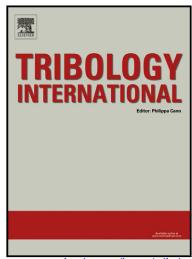
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ACCEPTED MANUSCRIPT

Film thickness and traction curves of wind turbine gear oils

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Abstract

The film thickness and the traction curves of four fully formulated wind turbine gear oils were measured on a ball-on-disc device. All oils have the same viscosity grade (ISO VG 320) and different formulations: ester, mineral, PAO and mineral+PAMA.

Film thickness and traction coefficient results will be presented. The film thickness measurements were compared with predictions using film thickness equations from the literature.

Keywords: Wind turbine gear oils, film thickness, coefficient of friction, Stribeck curve

1. Introduction

The prediction of film thickness and traction coefficient in concentrated EHL line and point contacts that can be found in mechanical components such as gears, cams, rolling bearings, etc [1] is of major interest.

In the 1960s Dowson and Higginson [2] performed a series of numerical simulations assuming isothermal Newtonian fluid model and exponential piezoviscosity to develop the most popular minimum film thickness formula to EHL line contacts.

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