The Effect of Mixed Pertamax with Tuak Nias (Tuonifaro) on Fuel Consumption at 125CC Machine and Its Dissemination Using Website

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Abstract.
The purpose of this research is to know how influence of mixture of pertamax with Tuak Nias (Tuonifaro) to fuel consumption at 125 cc engine To prove that Tuak Nias or Tuonifaro can be used as fuel mixture on motorcycle and examine how big influence of mix between Tuak Nias or Tuonifaro with Pertamax, conducting research by literature study method or literature study. Many authors use various supporting / input factors and supporting books related to the titles discussed. because Tuak Nias or tuonifaro contain low 4-5% ethanonic elements and contain 90% alcoholic elements so that the fuel easily burns easily in the combustion chamber and produces great power. The results of this research will be disseminated using the website.

1. Introduction
The world is facing a crisis of demand for energy, rising oil prices and the depletion of fossil fuel resources. Biodiesel was obtained from vegetable oils, which were considered a promising alternative fuel. Research on the blend of diesel and biodiesel has already taken place. The effects of dual...
biodiesel work in one cylinder, direct injection, air cooled and high-speed compression ignition engines at various engine loads at constant engine speeds of 3000 rpm. The effects of the mixtures on CO, CO2, HC, NOx and smoke opacity were examined by emission tests. Brake heat efficiency of blend A was higher than diesel. Emissions of smoke, hydrocarbons and nitrous oxides of biodiesel blends were higher than diesel emissions. However, the exhaust temperature for dual biodiesel blends was lower than diesel[1]. When the fuels were mixed at the same weight ratio, a small gain in cleanliness could also influence smoke exfoliation. Therefore, fuel mixtures can not be used as test fires, whereas CP n-heptane can be selected to prepare the fire test fuel on the basis of our preliminary results. As for the combustion behavior, the temperature profiles were almost identical for all mixtures, the weight loss curves also had good consistency[2]. Tuak Nias is a liquid material containing elements such as alcohol, tuak nias has a level of alcohol content of 90% in the form of liquids such as gas and alcohol containing 4 - 5% ethanol. The process of distillation of alcohol was carried out for 6 hours with a small flame but remain stable, the process boils the liquid and condenses the steam and accommodates the dew in other containers.

The distillation product, named after this first distillate tuna, can not be assumed because it contains a very high alcohol, can only be used as a medicine. So for the results of observations the authors are interested to do research on tuak nias because it is still not and easy to find at my hometown. Coconut tree with raw material from Tuak Nias was processed as a countermeasure of the waste of fuel that has been thinned due to the high growth of transportasi in Indonesia especially in northern, so that the authors examine and prove that Tuak Nias can be used as a fuel mixture, the authors do the fuel mixing research Pertamax and Tuak Nias has tested on a 125 cc motorcycles and the results of research conducted to prove the use of fuel consumption on motorcycles more efficient than the use of Pertamax 100% on a 125 cc motorcycles. Mixing Pertamax with Tuak Nias and Pertamax Fuel on the Engine must be in accordance with the combustion capability of the engine combustion chamber, the level of fuel consumption in the Engine will be more efficient in combustion that occurs in the more perfect engine combustion chamber, in addition to reduce the vehicles work better to save fuel consumption.

The mixing of Tuak Nias with Pertamax fuel should be determined by the researcher for the machine to work well, the researcher experiments Pertmax 90%, with 10% Tuak Nias, Pertamax 80% with 20% Tuak Nias and Pertamax 60% with 40% Tuak Nias. Mixing of materials burn Pertamax with Tuak Nias should not exceed 20% because it results in a machine not working even machine hard to live. Mixing this fuel can save fuel consumption so it can be passed on to future generations, to ensure fairness[3] in the use of local wisdom based fuels[4]. It is also important to analyze the efficiency of fuel mixing[5] and be associated with the resources used[6]. So that the results can be disseminated through the media website by considering the balance aspects of information through a good classification[7]. Similarly, aspects of diversity[8] and sensitivity of information should also be considered[9].

2. Related Works

Additional addition of ethanol to diesel fuel simultaneously reduces the cetane number, high heat value, aroma fraction and kinematic viscosity of diesel compliant diesel fuels with ethanol and changes in the distillation temperatures. The additive used to maintain homogeneous and stable mixtures and a flame retardant which can increase the cetane number of mixtures has beneficial effects on the physicochemical properties associated with ignition and combustion of mixtures with 10% and 30% ethanol[10]. Oil (biodiesel, bioethanol) is considered one of the most promising alternative fuels for gasoline fuels. The use of biodiesel fuel and diesel blends reduced the total amount of hydrocarbons (COCs) and carbon monoxide (CO) emissions, but increased NOx emissions due to the increased oxygen content of the fuel. Smoke emission was reduced by 50% when using bioethanol / diesel[11]. Hydrogen has intrinsic physicochemical characteristics of a wide range of ignition, a high flame propagation rate and low ignition energy. By using hydrogen, the combustion process in the engines can be improved and the poor mixture quickly burned in them, leading to an improvement in fuel...
consumption and emission characteristics of the original engine. Experimental results of combustion of hydrogen fuel, mixed hydrogen-gasoline and diesel fuel in the engine to improve combustion processes are investigated[12].

3. Research Methodology
Steps to test fuel consumption during the research:
1. Mix the fuel in the ratio Pertamax 90%: 10% Tuak Nias on the measuring cup as much as 100 ml.
2. Turning on the engine at idle or langsam, determined by the 125 cc motorcycle engine specification using the fuel mixture.
3. Raise the engine speed to 1000 Rpm for 2 minutes.
4. After 2 minutes of engine use at 1000 Rpm engine speed check fuel consumption on measuring cups.
5. Consumption of fuel used on machine 125 as much as 2 minutes as much as 5 cc.
6. Then do the next experiment at 2000 round Rpm and 3000 Rpm and wait until 2 minutes and check how much fuel consumption measuring glass fuel experiment.
7. After completion of the first experiment continue the second experiment with a mixture of Pertamax 80%: 20% Tuak Nias and third on the mixture of pertamax 60%: 40 Tuak Nias in the same way.
8. Then record all the results of each fuel mix test with engine rotation rate.

4. Results and Discussion
4.1. Results
After carrying out the research, then obtained the amount of fuel consumption due to Mixing of Tuak Nias with Pertamax to Machine 125 cc can be seen in Table 1-4.

### Table 1. Experimental results of fuel consumption on Pertamax Pure 100%

| No | Engine Rotation (Rpm) | Fuel Consumption On Machine (within 2 minutes) | Fuel Consumption (CC) |
|----|----------------------|---------------------------------------------|-----------------------|
| 1  | 1300 Rpm             |                                             | 15 CC                 |
| 2  | 2000 Rpm             |                                             | 20 CC                 |
| 3  | 3000 Rpm             |                                             | 25 CC                 |

From Results Table 1 can be seen that the relationship of engine rotation (rpm) fuel consumption on fuel mixture Pertamax and Tuak Nias with experiment 1-3 - can be explained and discussed how big the level of fuel consumption in the consumption by the machine with three variations of fuel mixing ratio:
1. At engine rotation 1300 Rpm and the fuel consumption level in this experiment is 15 cc.
2. At engine rotation 2000 Rpm and the fuel consumption level in this experiment is 20 cc.
3. At engine rotation 3000 Rpm and the fuel consumption level in this experiment is 25 cc.

### Table 2. Experimental results of fuel consumption on mixture with ratio Pertamax 90%: 10% Tuak Nias Tuonifaro

| No | Engine Rotation (Rpm) | Fuel Consumption On Machine (within 2 minutes) | Fuel Consumption (CC) |
|----|----------------------|---------------------------------------------|-----------------------|
| 1  | 1300 Rpm             |                                             | 5 cc                  |
| 2  | 2000 Rpm             |                                             | 7 cc                  |
| 3  | 3000 Rpm             |                                             | 10 cc                 |
From Results Table 2 can be seen that the relationship of engine rotation (rpm) fuel consumption on fuel mixture Pertamax and Tuak Nias with experiment 1-3 - can be explained and discussed how big the level of fuel consumption in the consumption by the machine with three variations of fuel mixing as follows:
1. At engine rotation 1300 Rpm and the fuel consumption level in this experiment is 5 cc.
2. At engine rotation 2000 Rpm and the fuel consumption level in this experiment is 7 cc.
3. At engine rotation 3000 Rpm and the fuel consumption level in this experiment is 10 cc.

Table 3. Experimental results of fuel consumption on mixture with ratio Pertamax 80%: 20% Tuak Nias Tuonifaro

| No | Engine Rotation (Rpm) | Fuel Consumption On Machine (within 2 minutes) | Fuel Consumption (CC) |
|----|------------------------|----------------------------------------------|-----------------------|
| 1  | 1300 Rpm               |                                              | 10 cc                 |
| 2  | 2000 Rpm               |                                              | 15 cc                 |
| 3  | 3000 Rpm               |                                              | 20 cc                 |

From Results Table 3, it can be seen that the relationship of engine rotation (rpm) fuel consumption on fuel mixture Pertamax and Tuak Nias with experiment 1-3 - can be explained and discussed how big the level of fuel consumption in the consumption by the machine with three variations of fuel mixing as follows:
1. At engine rotation 1300 Rpm and the fuel consumption level in this experiment is 10 cc.
2. At engine rotation 2000 Rpm and the fuel consumption level in this experiment is 15 cc.
3. At engine rotation 3000 Rpm and the fuel consumption level in this experiment is 20 cc.

Table 4. Experimental results of fuel consumption on mixture with ratio Pertamax 60%: 40% Tuak Nias Tuonifaro

| No | Engine Rotation (Rpm) | Fuel Consumption On Machine (within 2 minutes) | Fuel Consumption (CC) |
|----|------------------------|----------------------------------------------|-----------------------|
| 1  | 1300 Rpm               |                                              | 15 cc                 |
| 2  | 2000 Rpm               |                                              | 20 cc                 |
| 3  | 3000 Rpm               |                                              | 25 cc                 |

From Results Table 4, it can be seen that the relationship of engine rotation (rpm) fuel consumption on fuel mixture Pertamax and Tuak Nias with experiment 1-3 - can be explained and discussed how big the level of fuel consumption in the consumption by the machine with three variations of fuel mixing as follows:
1. At engine rotation 1300 Rpm and the fuel consumption level in this experiment is 15 cc.
2. At engine rotation 2000 Rpm and the fuel consumption level in this experiment is 20 cc.
3. At engine rotation 3000 Rpm and the fuel consumption level in this experiment is 25 cc.

4.2. Website Design
The design of dissemination website is done by using Waterfall method. The stages of the waterfall method can be seen in Figure 1.
5. Conclusion

Based on data of experimental results on the research of the influence of Pertamax mixture with Tuak Tuonifaro Nias to Fuel Consumption on 125cc Machine. in carrying out the final drafting, the authors conclude some of the most important things of the contents of this dissertation are:

1. Mixing of pertamax fuel with Tuak Nias can reduce fuel consumption by Pertmax 90% mix, with 10% Tuak Nias, Pertmax 80% with 20% Tuak Nias and Pertmax 60% with 40% Tuak Nias.
2. The existence of differences in fuel consumption is to reduce the waste of fuel consumption on the Machine. In this final project, the writer experiments with mixing ratio at 1300 (Rpm), 2000 (Rpm), 3000 (Rpm) Pertmax 90%: 10% Tuak Nias, fuel consumption of 5 (cc / min), 7 (cc / min), 10 (cc / min) Pertmax 80%: 20% Tuak Nias fuel consumption of 10 (cc / min), 15 (cc / min), 20 (cc / min), and Pertmax 60%: 40% Tuak Nias fuel consumption of 15 (cc / min).
3. The influence of fuel mixing fuel consumption because Tuak Nias contain low 4-5% ethanol intake and contains 90% alcoholic elements so that the fuel is easily burned in the burning room.

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