

INTISARI

STUDI PENGARUH SISTEM BAHAN BAKAR, UMUR, KAPASITAS MESIN DAN JARAK TEMPUH SEPEDA MOTOR TERHADAP KADAR EMISI GAS BUANG

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Telah dilakukan studi pengaruh sistem bahan bakar dan umur mesin terhadap kadar emisi gas buang sepeda motor di Yogyakarta menggunakan *gas analyzer*. Gas buang yang diuji adalah karbon monoksida (CO), hidrokarbon (HC), dan karbon dioksida (CO₂). Umur mesin sepeda motor yang dikaji adalah 6 tahun, 4 tahun, 2 tahun, dan 0 tahun dengan masing-masing sistem bahan bakar injeksi dan karburator. Perbedaan kedua sistem bahan bakar ini terletak pada proses pencampuran bahan bakar dan udara. Injeksi melakukan pencampuran secara *digital* sedangkan karburator melakukan pencampuran bahan bakar dan udara secara manual. Hasil pengukuran menunjukkan bahwa sistem bahan bakar injeksi menghasilkan kadar emisi gas buang CO, HC, dan CO₂ yang jauh lebih rendah dari sistem karburator. Kadar emisi gas buang CO dan HC juga mengalami peningkatan seiring bertambahnya umur sepeda motor namun CO₂ tidak dipengaruhi oleh umur mesin. Hasil penelitian menunjukkan bahwa gas CO dan CO₂ pada mesin karburator telah melewati ambang batas yang telah ditetapkan pemerintah sedangkan gas HC masih di bawah ambang batas. Kapasitas mesin dan jarak tempuh sepeda motor mempengaruhi kadar emisi gas buang. Semakin besar kapasitas mesin, kadar emisi gas buang semakin besar dan semakin besar jarak tempuh sepeda motor kadar emisi gas buang juga semakin besar.

Kata-kata kunci: emisi gas buang, sistem bahan bakar, sepeda motor

ABSTRACT

STUDY OF THE EFFECT OF FUEL SYSTEM, AGE, MACHINE CAPACITY AND DISTANCE OF MOTORCYCLE ON EXHAUST EMISSION LEVELS

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A study of the effect of fuel system and engine life on motor vehicle exhaust emission levels in Yogyakarta using a gas analyzer. Exhaust gases tested were carbon monoxide (CO), hydrocarbons (HC), and carbon dioxide (CO₂). The age of the motorcycle engine studied is 6 years, 4 years, 2 years, and 0 years with each fuel injection system and carburetor. The difference between these two fuel systems lies in the process of mixing fuel and air. The injection carries out the mixing digitally while the carburetor mixes fuel and air manually. The measurement results show that the injection fuel system produces much lower CO₂, CO, and CO₂ emissions from the carburetor system. CO₂ and HC exhaust emissions also increase with age of motorcycle but CO₂ is not affected by engine life. The results show that CO and CO₂ gas in carburetor engines have crossed the threshold set by the government while HC gas is still below the threshold. Engine capacity and distance of motorcycle affect exhaust emission levels. The greater the engine capacity, the exhaust gas emission level is greater and the greater the distance of motorcycle exhaust gas emission levels also greater.

Keywords: exhaust emissions, fuel systems, motorcycles