Pressure Analysis on the Surface Gearing Investigated by Numerical Simulation of Oil Flow in the Tooth Wheel Gap

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The key topic of this article is a study of the oil flow and pressure distribution on the surface gearing investigated using numerical simulations. Particularly, this paper is focused on a simulation of the single flow of oil, which is governed by the gearing motion. Results of the unsteady flow between two rotating gearing could help to identify reasons of damages of gearings. The destruction of surface is identified after several hours on the helical gearing which is used in a heavy industry. In the case of moving and rotating gearing, it was necessary to use dynamic mesh and procedure of remeshing based on the parameters of quality cells. The simulation provides the complete information of pressure distribution on the surface of gearings. By the analysis of numerical results the areas with the high frequencies of low pressure were identified.

Keywords: Computational fluid dynamic, dynamic mesh, oil flow, cavitations

Acknowledgement

This work has been financially supported by the research project TUL No. SGS 21000.

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Paper number: M2015155