

Thesis Title	Performance Analysis of Hydrodynamic Partial Journal Bearing with Non-newtonian Lubricants
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Abstract

This research described the study of the behavior of journal bearings. The 180 degree of circular journal bearings with 0.15 mm clearance and the 180 degree elliptical journal bearings with radial clearance on major axis between 0.375 mm and 0.5 mm and on minor axis between 0.25 mm and 0.375 mm are investigated experimentally. The lubricant oil was mixed with poly isobutylene to improve viscosity index which has non-newtonian property. Reynolds equation has been derived analytically for newtonian lubricant with infinitely short bearing by using linearized method to obtained the approximated viscosity.

In the experiment, the pressure distribution, oil film thickness are obtained under varying loads and varying speeds; 5, 10, 15, 20, 25 kilogram of loads and 1000, 1500, 2000, 2500, 3000 rpm respectively. In this experiment pressure sensor are motorolla MPX 700, gap sensors are eddy type gap sensor model AEC 5505.

Experimental results showed that journal bearing with PIB additive has slightly more load capacity, larger film thickness and higher friction loss.