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Investigation of Variable Compression Ratio Engine fueled with Jatropha oil

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Abstract: The increasing amount of Green-House Gases (GHG) causing global warming and climate change, as well as the declining reserve of fossil fuels, and more importantly, the high fuel prices have strongly increased the interest in the use of bio-oils and biodiesel for land, transport and power generation. Bio-fuel should be economically attractive and performance competent in order to replace the fossil fuel. The conventional petroleum fuels for internal combustion engines will be available for few years only, due to tremendous increase in the vehicular population. Moreover, these fuels cause serious environmental problems by emitting harmful gases into the atmosphere at higher rates. Generally, pollutants released by engines are CO, unburned hydrocarbons (UBHC), nitrogen oxides (NO_x), smoke and limited amount of particulate matter. Biodiesel has emerged as a clean fuel and offers a very promising alternative to diesel fuel since they are renewable and have similar properties. The objective of this research work is to investigate the performance characteristics (brake thermal efficiency) and emission (UBHC and NO_x) of a variable compression ratio engine using jatropha oil as an alternate fuel at different loads with different blends and variable compression ratios.

Key words: internal combustion engines, compression ratio, emission, Jatropha, efficiency.

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