

Implementation of a Thermo-Hydrodynamic Model to Predict Morton Effect

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Abstract

In this paper, the "Morton Effect" is analyzed. This phenomenon is a particular kind of rotor instability due to non-uniform journal bearing heating. In this paper, an overview of the previous works has been done. After this preliminary study, a specific approach suggested by the literature has been chosen and deeply analyzed. This choice has been argued; then a thermal model, a rotor dynamic model and a stability criterion has been implemented with COMSOL®. The result is a COMSOL App that allows to easily predict the stability of the rotor given a set of parameters. Outputs of the current App have been compared with literature showing a good agreement in different situations.

Reference

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