

Review: Wind turbine main-bearing lubrication - Part 1: An introductory review of elastohydrodynamic lubrication theory

Hart et al.

The manuscript presents a review of Elastohydrodynamic (EHD) theory, starting from the very basic concepts to the application, assumptions and limitations of the theory. It is important to mention that this reviewer understands that the authors try to address the message to a community which might not be too familiar EHD. Thus the reviewer understands that some basic concepts need to stay in the present manuscript, otherwise a more synthetic manuscript could have been written.

The reviewer is favourable to the publication of the manuscript but requires some minor revisions or at least the answer of some questions.

Revisions:

1. Equation (12): There are increasing voices (Vergne and Bair 2014) arguing that these models are too simplistic to capture the real behaviour of viscosity as a function of pressure and temperature. This is not mentioned in this section although the topic is somehow mentioned in the discussion section.

2. Equations (26-27): The work of (Habchi and Vergne: <https://doi.org/10.1007/s11249-021-01512-z>) shows significant deviations among the different authors mentioned here and experimental results for minimum film thickness. Perhaps the authors should comment this.

3. In section: Grease Lubrication, two important references seem to be missing for the understanding of thickener contribution on the EHD film thickness: Nogi, (<https://doi.org/10.1080/10402004.2020.1778147>) and Morales-Espejel (Tribology International 74 (2014) 7–19), especially for slow rotating bearings.

4. In the Dynamic effects section, the reviewer remarks that starts-stops are not mentioned by the authors, in the targeted application they are multiple and very important, strictly speaking is not a dynamic effect but it is dynamic in nature. Some works have been written on EHL stopping or accelerating contacts with simple formulae.