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RESEARCH PAPER

Optimization of friction and wear characteristics of jatropha oil based lubricant and physio-chemical characterization

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ABSTRACT

This investigation reports on the effect of jatropha oil doped with lube oil on tribological characteristics of Al-7per cent Si alloy. The factors involved were jatropha oil percentages, sliding velocities and load which was optimized for weight loss, friction co-efficient and specific wear rate characteristics. The conventional lubricant was SAE 40. It is observed that the jatropha oil percentage factor had significant influence on the weight loss, friction co-efficient and wear rate of the pin. The optimum result was $A_2B_3C_1$ for pin weight loss, friction co-efficient and wear rate. From the experimental result, it is found that the wear scar diameter increases with the increase of load for lube oil and reduced by addition of percentage of jatropha oil. Flash temperature parameter also studied in this experiment and results shown that 15 per cent addition of jatropha oil would result in less possibility to film breakdown. The overall results of this experiment reveal that the addition of 15 per cent jatropha oil with base lubricant produces better performance and anti-wear characteristics. This blend can be used as lubricant oil which is environment friendly in nature and would help to reduce petroleum based lubricant substantially.

KEY WORDS : Taguchi, ANOVA, Pin weight loss, Friction co-efficient, Wear rate

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