ANALYSIS OF LUBRICATION GROOVE GEOMETRY

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ABSTRACT

Lubrication is process of using lubricants in moving machine components to reduce friction and wear between them and consequently to improve their running life. In this thesis, a groove is introduced in these components and the various groove parameters that could influence better lubrication has been analyzed. The lubricating system considered in this thesis is a moving flat plate with a rectangular groove in it while its external housing is stationary. Equations that govern the flow rate, force and torque for this groove have been derived and analyzed. Sensitivity analysis of flow, force and torque has been done taking into consideration a short groove with deep depth and a long groove with shallow depth. Based on the results obtained it is possible to determine the importance of each groove parameter in effective lubrication and to eliminate those that do not have any influence.