COMPRASION OF PHYSICAL AND MECHANICAL PROPERTIES OF GENUINE PART CYLINDER BLOCK WITH USED ALUMINUM CYLINDER BLOCKS

Wahyudin A. Badarudin
Program Studi D3 Teknik Mesin
Program Vokasi Universitas Muhammadiyah Yogyakarta
Email : Wahyudin.a.badarudin02@gmail.com

ABSTRACT

The purpose of this research is to make a cylinder block using metal casting method using vixion cylinder block, mio J cylinder block, and Mio P piston. Melted with sand mold pattern using the original cylinder block of Yamaha Vixion motor parts, with 700^{o}C-800^{o}C process. With trials investigating the matter of chemical composition, wear tests, and hardness tests.

Analysis of the results of the study showed that the cast cylinder block had the largest percentage of Si with a level of 10.57% Si with an average wear value of 2.013 mm2 / kg. While the genuine cylinder block part 13.29% Si (difference in content of 2.72%) with an average wear value of 0.075 mm2 / kg (difference of 1,938 mm2 / kg). While the average value of 111.6 HB cast specimen hardness test. and Genuine part specimen 165.3 HB.

The results of testing the chemical composition there are 15 elements with the percentage of dominant elements in the genuine part block 79.78% Al, 13.2928% Si, 5.7197 Cu. While in the cylinder block castings 83.22% Al, 10.5751% Si, 2.7443% Cu, 1.7762% Zn, 1.1138% Fe. with an average wear value of 0.075 mm2 / kg genuine part cylinder block and 2.013mm2 / kg castings cylinder block. While the hardness test obtained an average value of 111.6 HB Cast specimens. and Genuine Part 165.3 HB specimens.

***Keywords**: Making Castings, composition testing, wear, and hardness testing.*

PERBANDINGAN SIFAT FISIS DAN MEKANIS BLOK SILINDER *GENUINE PART* DENGAN BLOK SILINDER BERBAHAN ALUMINIUM BEKAS

Wahyudin A. Badarudin
Program Studi D3 Teknik Mesin
Program Vokasi Universitas Muhammadiyah Yogyakarta
Email : Wahyudin.a.badarudin02@gmail.com

ABSTRAK

Tujuan penelitian adalah membuat blok silinder dengan metode pengecoran logam menggunakan bahan bekas blok silinder vixion, blok silinder mio J, dan piston mio J. Dilebur dengan pola cetakan pasir menggunakan blok silinder *genuine part* motor yamaha vixion, dengan proses penuangan grafitasi pada suhu penuangan mencapai 700^{o}C-800^{o}C. Dengan kegiatan penelitian meliputi pengujian komposisi kimia, uji keausan, dan uji kekerasn.

Analisa hasil penelitian menunjukan bahwa blok silinder *coran* memiliki presentase Si paling besar dengan kadar 10,57% Si dengan nilai rata-rata keausan 2,013 mm^2/kg. Sedangkan blok silinder *genuine part* 13,29% Si (selisih kadar 2,72%) dengan nilai rata-rata keausan 0,075 mm^2/kg (selisih 1,938 mm^2/kg). Sedangkan nilai rata-rata uji kekerasan spesimen *coran* 111,6 HB. dan Spesimen *genuine part* 165,3 HB.

Hasil pengujian komposisi kimia terdapat 15 unsur dengan persentase unsur dominan pada blok *genuine part* 79,78% Al, 13,2928% Si, 5,7197 Cu. Sedangakan pada blok silinder *coran* 83,22% Al, 10,5751% Si, 2,7443% Cu, 1,7762% Zn, 1,1138% Fe. dengan nilai rata-rata keausan blok silinder *genuine part* 0,075 mm^2/kg dan blok silinder *coran* 2,013mm^2/kg. Sedangkan pengujian kekerasan yang didapat nilai rata-rata spesimen *Coran* 111,6 HB. dan sepesimen *Genuine Part* 165,3 HB.

Kata Kunci : Pembuatan Coran, pengujian komposisi, keausan, dan uji kekerasan.