

PERFORMANCE, COMBUSTION CHARACTERISTICS OF DIESEL ENGINE BY USING SOY-BIODIESEL

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ABSTRACT

Biodiesel with fuel additives has been gaining increased attention from engine researchers in view of the energy crisis and increasing environmental problems. The present work is aimed at experimental investigation in the present work the bio diesel is the soy oil which is obtained from the crude soy seeds by using the transesterification process. In the initial stage tests are to be conducted on the four stroke single cylinder direct ignition diesel engine and base line data is generated. Further in second stage the test was conducted on the same engine at same operating parameters by using the diesel blended with the soy esters with different blending ratios such as S10, S20, S30 and the performance parameters (Brake Thermal Efficiency, Brake Specific Fuel Consumption) and also emission parameters (CO, HC, NO_x, CO₂, unused oxygen and smoke density) are evaluated. Among all the blends S30 has shown the better performance in the parameters and also in the emissions. So S30 is taken as the optimum blend. Finally the performance and emission parameters obtained by the above test are compared with the base line data obtained earlier by using diesel.

KEYWORDS: Combustion Characteristics, Diesel-Biodiesel Blends, Transesterification Process, Performance, Brake Thermal Efficiency, Brake Specific Fuel Consumption, Emission Parameters