The Effect of Ading A Carbon Cleaner to Electrical Power Generator Combustion on Exhaust Gas Emissions and Fuel Consumption)

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ABSTRACK

This study aimed to determine the effect of carbon cleaner on exhaust gas emissions and fuel consumption in a generator using a quantitative experimental method. The research was conducted using pure Pertalite fuel and a mixture of Pertalite fuel with carbon cleaner under three operating conditions: no load, load 1 (REAMI 220–230 grinder), and load 2 (Mollar Bench Drill 100 W). The parameters analyzed were Specific Fuel Consumption (SFC) and exhaust gas emissions, including CO, CO_2, HC, O_2, and Air-Fuel Ratio (AFR). The results showed that under no-load conditions, both pure Pertalite and the fuel mixture produced the same SFC value of 0.42 kg/kWh. Under load 1, the SFC decreased from 0.84 kg/kWh for pure Pertalite to 0.80 kg/kWh for the fuel mixture, while under load 2, the SFC values were 4.81 kg/kWh and 4.78 kg/kWh, respectively. The lowest exhaust emission values were obtained using the fuel mixture, with CO of 7.62%, CO_2 of 2.23%, HC of 1829 ppm, O_2 of 11.03%, and AFR of 1.23. These findings indicate that the addition of carbon cleaner improves the combustion process, resulting in lower fuel consumption and better exhaust emission characteristics compared to pure Pertalite fuel.

Keywords: carbon cleaner, generator, exhaust gas emissions, fuel consumption, SFC.