ABSTRACT

COMPARISON STUDY USING ZEOLITE GLUTEN PELLETS ACTIVATION NaOH AND KOH NORMALITY AND VARIATION OF ACHIEVEMENT WITH MOTOR DIESEL ENGINE 4 STEP

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In the combustion process, oxygen gas is most needed. The higher levels of oxygen in the air becomes more optimal combustion process. One is the use of natural zeolite as adsorbent air. With the ability of the zeolite as adsorbent air is expected to deliver the air, especially oxygen into the combustion chamber to be optimized. Activated natural zeolite before use in order for the zeolite adsorbent capacity can be optimized. In this research, two kinds of activation, the first chemical activation with KOH and NaOH activator variations. In each of the activator, given the normality of 0.25 N, 0.5 N, 0.75 N and 1.0 N. Activation of both the physical activation by sunlight and drying above the oven with a temperature of 200 ° C for one hour. Zeolite pellets are then packaged and placed on diesel engine air filter, then able to absorb molecules of nitrogen, water vapor and other gases resulting in a higher concentration of oxygen that can be used in the combustion process. Data collection was performed using four variations of engine speed is 1500 rpm, 2000 rpm, 2500 rpm and 3000 rpm. Testing is done by comparing the results of crank power and specific fuel consumption generated by diesel engines without using zeolite pellets and by using zeolite pellets that have previously been activated.

Reductions in fuel consumption best for normality variation occurs in KOH activator with percentage reductions in fuel consumption reached 13.49% (0.17 kg / kWh) on the normality of 1 N and 3000 rpm rotation. Increased crank power occurred in the largest percentage increase in activator KOH with the crank at 8.59% (0.72 kW) on the normality of 1 N and 1500 rpm rotation. The use of alkali-activated zeolite physical effectively used at high speed is 3000 rpm using KOH activator. Value of the percentage reduction in fuel consumption at a concentration of 0.25 M, 0.50 M, 0.75 M and 1 N respectively are 10.62%, 10.25%, 11.30% and 13.49%. While the decline NaOH activator BSFC occurred at a concentration of 1 N at 1500 rpm rotation, amounting to 7.04% (0.22 kg / kWh).

Keywords: combustion, zeolite pellets, activation