

## **ABSTRACT**

### **EFFECT OF CHARCOAL COCONUT SHELL AS ADSORBENT FOR COMBUSTION AIR ON THE PERFORMANCE OF 4 STROKE MOTORCYCLE**

**By**

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A large number of engines vehicles will increase fuel consumption and air pollution. Both petrol engines and diesel engines will release gas CO, HC, and NO<sub>x</sub> with dust as a result the air pollution can not be avoided. The scarcity of fuel and air pollution is our country's serious problem. With these conditions, the necessary environment-friendly technologies that can reduce fuel consumption and gas emissions by utilizing the abundant natural resources, especially in Lampung Province namely charcoal pellets of coconut shell.

The research was done with some variations those were fuel consumption test, acceleration, and emissions test. Fuel consumption test was conducted by the two variations, Those were road test (by a distance of 5 km was constantly operated at 50 km/hour) and stationary tests (performed at 1500 rpm, 2500 rpm and 4000 rpm rotation). The acceleration tests was conducted by the road test taking trough speed 0-80 km/hour and 40-80 km/hour and emissions tests performed by stationary at rotating speed variation of 1500, 2500, and 4000 rpm used charcoal pellets and without charcoal pellets. Charcoal pellets used in this study consist of two diameter sizes (10 mm and 5 mm) and several mass variation (35 grams, 40 grams and 45 grams). Charcoal pellets were packed in a frame and placed inside the Honda Blade 110 cc motorcycle air filter. Before the air flows into the vehicle air filter, air will be contacted onto the charcoal pellets firstly.

In this research, it was proved that use of charcoal pellets could reduced fuel consumption by 24,36% on the road test through the distance of 5 km. For stationary test, use of charcoal pellets could also reduced fuel consumption by 29,30% at 4000 rpm. Meanwhile, the travel time could also be shorted by 13% at the acceleration test of 0-80 km/hour, and by 20,69% at 40-80 km/hour. In another test, CO and HC levels were also be able to reduced by 29,52% and 53,71% by using charcoal pellet, respectively.

**Key words:** Fuel consumption, acceleration, emissions, charcoal coconut shell, charcoal pellet adsorbent.