

## Pressure Distribution, Load Capacity, and Thermal Effect with Generalized Maxwell Model in Journal Bearing Lubrication

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**Abstract :** This numerical investigation aims to evaluate how a viscoelastic lubricant described by a generalized Maxwell model, affects the pressure distribution, the load capacity and thermal effect in a journal bearing lubrication. We use for the purpose the CFD package software completed by adapted user define functions (UDFs) to solve the coupled equations of momentum, of energy and of the viscoelastic model (generalized Maxwell model). Two parameters, viscosity and relaxation time are involved to show how viscoelasticity substantially affect the pressure distribution, the load capacity and the thermal transfer by comparison to Newtonian lubricant. These results were also compared with the available published results.

**Keywords :** journal bearing, lubrication, Maxwell model, viscoelastic fluids, computational modelling, load capacity

**Conference Title :** ICTIE 2014 : International Conference on Tribology and Interface Engineering

**Conference Location :** Venice, Italy

**Conference Dates :** November 13-14, 2014