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# 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

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## 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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