

CFD Analysis of Transient Effects in Elastohydrodynamic Lubrication of Rough Surfaces

Masterarbeit

Introduction:

The main role of a lubricant in machine elements is to separate parts in relative motion. A properly designed lubricant needs to be viscous enough to prevent contact between moving parts but at the same time easily sheared to provide low friction. Finding this balance requires knowing effects of operating conditions, solid and liquid material properties on lubricant film formation. In this regard, CFD technique proved to be especially useful.

Content:

The aim of this study is to improve an already existing CFD model of EHL line contact problem and to extend its capabilities to rough surfaces and point contact problems.

For solving the EHL problem by CFD, GCS Supercomputer SuperMUC-NG at Leibniz Supercomputing Centre will be used.

The developed CFD models should be validated by comparing the CFD results against literature results or experimental measurements of the film thickness profile and/or friction.

Conditions:

- Basic understanding of numerical analysis and ANSYS Fluent
- Basic knowledge of C programming language
- Fun with theoretical work

Possible doctoral position after successful completion!

Start: immediately!

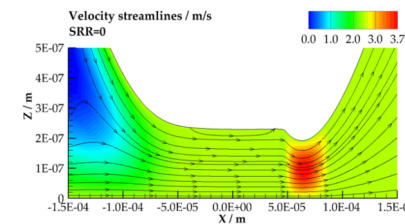
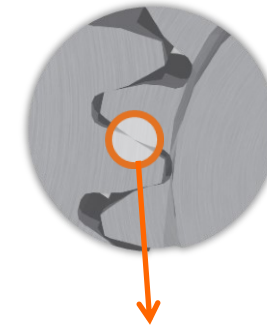


Fig.: CFD analysis of EHL line problem for smooth surfaces

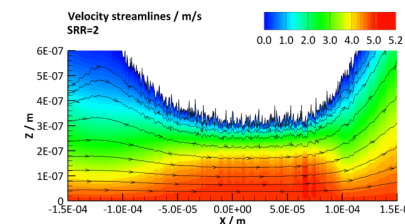


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