

A PROJECT REPORT ON

**COMBUSTION, PERFORMANCE AND EMISSION ANALYSIS OF
DIESEL ENGINE OPERATING WITH MWCNT'S DISPERSED
THIRD GENERATION BIO DIESEL**

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

**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING**

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CERTIFICATE


This is to certify that the project entitled **“COMBUSTION, PERFORMANCE AND EMISSION ANALYSIS OF DIESEL ENGINE OPERATING WITH MWCNT’S DISPERSED THIRD GENERATION BIO DIESEL”** is the record of the work carried out by **B.Om Sai (21815A0306), Y.Laxmi Narayana (21815A0304), Ch.Chaitanya Kumar (21815A0308), B.Dhanunjaynaidu (20811A0306), R.Pavan (20811A0334)** 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 2022-2023.


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ABSTRACT

The present work is intended to improve the performance of a direct injection compression-ignition engine fueled with nanoparticle dispersed Third generation oil biodiesel blend (B20). The MWCTN's nanoparticle additive with dispersant (TWEEN 80) was mixed to B20 in concentrations of 50, 75, and 100 mg/lit. Tests were performed to assess the engine operating characteristics under varying load conditions such as 25, 50, 75, and 100% by maintaining a uniform speed of 1500 rpm. The combustion characteristics namely cylinder pressure (CP) and net heat release rate (NHRR) have greatly improved with the MWCTN's surfactant fuel than diesel-biodiesel blends. Besides, the brake thermal efficiency (BTE) has enhanced together with lower brake specific fuel consumption (BSFC). Finally, a significant decrease in emissions like carbon monoxide (CO), unburnt hydrocarbons (UHC), smoke, and nitrogen oxides (NO_x) were observed. At maximum load, the CP and NHRR have improved compared to normal diesel. The reduction in CO, UHC, NO_x and smoke were found for the MWCTN's nanoparticle than conventional diesel.

Keywords: Biodiesel, nanoparticles, dispersant, emissions.