## ABSTRAK

Penelitian ini dilakukan untuk mengetahui pengaruh exergi dan energi untuk meningkatkan kinerja mesin yang lebih ekonomis dari motor bakar diesel dengan bahan bakar campuran Eco Racing. Berdasarkan penelitian dan eksperimen yang dilakukan pada motor bakar diesel Daihatsu dengan beban bervariasi pada putaran 1200 rpm, 1600 rpm dan 2000 rpm, antara bahan bakar bio solar dengan bahan bakar campuran eco racing 25 % dan campuran eco racing 50% terhadap kinerja mesin diperoleh. Hasil penelitian menunjukan Komposisi campuran 50% memperlihatkan perbandingan daya yang dicapai pada nilai maksimum, konsumsi bahan bakar rendah dan perbandingan udara bahan bakar tinggi, namun sebaliknya efisiensi termal yang dicapai rendah dibandingkan terhadap bahan bakar bio solar. Komposisi campuran 25% memperlihatkan perbandingan daya yang dicapai pada nilai minimum, konsumsi bahan bakar tinggi dan perbandingan udara bahan bakar sedang, namun sebaliknya efisiensi termal yang dicapai berada dibawah efisiensi termal bio solar. Dari hasil analisa sementara terlihat bahwa nilai exergy mempengaruhi kinerja sebuah mesin dan terlihat efsiensi exergy lebih kecil dari efeisiensi termal sebuah mesin.Hasil efisiensi exergy diperoleh 12,7 %, sementara efisensi termal lebih besar dari efisensi exergy. Artinya faktor temperatur lingkungan sedikit mempengaruhi performance mesin disesel.



**Kata kunci:** Exergi dan Energi, Bio Solar, Eco Racing, Motor Diesel, Efesiensi.

## ABSTRACT

This research was conducted to determine the effect of energy and exergy to increase the performance of a more economical engine than a diesel engine with a mixture of Eco Racing fuel. Based on research and experiments carried out on Daihatsu diesel engines with varying loads at 1200 rpm, 1600 rpm and 2000 rpm rotations, between bio diesel fuel and 25% eco racing mixed fuel and 50% eco racing mixture on engine performance is obtained. The results showed that the composition of the 50% mixture showed the ratio of power achieved at the maximum value, low fuel consumption and high air fuel ratio, but on the other hand the thermal efficiency achieved was low compared to bio-diesel fuel. The composition of the 25% mixture shows the power ratio achieved at the minimum value, high fuel consumption and moderate air-to-fuel ratio, but on the other hand the thermal efficiency achieved is below the thermal efficiency of bio diesel. From the results of the temporary analysis, it can be seen that the exergy value affects the performance of a machine and it appears that the exergy efficiency is smaller than the thermal efficiency of a machine. The exergy efficiency results are 12.7%, while the thermal efficiency is greater than the exergy efficiency. This means that the environmental temperature factor slightly affects engine performance.



**Keywords:** Exergi and Energy, Bio Solar, Eco Racing, Diesel Motor, Efficiency.