

ABSTRAK

Segment Teeth adalah bagian komponen penggerak yang berada di dalam *final drive*, sehingga ketahanan *Impact Charpy* dan aus menjadi sifat mekanik material yang harus dipenuhi, sifat-sifat material tersebut sebagian besar dipengaruhi oleh proses perlakuan panas (*heat treatment*) khususnya proses *quenching*. Oleh karena itu perlu dilakukan penelitian yang berkaitan dengan pengaruh variasi konsentrasi water base polimer antara air, polimer 3%, 6%, dan 9%. Dari hasil penelitian didapatkan bahwa semakin tinggi nilai persentase polimer yang digunakan maka kekerasan permukaan yang didapatkan semakin kecil akan tetapi nilai *Impact Charpy* semakin tinggi, nilai kekerasan (*hardness*) terbesar ada pada material *quenching* air yaitu 56.30 HRC dan nilai *Impact Charpy* paling besar pada material dengan *quenching* 9% yaitu 6.40 Kg.m/cm², artinya semakin tinggi persentase polimer maka *hardness* material semakin rendah tetapi nilai *Impact Charpy* material semakin tinggi, dan struktur mikro yang terbentuk adalah *Martensite temper*. Dari hasil pengujian pada material SMnB440H pada model *Teeth* D155-5, kondisi paling ideal adalah persentase polimer 6%.

Kata kunci: *Perlakuan panas, Persentase Polimer, Hardness, Impact Charpy, Microstructure*

ABSTRACT

Segment Teeth is part of the driving component in the inside *Final drive*, so that *Charpy Impact* and wear resistance are mechanical properties of the material that must be met. These material properties are influenced by the heat treatment process, especially the *quenching* process. Therefore, it is necessary to carry out research related to the effect of varying the water base polymer concentration between water, polymer 3%, 6%, and 9%. From the research results, it was found that the higher polymer percentage used result of surface hardness is smaller but the *Charpy Impact* value was higher, the highest *Hardness* value was in the water, that is 56.30 HRC and the *Charpy Impact* value was highest in the material with *quenching* 9% polymer, that is 6.40 Kg.m/cm², so the higher percentage of polymer the hardness of the material decreases but the *Charpy Impact* value of the material becomes higher. The microstructure that forms after the material go through *quenching* and *tempering* process is *Martensite temper*. From the result of analysis on material SMnB440H *Teeth* D155-5 the ideal condition is on 6% polymer.

Key words: *Heat Treatment, Percentage Polimer, Hardness, Impact Charpy, Microstructure*