A PROJECT REPORT ON

VIBRATION AND NOISE ANALYSIS OF DIESEL ENGINE OPERATING WITH HYBRID NANOPARTICLES DISPERSED BIODIESEL

A Project report submitted in the partial fulfillment of the requirements for award of Degree of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

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CERTIFICATE

This is to certify that the project entitled **"Vibration and Noise Analysis of Diesel Engine Operating with Hybrid Nanoparticles Dispersed Biodiesel"** is the record of the work carried out by P. APUROOP SAI (21815A0333), M. BHAVANA RUSHI (21815A0354), P.SAI KUMAR (21815A0334), P. RAJ KUMAR (21815A0336) students of final year B. Tech in the department of Mechanical engineering. This work is done for the partial fulfillment for the award of BACHELOR OF TECHNOLOGY during the year 2023-2024.

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ABSTRACT

The present study is intended for the vibration and noise analysis of variable loads on the diesel engine operating with Titanium dioxide (TiO_2), nanoparticle dispersed with coconut oil biodiesel blend (B20). The TiO_2 nanoparticles were taken at the following proportions of 50 ppm, 75 ppm, and 100 ppm. Further, the CTAB surfactant was added to nanoparticles at 1:1 ratio. The engine load was altered from 25-100 % by keeping the speed constant at 1500 rpm. The vibration (velocity) and noise characteristics were stated in terms of RMS values.

The main objective for this research is to find the best fuel from the given fuels which is able to reduce the vibration and noise of the diesel engine compared to the diesel from the B20 blends with the addition of TiO_2 nanoparticles at different proportions.

Keywords: Biodiesel, load, nano particles, Vibration, Noise, RMS