

ABSTRAK

ANALISA PENGARUH PROSES *PACK CARBURIZING* TERHADAP NILAI KEKERASAN PADA *BEARING*

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Bearing merupakan komponen mesin yang berfungsi mengurangi gesekan dan menopang beban rotasi. Dalam penggunaannya, *bearing* harus memiliki ketahanan aus dan kekerasan permukaan yang tinggi. Penelitian ini bertujuan untuk menganalisis pengaruh proses *pack carburizing* terhadap nilai kekerasan pada *bearing* berbahan baja karbon tinggi (kode 6203 2RS). Proses dilakukan menggunakan media arang kayu bakau pada suhu 920°C dan ditahan selama 1 jam, kemudian *quenching* dengan air sumur. Pengujian kekerasan metode *rockwell* skala HRC dilakukan pada tiga komponen *bearing*, yaitu *Outer ring*, *Inner ring*, dan *Rolling ball*. Hasil menunjukkan peningkatan kekerasan yang relatif kecil, yaitu *Outer ring* naik 0,46 HRC (61,55 HRC menjadi 62,01 HRC), *Inner ring* naik 0,60 HRC (60,40 HRC menjadi 61,00 HRC), dan *Rolling ball* naik 1,07 HRC (56,10 HRC menjadi 57,17 HRC). Peningkatan ini tergolong rendah dan menunjukkan bahwa proses *pack carburizing* yang dilakukan kurang efektif dalam meningkatkan sifat kekerasan material, kemungkinan disebabkan oleh parameter proses yang belum optimal atau kekerasan awal material yang sudah tinggi.

Kata kunci: *Pack carburizing*, kekerasan, *bearing*, baja karbon, arang kayu bakau.

ABSTRACT

ANALYSIS OF THE EFFECT OF PACK CARBURIZING PROCESS ON THE HARDNESS VALUE OF BEARING

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Bearings are machine components that function to reduce friction and support rotational loads. In their application, bearings must possess high wear resistance and surface hardness. This study aims to analyze the effect of the pack carburizing process on the hardness value of high-carbon steel bearings (type 6203 2RS). The process was carried out using mangrove charcoal as the carbon source at a temperature of 920°C with a holding time of 1 hour, followed by quenching in well water. Hardness testing using the Rockwell method on the HRC scale was performed on three bearing components: the Outer ring, Inner ring, and Rolling ball. The results showed a relatively small increase in hardness, with the Outer ring increasing by 0.46 HRC (from 61.55 HRC to 62.01 HRC), the Inner ring increasing by 0.60 HRC (from 60.40 HRC to 61.00 HRC), and the Rolling ball increasing by 1.07 HRC (from 56.10 HRC to 57.17 HRC). This increase is considered low, indicating that the applied pack carburizing process was less effective in significantly enhancing the material's hardness, possibly due to suboptimal process parameters or the already high initial hardness of the bearing material.

Keywords: Pack carburizing, hardness, bearing, carbon steel, mangrove charcoal.