



Investigation of tribological characteristics of Polyol Ester – Copper Oxide nanolubricant

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Abstract: Friction characteristics are significant for any lubricants since it optimizes the energy consumption in any dynamic systems and in the present work, the influence of CuO nanoparticles on the tribological characteristics of Polyol ester (PoE) oil is experimentally investigated, due to its wide usage in refrigeration systems. CuO nanoparticles have been experimentally used along with many refrigerants and found compatible for present generation refrigeration systems by many research studies. PoE oil is checked for enhanced friction characteristics which could possibly minimize the power consumption of the refrigeration systems with reciprocating compressors. Experiments were conducted on PoE/CuO nanofluids prepared at three different concentrations of CuO nanoparticles in the base oil, viz. 0.025, 0.05 and 0.10 % by mass using an ultrasonic oscillator. Surface roughness studies were conducted on Pin-on Disc wear testing machine and viscosity studies at different operating temperature were measured by Redwood viscometer for all the samples. Significant results were reported in friction characteristics and viscosity aspects for the nanolubricants compared with the pure lubricant.

Keywords: Lubricant; nanofluids; tribology; friction coefficient; viscosity.

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