

## ABSTRAK

Kenaikan jumlah penggunaan kendaraan bermotor sebagai alat transportasi yang berdampak pada peningkatan penggunaan bahan bakar minyak bumi sebagai bahan bakar utamanya. Peningkatan jumlah kendaraan bermotor sebagai alat transportasi di Indonesia beberapa tahun terakhir mengalami peningkatan terutama pada kendaraan bermotor roda dua. Kendaraan bermotor roda dua dinilai efisien untuk menunjang kebutuhan transportasi sehingga kebutuhan minyak bumi sebagai bahan bakar utama semakin menipis ketersediaannya. Cara untuk mengurangi penggunaan minyak bumi dengan menambahkan *ethanol* pada premium.

Tujuan penelitian ini untuk mengetahui karakteristik performa *premium engine* dengan menggunakan campuran bahan bakar premium RON 88 dan *ethanol*. Penelitian dilakukan dengan memvariasikan pembebanan dari 25%, 50%, 75%, dan 100%, dengan menggunakan variasi premium 95% dan *ethanol* 5%, premium 90% dan *ethanol* 10%, dan premium 85% dan *ethanol* 15%, dan putaran mesin 2000 rpm, 3000 rpm, 4000 rpm, 5000 rpm, dan 6000 rpm.

Hasil penelitian menunjukkan bahwa nilai *brake torque* tertinggi 2,43 N.m pada *mixing* premium 10%, nilai *brake power* tertinggi 1,27 kW pada *mixing* premium 10%, nilai *brake specific fuel consumption* terendah 0,93 kg/kW.h pada *mixing* premium 10%, dan nilai *brake thermal efficiency* tertinggi 32,5% pada *mixing* premium 15%.

Kata kunci : *engine, ethanol, mixing premium*

## ABSTRACT

The increase in the use of motorized vehicles as a means of transportation has an impact on increasing the use of petroleum as the main fuel. The increase in the number of motorized vehicles as a means of transportation in Indonesia in recent years has increased, especially in two-wheeled vehicles. Two-wheeled motorized vehicles are considered efficient to support transportation needs so that the need for petroleum as the main fuel is decreasing in availability. The way to reduce the use of petroleum by adding ethanol to premium.

The purpose of this study was to determine the performance characteristics of the premium engine by using a mixture of premium fuel and ethanol. The study was carried out by varying the loading of 25%, 50%, 75%, and 100%, using variations of 95% premium and 5% ethanol, 90% premium and 10% ethanol, and 85% premium and 15% ethanol. and engine speed of 2000 rpm, 3000 rpm, 4000 rpm, 5000 rpm and 6000 rpm.

The results showed that the highest brake torque value was 2.43 Nm for 10% premium mixing, the highest brake power value was 1.27 kW for mixing premium 10%, the lowest brake specific fuel consumption value was 0.93 kg / kW.h for mixing premium 10. %, and the highest thermal brake efficiency value is 32.5% at 15% premium mixing.

Keywords: engine, ethanol, premium mixing