ABSTRACT

The usage of oxygen organic compounds (oxygenate) as octane booster is nowadays concerning in Indonesia because the lead compound that already been used all this time could cause air pollution. The oxygenate compound contains in the fuel may improve burning qualities, machine performance and also decrease gas emission.

This research will examine the comparison of using two kinds of RON95 fuel with different oxygenate i.e, Pertamax plus that contains 11% methyl terrier butyl ether and Gasohol95 contains 20% ethyl alcohol, the influence regard to performance and gas emission with ratio compression in Toyota machine type 4K 1290 cc and constant combustion time 8° BTDC. The performance which expect to be determined in this experiment is the effective power and specific fuel consumption (bsfc), while the researched gas emission is the level of carbon monoxide (CO) and hydrocarbon (HC). The compression ratio which used here is varied from 9,0:1, 9,2:1, 9,5:1 and 9,73:1 for sample of fuel.

By the standard machine condition, the research showed that fuel performance of Gasohol95 was lower comparing to Pertamax plus in any level of compression comparison. This due to the height of ethanol hygroscope level in compounds. Fuel comparison with varied compression yield the optimal result of Pertamax plus at Cr 9,5:1. From standard condition (Pertamax plus - Cr9,0:1), the effective power raise 18,506%, sfc drop till 9,60 %, efficiency raise 8,270 %, CO level drop 35,294 % and HC level drop 41,735%. For Gasohol95, the optimum compression comparison is 9,73:1, From standard condition (Pertamax plus - Cr9,0:1). The effective power drop 10,35%, sfc raise 2,298%, thermal efficiency drop 30,88%, CO level drop 197,179% and HC level drop 3,794%.

Keyword :
Oxygenate, Octane Number, Pertamax plus, Gasohol95, Compression Ratio, Performance and Gas Emission.