

ABSTRACT

MODIFICATION OF CAMSHAFT DURATION TO IMPROVE THE PERFORMANCE OF A 115CC ONE CILINDER ENGINE

Irwan Tri Prasetyo

3331140340

Sultan Ageng Tirtayasa University

The performance that is not optimal on a standard motorcycle requires users to do modification on the engine sector. The objective of this research was to improve motorcycle performance by modifying the camshaft duration. The research conducted at Motorcycle Combustion Laboratories Of Engineering Faculty Of Sultan Ageng Tirtayasa University. The modification conducted by changing the camshaft duration and the Lobe Separation Angle (LSA) where the standard of camshaft duration on valve intake was 221° with the Lobe Separation Angle (LSA) was 96.75° . The valve exhaust was 202° with lobe separation angle was 84° . The Camshaft duration on the first modification where valve intake was 235° and the lobe separation angle was 100.5° and valve exhaust was 235° and the lobe separation angle was 102.5° . Meanwhile, the camshaft duration on the second modification was valve intake was 260° and lobe separation 104° and valve exhaust duration were 260° and lobe separation angle 107° . On the first test by using camshaft duration first modification, the torque was increased 19.182% than using standard camshaft. In the second testing by using the second modified camshaft duration, the torque was increased 22.902% compared with the standard camshaft. On the other hand, the power of first modification camshaft with the standard camshaft was 7.378%, the second modification camshaft with the standard camshaft is 13.45% and the rate of fuel consumption on the standard camshaft with the first modification was 15% and on the standard camshaft with the second modification was 15%. The results of this research indicated the best engine performance using a second modified camshaft duration.

Keywords: Motor, Performance, Camshaft Modification, Lobe Separation Angle (LSA).

ABSTRAK

MODIFIKASI DURASI CAMSHAFT UNTUK MENINGKATKAN PERFORMA MESIN SATU SILINDER 115 CC

Irwan Tri Prasetyo

3331140340

Universitas Sultan Ageng Tirtayasa

ABSTRAK

Performa mesin yang kurang maksimal pada motor standar mengharuskan pengguna motor memodifikasi sektor mesin, salah satunya pada durasi *camshaft*. Penelitian ini bertujuan untuk meningkatkan performa motor dengan memodifikasi durasi *camshaft*. Pelaksanaan penelitian dilakukan di Laboratorium Motor Bakar Jurusan Teknik Mesin Fakultas Teknik Universitas Sultan Ageng Tirtayasa . Modifikasi dilakukan dengan merubah durasi *camshaft* dan *lobe separation angle* (LSA), dimana durasi *camshaft* standart pada katup *intake* 221° dan *lobe separation angle* 96.75° serta katup *exhaust* 202° *lobe separation angle* 84° . Modifikasi *camshaft* ke-satu dengan durasi katup *intake* 235° dan *lobe separation angle* 100.5° serta katup *exhaust* 235° dengan *lobe separation angle* (LSA) $102,5^{\circ}$ yang akan dibandingkan dengan modifikasi *camshaft* ke-dua dengan durasi katup *intake* 260° dan *lobe separation angle* (LSA) 104° serta katup *exhaust* durasi 260° dengan *lobe separation angle* 107°). Hasil penelitian ini menunjukkan bahwa performa mesin terbaik yakni menggunakan modifikasi *camshaft* ke-dua. Peningkatan torsi pada modifikasi *camshaft* adalah 19,182 % dan 22,902 % untuk modifikasi satu dan dua secara berturut-turut terhadap *camshaft* standar. Untuk peningkatan daya modifikasi *camshaft* terhadap *camshaft* standar adalah 7,378% dan 13,45% untuk modifikasi satu dan dua secara berturut-turut.

Kata kunci : Motor, Performa, Modifikasi Camshaft , *Lobe Separation Angle* (LSA).