The Effect of Using Bio-Composite Reinforced by Randu Tree as a Replacement for Glasswool in Free flow Exhausts on Sound Intensity Level and Heat Resistance

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ABSTRACT

Exhaust modifications that are mostly done by motorcycle users include changing the factory standard exhaust to a *free-flow exhaust* in order to make the vehicle look elegant. However, this modification raises new problems in the community because the sound from the *Free Flow exhaust* is too noisy and crowded, so it disturbs the concentration of other road users. This research was conducted with the aim of knowing the strong attenuation of exhaust sound using composites made from natural fibers. This research a composite of cottonwood fiber was mounted on a *Free Flow exhaust* with a composite length and width of 250 mm and a thickness of 20 mm. This sound strength test was carried out on variations in engine speed of 110 cc motorcycles with engine speeds of 1000 rpm, 2000 rpm, 3000 rpm, and 4000 rpm, where each variation in engine speed was added with fiber composites. In this research, the results of a decrease in exhaust sound were obtained. The highest percentage decrease in sound strength by cotton fiber composites occurred at 4000 rpm engine speed variations with a decrease in sound strength of 8.3%, and the composite had heat resistance at a temperature of 300 °C within 60 minutes until the composite burned out.

Keywords : *Sound Intensity Level, Cotton Fiber Composite, Heat Resistance,*