

**PENGARUH RASIO KOMPRESI TERHADAP LAJU ALIRAN BAHAN
BAKAR DAN AFR PADA KENDARAAN HEMAT ENERGI
PANDALUNGAN**

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ABSTRACT

This study aims to analyze the effect of compression ratio variations on the Air Fuel Ratio (AFR) and fuel flow rate in an ethanol-fueled energy-efficient vehicle. The compression ratio variations used were 13:1, 14:1, and 15:1 with testing speeds of 25 km/h, 30 km/h, and 35 km/h. The tests were conducted experimentally using an AFR sensor and a volumetric method with a burette and stopwatch. Fuel volume measurements were carried out for 30 seconds and then converted into $\times 10^{-2}$ ml/s units.

The results showed that increasing the compression ratio affected the AFR value and fuel flow rate. The 13:1 compression ratio produced the lowest fuel flow rate compared to the other variations, namely 3.0×10^{-2} ml/s at 25 km/h, 4.7×10^{-2} ml/s at 30 km/h, and 5.9×10^{-2} ml/s at 35 km/h. Meanwhile, the 14:1 compression ratio produced the highest fuel flow rate at all testing speeds. The AFR values in all testing variations were still within normal combustion conditions. Based on the test results, changes in compression ratio affected combustion characteristics and the amount of fuel required during the testing process.

Keywords: compression ratio, AFR, fuel flow rate, ethanol, energy-efficient vehicle.