The Effect of Pilot Jet and Main Jet Variations in Carburetors on Fuel Consumption and Exhaust Emissions of a 125 CC 4-Stroke Motorcycle
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ABSTRACT

This study aims to analyze the effect of varying pilot jet size on fuel consumption in a four-stroke motorcycle. Modifying the carburetor fuel system is often considered a simple way to improve motorcycle performance, but its impact on fuel efficiency and air pollution is often under-researched. This study aimed to determine the effect of varying pilot jet and main jet sizes on fuel consumption and exhaust emissions (CO and HC) in a 125 cc four-stroke motorcycle. Three combinations of pilot jet sizes were tested: PJ 0,032mm–MJ 0,108mm, PJ 0,035mm–MJ 0,110mm, and PJ 0,038mm–MJ 0,115mm.

From these results, it can be concluded that the PJ 0,035mm–MJ 0,110mm variation is the most efficient combination in terms of specific fuel consumption in the tested engine speed range (1500–1610 RPM), while the PJ 0,038mm–MJ 0,108mm variation with the big jet size actually shows the highest or most wasteful fuel consumption level in the entire engine speed (RPM) range.

Keywords: *Carburetor, Pilot Jet, Main Jet, Fuel Consumption, Exhaust Emissions.*