

ABSTRAK

Perkembangan kendaraan bermotor saat ini menjadi lebih meningkat, *engine* yang banyak digunakan adalah *gasoline engine*, yang menghasilkan polusi udara diakibatkan oleh emisi gas polutan seperti HC, CO, NO_x. Salah satu cara untuk menurunkan NO_x pada *gasoline engine* dengan menggunakan *Exhaust Gas Recirculation* (EGR). Dengan menambahkan *Catalytic Converter* dapat mengkonversi emisi gas buang (CO, HC dan NO_x) sehingga mampu meningkatkan performa *engine*. Tujuan dari penelitian ini adalah mengetahui karakteristik variasi EGR *valve* dan *catalytic converter* terhadap performa *gasoline engine*.

Pengujian dilakukan dengan bervariasi pembebanan 0%, 25%, 50%, 75%, 100%, dengan variasi EGR *valve* 0%, 25%, 50%, 75%, 100%, dan pada putaran mesin 2000 rpm, 3000 rpm, 4000 rpm, 5000 rpm, 6000 rpm.

Hasil penelitian menunjukkan bahwa *brake torque* dan *brake power* tertinggi pada pembukaan EGR *valve* 50% pada pembebanan 100% sebesar 12.4%, nilai *brake specific fuel consumption* terendah pada pembukaan EGR *valve* 100% pada pembebanan 25% sebesar 23% dan nilai *brake efficiency* tertinggi pada pembukaan EGR *valve* 50% pada pembebanan 100% sebesar 12,4%.

Kata kunci : *gasoline*, *exhaust gas recirculation* (EGR), *catalytic converter*, emisi, performa.

ABSTRACT

The development of motorized vehicles is currently increasing, the most widely used machines are gasoline engines, which produce air pollution caused by emissions of pollutant gases such as HC, CO, NO_x. One way to reduce NO_x in a gasoline engine is by using Exhaust Gas Recirculation (EGR). By adding a Catalytic Converter, it can increase exhaust emissions (CO, HC and NO_x) so as to improve engine performance. The purpose of this study was to measure the reaction of the EGR valve and catalytic converter to the performance of a gasoline engine.

The test was carried out by varying the loading of 0%, 25%, 50%, 75%, 100%, with variations of the EGR valve 0%, 25%, 50%, 75%, 100%, and at engine speed 2000 rpm, 3000 rpm, 4000 rpm, 5000 rpm, 6000 rpm.

The results showed that the brake torque and brake power were at the opening of the EGR valve at 50% at 100% loading of 12.4%, the specific brake value for fuel consumption at the opening of the EGR valve was 100% at 25% loading by 23% and the brake efficiency value at opening EGR valve 50% at 100% loading of 12.4%.

Keywords : gasoline, exhaust gas recirculation (EGR), catalytic converter, emissions, performance.

