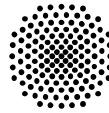


Research Project: Welleneinlauf

Influence of the Lubricants Wetting Properties on the Wear of the Counter Face in Radial Lip Sealing Systems

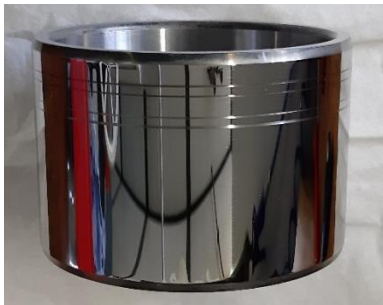
Editor: Philipp Fricker, M.Sc.



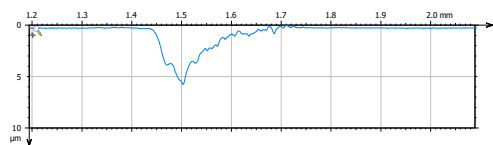
University of Stuttgart
Institute of Machine Components



Measurement of the surface tension of lubricants by using the Wilhelmy-Tensiometry



Polished counter face with wear tracks



2D roughness measurement chart with wear track

Motivation

In this project, the material properties of various lubricant-metal pairings that lead to increased wear on the radial lip sealing system were investigated. Initial correlations between the depth of the shafts wear track and the lubricants wetting properties have already been shown in previous work.

Background

Like any tribological system, the radial lip sealing system is subject to wear. Wear occurs on both the radial lip seal and the counter face. Wear on the shaft has the form of a circumferential groove. This wear is called "wear track". An excessive amount of wear track depth and width disturbs the function of the radial lip seal and ultimately leads to unwanted leakage. Under constant conditions (pressure, viscosity), the sliding speed, the counter face material **and** the lubricant have a significant influence on the wear rate of the sealing **components**.

Expected results

- Investigation of the wear sensitivity of radial lip sealing systems
- Understanding the material properties that lead to a change of the lubrication condition
- Prediction of the wear of different material pairings

Approach

- Analysis of the hydrodynamic and wetting characteristics
- Functional tests on a friction torque test rig
- Wear tests on a real sealing system

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