Sl No	Particulars		
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3	PhD Thesis Title	Mixed Non-Newtonian Thermoelastohydrodynamic Analysis of Journal Bearings	
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5	Date of Registration for PhD	01.03.2004	
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6	Date of Award of PhD degree	24.03.2014 (Date of final Viva-Voce)	
7	Brief synopsis		

This work was planned to predict the influence of surface roughness and fluid-inertia on mixed non-Newtonian thermoelastohydrodynamic (TEHD) performance of hydrodynamic journal bearing systems under more realistic operating condition of bearing by considering bearing flexibility, thermal and non-Newtonian behavior of lubricant. The modified form average Reynolds equation was derived in terms of Patir and Cheng's flow factors and inertia functions to include the surface roughness and fluid-inertia. The mean pressure induced velocity components were also modified to include surface roughness in fluid-inertia analysis. Computationally efficient and robust iterative schemes and their solution algorithm for the simultaneous solution of non-linear Reynolds equation and three-dimensional elasticity, energy and heat conduction equations were presented.

The coupled solutions of the modified average Reynolds, energy, heat conduction and elasticity equations were obtained using finite element method and appropriate iterative schemes.

A significant interaction between the influences of surface roughness, bearing flexibility, thermal, non-Newtonian behavior of lubricant, operating speed or eccentricity on the mixed performance characteristics of journal bearings was found.