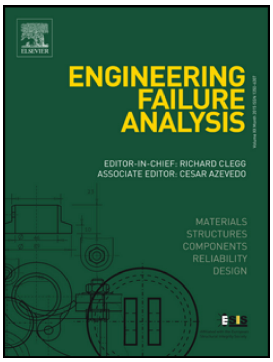

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Longitudinal rail weld geometry control and assessment criteria[1]

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This study covers the parametric variations of vehicle and track characteristics to inform on the requirements for an optimum and yet pragmatic control of longitudinal rail weld profile. A statistical study has been carried out using a large set of measured weld profiles (arbitrary mix of flash butt welds and aluminothermic welds) in order to establish relationships between degradation mechanisms and the longitudinal geometry of the finished weld. The potential benefits which would be expected from improved controls over the welded profile, with respect to not only rail running surface damage but also susceptibility to rail breaks and ballast degradation, are demonstrated. Finally, recommendations for the review of the geometric controls of finished weld geometry in the relevant Euro Norms are made.

Keywords: Geometry assessment; longitudinal weld profile; rail fatigue; vehicle/track interaction; wheel/rail contact forces.

1. Introduction

There is a continuing worldwide trend towards installing continuously welded rails (CWR) to minimize the wheel-rail impact forces in comparison to jointed track. Even though the use of welding to join rails is a considerable

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[1]

BOEF	Beam on Elastic Foundation
CWR	Continuously Welded Rails
FE	Finite Element
HAZ	Heat Affected Zones
RCF	Rolling Contact Fatigue
SFT	Stress Free Temperature
UTS	Ultimate Tensile Stress
VTI	Vehicle/Track Interaction

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