THE EFFECT OF SPARK PLUG VARIATIONS USING A *PROGRAMMABLE* ECU ON EXHAUST GAS EMMISSIONS OF A 128 CC *BOREUP* AUTOMATIC MOTORCYCLE

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ABSTRACT

This study examines the effect of spark plug variations (standard, platinum, and iridium) combined with a programmable ECU on the exhaust emission characteristics of a 128 cc bore-up automatic motorcycle under idle conditions. An experimental method was employed by measuring CO, HC, CO_2, and O_2 emissions using a gas analyzer. The results indicate that spark plug type influences emission characteristics, with the standard spark plug producing the lowest CO and HC levels, while platinum and iridium spark plugs show a tendency toward more intensive combustion. The CO_2 and O_2 emission patterns are consistent with gasoline engine combustion theory, and all measured emissions remain below the applicable regulatory limits. These findings confirm that under idle conditions, exhaust emission characteristics are more strongly affected by spark plug type and ECU mapping than by overall combustion completeness.

Keywords **:** *exhaust emissions, spark plug, programmable ECU, bore up, motorcycle.*