

Analysis of the Effect of Standard Bagasse Air Filters and Bagasse and Zeolite Biocomposites on the Performance and Exhaust Gas of a 150cc 4-Stroke Motorcycle

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ABSTRACT

This study aims to analyze the effect of using air filters made from biocomposite from sugarcane bagasse and a combination of sugarcane bagasse-zeolite on performance and exhaust emissions on a 150 cc 4-stroke motorcycle. Biocomposite filters are developed as an environmentally friendly alternative that utilizes sugarcane bagasse waste and porous zeolite material as air filters. This study uses an experimental method with three filter variations: standard filter (V1), sugarcane bagasse filter (V2), and sugarcane bagasse/zeolite filter (V3). Tests were conducted to measure torque, power, and CO and HC emission levels. The results showed that the V2 filter provided the highest performance results with a maximum torque of 12.19 N.m and a power of 11.48 HP, as well as lower CO and HC emissions than the standard filter, which were 0.26% and 115.5 ppm. Meanwhile, the V3 filter had lower performance than V2 but was still better than the standard filter. In conclusion, the air filter made from sugarcane bagasse provides increased engine performance and reduced exhaust emissions, and is worthy of being used as an alternative to conventional filters.

Keywords: air filter, bagasse, zeolite, torque, power, exhaust emissions.