PENGARUH PERLAKUAN PANAS DENGAN MEDIA PENDINGIN *COOLANT* RADIATOR PADA KETANGGUHAN DAN KEKERASAN PISAU MESIN PEMOTONG RUMPUT

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ABSTRAK

Penelitian ini bertujuan untuk mendapatkan pengaruh perlakuan panas tempering yang diberikan terhadap ketangguhan impak dan untuk mendapatkan pengaruh perlakuan panas tempering terhadap kekerasan. Penelitian ini dilaksanakan dengan cara memanaskan hingga temperatur austenit 800^0C selama 45 menit dan *diquenching* dengan media pendingin *coolant* radiator. Kemudian dilakukan tempering dengan variasi temperatur 300^0C, 400^0C, 500^0C selama 2 jam, dilakukan pengujian kekerasan, pengamatan struktur mikro, pengujian impak (ketangguhan). Hasil dari pengujian menunjukan struktur mikro pisau pemotong rumput tanpa perlakuan panas adalah *Pearlite* dan pada pisau pemotong rumput yang diberi perlakuan panas tempering 300^0C , 400^0C , 500^0C selama 2 jam adalah *Pearlite* (*dask area*). Nilai kekerasan dan ketangguhan impak pada pisau pemotong rumput tanpa perlakuan panas yaitu 40,3 HRC dan 1,6192 J/mm^2. Kemudian nilai kekerasan tertinggi dan harga impak terendah ada pada sampel tempering 300^0C yaitu 55,3 HRC dan 0,1064 J/mm^2. Pada sampel tempering 400^0C nilai kekerasan yang didapat dan harga impak yaitu 46,7 HRC dan 0,2132 J/mm^2. Nilai kekerasan terendah ada pada sampel 500^0C yaitu 35,5 HRC, dan ketahanan impaknya adalah 0,7592 J/mm^2.

Kata Kunci : uji impak, pisau pemotong rumput, *coolant* radiator

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EFFECT OF HEAT TREATMENT WITH COOLANT RADIATOR REFRIGERATOR MEDIA ON TENSION AND VIOLENCE OF KNIFE OF GRASS CUTTING MACHINE

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ABSTRACT

This study aims to obtain the effect of tempering heat treatment on impact toughness and to obtain the effect of tempering heat treatment on hardness. This research was carried out by heating up to 800^0C austenite temperature for 45 minutes and quenching with coolant radiator cooling media. Then tempering with temperature variations of 300^0C, 400^0C, 500^0C for 2 hours, hardness testing, microstructure observation, impact testing (toughness) were carried out. The results of the test showed that the microstructure of the grass cutter blade without heat treatment was Pearlite and the grass cutting knife which was given tempering heat treatment 300^0C, 400^0C, 500^0C for 2 hours was Pearlite (dask area). The value of hardness and impact toughness on grass cutting blades without heat treatment is 40.3 HRC and 1.6192 J/mm^2. Then the highest hardness value and the lowest impact price was in the 300^0C tempering sample, 55.3 HRC and 0.1064 J/mm^2. In the tempering sample 400^0C the hardness value obtained and the impact price were 46.7 HRC and 0.2132 J/mm^2. The lowest hardness value is in the 500^0C sample which is 35.5 HRC, and the impact resistance is 0.7592 J/mm^2.

Keywords : impact test, lawn mower, coolant radiator

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