**Unjuk Kerja Dan Emisi Gas Buang Motor Bakar Injeksi Bertransmisi Otomatis Berbahan Bakar Campuran Pertamax Dan Bioetanol 99,5%.** (*The performance and exhaust emissions of automatic transmission injection engine with mixture fuel between pertamax and bioetanol 99.5%).*

Yuli Hananto,S.TP,M.Si as chief counselor

**Adin Saputra**

**Renewable Energy Engineering Study Program**

**Majoring of Engineering**

Program Studi Teknik Energi Terbarukan

Jurusan teknik

**ABSTRACT**

Biofuels are widely used in increasing the octane number and performance of vehicles, The most common biofuel bioethanol.Bioethanol alcohol which derived from plants such as sugar cane, corn, and wheat. Bioethanol also functions as fuel extender, saves fossil fuels. the purpose of This study to determine the effect of the addition 99.5% bioethanol as the Pertamax fuel mixture to performance and emissions of the automatic transmission injectionengine. The method of this research a controlled experiment with bioethanol which used the Pertamax mixture with levels of 5%, 10%, 15%, and 20% of the volume of fuel. The average maximum torque of Pertamax 21.75 Nm, 5% bioethanol mixture 27.03 Nm, 10% bioethanol mixture 27.46 Nm 15% bioethanol 27.17 Nm, 20% bioethanol mixture 26.98 Nm. The average maximum power 11.17 HP, 5% bioethanol mixture 11.1 HP, mixture with 10% bioethanol 11.47 HP, 15% bioethanol mixture, 20% bioethanol mixture 11.77HP. The average exhaust gas emission with the lowest CO level a mixture of 10%, namely 0.30% vol, the highest CO level 0.43 vol% at Pertamax. The lowest CO2 was mixture of 5% bioethanol, namely 5.43% vol, the highest CO2 was 10% bioethanol mixture, namely 5.76% vol. The lowest HC 20% bioethanol mixture, namely 136.6 ppm vol. The highest HC was a mixture of 10% 177.3 ppm vol. The best fuel mixture 10% bioethanol mixture because it produces thebest performance and exhaust emissions withaverage torque of 27.46 Nm, average power of 11.47 HP, 0.30% CO emissions, 177.3 ppm vol and CO2 emissions by 5.76% vol.

*Keyword :* *bioethanol, Pertamax, Power, Torque, Exhaust Gas Emission*