8605 Kapfenberg, Austria

[*]Corresponding author (Harald Rojacz). Tel.: +43(0)2622-81600171; Fax: +43(0)2622-8160099. harald.rojacz@ac2t.at

Abstract

Structural steels provide a broad spectrum of heat, creep and wear resistance at different microstructures and hardness levels. Two different steel grades were chosen for investigation and simulated repair welds with different parameters were performed, aiming on the influence of heat input during welding and the resulting microstructure on the high temperature abrasion resistance. The impact on the wear resistance and its temperature dependence was evaluated within a high temperature three-body abrasion test and a hot hardness test rig. Results indicate a strong dependence of present microstructural phases and hardness on the wear resistance entailed by different welding parameters. Optimised parameters and low energy input during welding leads to stable hot hardness progress and wear conditions for the investigated materials.

Keywords: high temperature; abrasion; hot hardness; welding; tribology.