A Project Report on

EVALUATION OF PHYSICO-CHEMICAL AND TRIBOLOGICAL PROPERTIES OF ENGINE OIL DISSIPATED WITH COPPER NANO PARTICLES

A project report submitted in partial fulfilment of requirements for the award of the degree of

Bachelor of Technology
In
MECHANICAL ENGINEERING

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Tamaram, Makavarapalem, Narsipatnam, Visakhapatnam-531113

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CERTIFICATE

This is to certify that project report is entitled "Evaluation of physico-chemical and tribological properties of engine oil blend with copper nano particles" was carried out by Y. PAVAN GANESH (19815A0383), M. SIVA SANKAR (19815A0347), R. TEJASWINI (19815A0370), G. SURENDRA (19815A0394) in partial fulfilment of requirements for the award of the degree of bachelor of technology in "MECHANICAL ENGINEERING" by Jawaharlal Nehru Technological university, Kakinada During the year 2019-2022.

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ABSTRACT

The physico chemical and tribological properties of HP Racer 4 engine oil dissipated with inorganic nanoparticles such as Cu were evaluated using Four Ball Tester. Samples are prepared by dissipating the nanoparticles in different weight percentage in engine oil. These nanoparticles are made stable in the lubricant by the addition of different surfactants such as CTAB and SPAN 80. The stability of the lubricant with nanoparticles dissipated in it is evaluated by studying its ultraviolet-visible spectra. Using a Four Ball Tester, anti-wear and anti-friction properties of the samples are tested and an evaluation of the Cu nanoparticles with surfactants CTAB is done to compare their relative performances. Based on the load applied, the friction and wear characteristics of lubricants dissipated with nanoparticles vary. It is observed that there is a significant reduction in coefficient of friction when the base oil is dissipated with Cu nanoparticles in CTAB surfactant. The results obtained from this investigation will be used to develop new and efficient lubricants for automotive engine applications.