

SUMMARY

Silvi Wildia Hariadi. Department of Mechanical Engineering, Faculty of Engineering, Brawijaya University, December 2016, The effect of octane number variation of fuel toward Six-Stroke Internal Combustion Engine Performance. Supervisor : Eko Siswanto and Denny Widhyanuriyawan

Basically, the development of automotive technology today influences development of engine technologies. The development of engine technologies in combustion system. The combustion system need a high level compression ratio. The high level compression ratio which is suitable with the engine. Based on Fuel consumption of the four stroke otto cycle is less than two stroke otto cycle. It is the reason why four stroke is more favourable than two stroke. Based on the analogy between four stroke and two stroke, it can be built a deduction that the six stroke is more efficient than four stroke internal combustion engine.

This study has aims to initiate the development of six - stroke internal combustion engine based on the duration of mass diffusion of air - fuel mixture and the thermal diffusion duration of the cylinder wall components to air - fuel mixture. By doing the testing of the six - stroke internal combustion engine performance, it also needs to do the methods of using variations of octane fuel number as a method to increase performance. Variations in the value of the selected 1 octanfuel is *Premium 88*, *Pertalite 90*, *92 Pertamina* and *Pertamax Plus 95*. With the rotation of the motor during the test interval of 400 rpm and *throttle* opening are conditioned by constant 30%. Six - stroke internal combustion engine performance is rated from of torque to the crankshaft, power, effective specific fuel consumption and effective thermal efficiency.

This research informs that the use of 90 octane fuel *Pertalite* has an increase in the average value of torque, power, specific fuel consumption effective (SFCe) and the motor rotation, respectively for 12%, the effective thermal efficiency increased by 7.61 %, and the effective specific fuel consumption (SFCE) decreased by an average of 0.35% compared to the use of octane fuel for octan 88, 92 and 95.

Keywords: Fuel, Compression Ratio, Octane number, Six-Stroke Internal Combustion Engine.