

## ABSTRACT

*Excavators have one component that plays an important role in its function, which is the tooth bucket pin. A case of tooth bucket pin wear was found at CV Cahaya Indra Laksana, resulting in the tooth bucket not settling into position and the tooth bucket pin had to be replaced. Maintenance of excavator performance is done by replacing components. The use of genuine spare parts is considered better in material quality and has a longer service life. CV Indra Laksana prefers non-genuine products for spare part replacement. The purpose of this research is to analyze the hardness value and wear rate value of genuine and non-genuine pin tooth bucket test specimens on an excavator unit with a capacity of 20 tons. The tests carried out include chemical composition testing, microstructure analysis testing, Vickers hardness testing and Ogoshi wear testing. The results showed that the chemical composition of genuine tooth bucket pins (C 0.446%), and non-genuine (C 0.504%) is included in the medium carbon steel category. The hardness of the genuine pin tooth bucket (415 HVN) is higher than the non genuine has a value of (394 HVN), because the genuine pin tooth bucket material has a lower bainite microstructure compared to non genuine has an upper bainite microstructure. Genuine pin tooth bucket has a lower wear rate ( $2,02 \times 10^{-5} \text{mm}^3/\text{kg. m}$ ) than non genuine has a high average wear rate value of ( $2,69 \times 10^{-5} \text{mm}^3/\text{kg. m}$ ), so genuine pin tooth bucket is more wear resistant than non genuine pin tooth bucket.*

*Keywords: pin tooth bucket, hardness, and wear rate*

## INTISARI

*Excavator* memiliki satu komponen yang berperan penting dalam fungsinya adalah *pin tooth bucket*. Kasus keausan *pin tooth bucket* ditemukan di CV Cahaya Indra Laksana, mengakibatkan *tooth bucket* tidak *settle* pada posisinya dan *pin tooth bucket* harus diganti. Perawatan performa *excavator* dilakukan dengan penggantian komponen. Penggunaan *spare part genuine* dinilai lebih baik dalam kualitas material dan memiliki masa pakai yang lebih lama. CV Indra Laksana lebih memilih produk *non genuine* untuk penggantian *spare part*. Tujuan penelitian ini adalah menganalisis nilai kekerasan dan nilai laju keausan pada spesimen uji *pin tooth bucket genuine* dan *non genuine* pada unit *excavator* kapasitas 20 ton. Pengujian yang dilakukan meliputi pengujian komposisi kimia, pengujian analisa struktur mikro, pengujian kekerasan *vickers* dan pengujian keausan *Ogoshi*. Hasil penelitian menunjukkan bahwa komposisi kimia pada *pin tooth bucket genuine* (C 0,446%), dan *non genuine* (C 0,504%) termasuk dalam kategori baja karbon sedang. Kekerasan *pin tooth bucket genuine* (415 HVN) lebih tinggi dibandingkan *non genuine* memiliki nilai (394 HVN), karena material *pin tooth bucket genuine* memiliki struktur mikro *lower bainite* dibandingkan *non genuine* memiliki struktur mikro *upper bainite*. *Pin tooth bucket genuine* memiliki laju keausan yang lebih rendah ( $2,02 \times 10^{-5} \text{ mm}^3/\text{kg.m}$ ) dibandingkan *non genuine* memiliki nilai rata-rata laju keausan yang tinggi yaitu ( $2,69 \times 10^{-5} \text{ mm}^3/\text{kg.m}$ ), sehingga *pin tooth bucket genuine* lebih tahan aus dibandingkan *pin tooth bucket non genuine*.

Kata Kunci: *pin tooth bucket*, kekerasan, dan laju keausan