KARAKTERISTIK PERFORMA MOTOR BENSIN PGMFI (*PROGAMMED FUEL INJECTION*) SILINDER TUNGGAL 110CC DENGAN VARIASI *MAPPING* PENGAPIAN TERHADAP EMISI GAS BUANG

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Abstrak

Mapping derajat pengapian pada sistem injeksi merupakan pengapian 3 dimensi dimana fungsi dari bukaan gas (TPS) dan putaran mesin (RPM) digunakan untuk menentukan derajat pengapian untuk proses pembakaran didalam silinder. Sistem pengapian 3 dimensi menghasilkan performa motor bensin yang signifikan, baik pada putaran rendah, putaran menengah maupun putaran tinggi. Sistem pengapian 3 dimensi juga menghasilkan kadar emisi gas buang yang sangat rendah dengan nilai lambda mendekati 1. Hasil pengujian maupun pembahasan performa dan emisi gas buang motor bensin 4 langkah PGMFI silinder tunggal 110 cc dengan 5 variasi *mapping* derajat pengapian (*ecu* variasi 1, *ecu* variasi 2, *ecu* variasi 3, *ecu* variasi 4 dan *ecu* variasi 5) yang telah dilakukan dapat disimpulkan bahwa nilai lambda emisi gas buang yang optimal terdapat pada *ecu* variasi 1 sebesar 1,003 dengan daya rata-rata sebesar 3,669 HP, torsi rata-rata sebesar 7,738 N.m, tekanan efektif rata-rata mencapai 900,395 kPa, *sfc* terendahnya mencapai 0,032 kg/HP.jam, kadar emisi gas buang pada putaran mesin stasioner yaitu O_2 15,54 g/Km, CO_2 4,4 g/Km, CO 0,16 g/Km, NOx 0,027 g/Km dan HC 0,065 g/Km, pada putaran mesin menengah yaitu O_2 14,2 g/Km, CO_2 12,5 g/Km, CO 1,64 g/Km, NOx 0,037 g/Km dan HC 0,388 g/Km, pada putaran tinggi yaitu O_2 15,1 g/Km, CO_2 12,2 g/Km, CO 0,88 g/Km, NOx 0,037 g/Km dan HC 0,239 g/Km.

Kata kunci : *Mapping* pengapian, kurva pengapian, *ECU*, derajat pengapian injeksi, emisi gas buang, lambda, torsi, daya, tekanan efektif rata-rata, sfc.

Keterangan :
1. Penyusun Tugas Akhir
2. Dosen Pembimbing I
3. Dosen Pembimbing II

PERFORMANCE CHARACTERISTICS GASOLINE ENGINE PGMFI (PROGAMMED FUEL INJECTION) SINGLE CYLINDER 110cc WITH VARIATION OF IGNITION MAPPING TO EXHAUST EMISSIONS

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Abstract

Mapping degrees ignition at the fuel injection system is a 3D (three dimensions) ignition where the function of the throttle (TPS) and engine rotation (RPM) is used to determine the degree of ignition for the combustion process, in cylinder. 3-dimensional ignition systems generate significant performance of gasoline engine, both at low speed , medium speed and high speed. 3-dimensional ignition systems also produce exhaust emissions levels are very low with a lambda value close to 1. The test results and the discussion of the performance and exhaust emissions of motor gasoline 4 stroke PGMFI single cylinder 110 cc engine with 5 variations of mapping the degree of ignition (ecu variation 1 , ecu variation 2 , ecu variation 3 , ecu variations 4 and ecu variations 5) , it can be concluded that the lambda value of the exhaust emissions are at best 1 ecu variation of 1.003 with an average power of 3,669 HP , the average torque of 7.738 Nm , mean effective pressure reaches 900.395 kPa , sfc lows reached 0,032 kg / HP.jam , the levels of exhaust emissions in stationary engines rotation is 15.54 g/Km O2, CO2 4.4 g/Km, 0.16 g/Km CO, NOx 0,027 g/Km and HC 0,065 g/Km, at medium engine rotation namely O2 14,2 g/Km, CO2 12.5 g/Km , 1.64 g/Km CO, NOx 0,037 g/Km and HC 0,388 g/Km, at high speed, namely 15,1 g/Km O2 , CO2 12.2 g/Km , 0.88 g/Km CO, NOx 0,037 g/Km and HC 0,239 g/Km.

Keywords : Mapping ignition , ignition curve , ECU , degrees ignition injection , emissions , lambda , torque , power , mean effective pressure, sfc .

Annotation :
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