

ABSTRAK

PENGARUH PENAMBAHAN MINYAK PIROLISIS PLASTIK PADA PERTALITE TERHADAP PERFORMA SEPEDA MOTOR GL PRO 145 Cc

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Performa suatu kendaraan bermotor salah satu yang memengaruhinya adalah jenis bahan bakarnya. Bahan bakar yang mempunyai oktan akan menghasilkan performa bagus, ternyata tidak selalu seperti itu. Pemilihan bahan bakar harus di perhitungkan dengan rasio kompresi motor. Tujuan dari penelitian ini adalah untuk menganalisis perbandingan daya, torsi, kecepatan dan emisi gas buang yang dihasilkan dari penambahan minyak pirolisis plastik pada pertalite terhadap performa sepeda motor GL PRO 145 Cc.

Penelitian dilakukan dengan metode eksperimen atau pengujian dengan bantuan alat dynotest dan gas analyzer. Hasil penelitian pengaruh penambahan minyak pirolisis plastik pada pertalite menunjukkan hasil pengujian torsi pada dynotest untuk berbagai campuran minyak pirolisis plastik (MP0%, MP20%, MP40%) pada sepeda motor dengan RPM tertentu. Terhadap performa torsi pada mesin dihasilkan, pada RPM rendah (2000) MP20 menghasilkan torsi tertinggi (52,04%), diikuti MP 0 (49,08%) dan MP40 (21,68%). Terhadap Performa daya pada mesin dihasilkan pada RPM 2000: MP0 = 15,53, MP20 = 15,54 (sedikit lebih

tinggi dari MP0), MP40 = 5,87 (jauh lebih rendah). Pada RPM 2200 : MP20 memiliki power yang sangat meningkat (17,32) dibanding MP0 (9,42) dan MP40 (6,38). Terhadap kecepatan pada mesin dihasilkan, pada waktu 0 detik, kecepatan semua motor 0 Km/h (start kondisi diam). Pada 0,5 detik P0% = 43,35 Km/h, P20% = 52,25 Km/h (lebih cepat dari P0%), P40% = 36,25 Km/h (lebih lambat dari P0% dan P20%). Pada waktu selanjutnya (1–7 detik) : P20% selalu menunjukkan kecepatan lebih tinggi dibanding P0%. P40% kecepatan awalnya lebih rendah, namun setelah 6,5 detik, kecepatan P40% melampaui semua (tercatat 101,63 Km/h di 6,5 detik). Di akhir waktu (7 detik) : P0% = 90,25 Km/h, P20% = 95,45 Km/h, P40% = 99,55 Km/h, P40% menjadi yang tercepat di akhir pengujian.

Kata Kunci : Minyak Pirolisis, Torsi, Daya, Kecepatan

ABSTRACT

THE INFLUENCE OF ADDING PLASTIC PYROLYSIS OIL TO PERTALITE ON THE PERFORMANCE OF GL PRO 145 CC MOTORCYCLE

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The performance of a motor vehicle is influenced by the type of fuel it uses. Fuel with higher octane ratings is expected to produce good performance, but this is not always the case. The choice of fuel must be considered with the engine's compression ratio. The purpose of this study is to analyze the comparison of power, torque, speed, and exhaust gas emissions produced from the addition of plastic pyrolysis oil to pertalite on the performance of the GL PRO 145 Cc motorcycle.

The research was conducted using experimental methods or testing with the assistance of dynotest tools and gas analyzers. The research results on the effect of adding plastic pyrolysis oil to pertalite show the results of torque testing in a dynotest for various mixtures of plastic pyrolysis oil (MP0%, MP20%, MP40%) on motorcycles at certain RPMs. Regarding the torque performance produced by the engine, at low RPM (2000), MP20 generated the highest torque (52.04%), followed by MP0 (49.08%) and MP40 (21.68%). Regarding the power performance produced by the engine at RPM 2000: MP0 = 15.53, MP20 = 15.54 (slightly higher than MP0), MP40 = 5.87 (much lower). At RPM 2200: MP20 had a significantly increased power (17.32) compared to MP0 (9.42) and MP40 (6.38). Regarding the

speed produced by the engine, at 0 seconds, the speed of all motorcycles was 0 Km/h (starting from a stationary condition). At 0.5 seconds, P0% = 43.35 Km/h, P20% = 52.25 Km/h (faster than P0%), P40% = 36.25 Km/h (slower than P0% and P20%). At the next time (1–7 seconds): P20% always shows a higher speed compared to P0%. P40%'s initial speed is lower, but after 6.5 seconds, P40%'s speed surpasses all (recorded at 101.63 Km/h at 6.5 seconds). At the end of the time (7 seconds): P0% = 90.25 Km/h, P20% = 95.45 Km/h, P40% = 99.55 Km/h, P40% becomes the fastest at the end of the test. Exhaust emissions from MP 0% fuel produce CO that tends to increase from 1000 to 4000 RPM (incomplete combustion increases), but decreases at 5000 RPM. High levels of CO indicate incomplete combustion. CO₂ remains stable in the range of 2.02 - 2.06%. HC is highest at 2000 RPM (498 ppm), and then drastically decreases to 115 ppm at 5000 RPM. O₂ is high at 1000-3000 RPM (25%) then drops to 0% at 4000 and 5000 RPM. Lambda (λ) value remains at 2.000 across all RPM.

Keywords: Pyrolysis Oil, Torque, Power, Speed.