

ABSTRAK

Excavator adalah salah satu alat berat yang digunakan dalam pekerjaan proyek untuk mempercepat pekerjaan. *Excavator* memiliki bagian yang langsung berkontak dengan medan yang dilalui disebut *undercarriage*. *Undercarriage* adalah bagian bawah dari sebuah *excavator* yang berfungsi untuk menahan beban. Penelitian ini bertujuan untuk menganalisa tingkat keausan dan sisa umur pemakaian. Penelitian ini menggunakan metode FMEA (*Failure Mode and Effect Analysis*) yang digunakan untuk menganalisis faktor keausan komponen *undercarriage* pada *track shoe*, *track link*, *carrier roller* dan *track roller*. Nilai RPN (*Risk Priority Number*) didapat dari perkalian *severity*, *occurrence* dan *detection*.

Hasil dari penelitian ini berupa tingkat keausan dan sisa umur pakai pada komponen *undercarriage*. Dari grafik diperoleh persentase tingkat keausan untuk 2.500 jam sampai umur 2.724 jam pada komponen *track shoe* sebesar 4% dengan sisa umur pakai 2.873 jam, komponen *track link* sebesar 3% dengan sisa umur pakai 6.561 jam, komponen *carrier roller* 4,54% dengan sisa umur pakai 2.681 jam dan komponen *track roller* sebesar 4,44% dengan sisa umur pakai 1.994 jam. Tanggal penggantian berdasarkan dari grafik komponen *track shoe* adalah 4 April 2024, *track link* 9 Juli 2025, *carrier roller* 11 Maret 2024 dan *track roller* 16 Desember 2023. Hasil dari analisa menggunakan FMEA diperoleh hasil nilai RPN *track shoe* 210, *track link* 150, *carrier roller* 240 dan *track roller* 294.

Kata kunci : *Excavator*, *Undercarriage*, *Track Shoe*, *Track Link*, *Carrier Roller*, *Track Roller*, *FMEA*, *RPN*, Kobelco SK200-8

ABSTRACT

An excavator is one of the heavy equipment used in a project to speed up the work. An excavator has a part that is directly contacted with the terrain and is called as undercarriage. The undercarriage is the bottom part of an excavator that has a function to hold the load. This study is aimed to analyse the level of wear and component remaining service life. This study used the FMEA (Failure Mode and Effect Analysis) method to analyse the wear factor of undercarriage components namely track shoes, track links, carrier rollers and track rollers. The value of RPN (Risk Priority Number) was obtained from the multiplication of severity, occurrence, and detection.

The result of this research were the percentage rate of wear and remaining service life. From the result was obtained the percentage of wear level for 2.500 hours until 2.724 hours of track shoe is 4% with remaining service life 2.891 hours, track link is 3% with remaining service life 2.716 hours, carrier roller is 4,54% with remaining service life 2.520 hours and track roller is 4,44% with remaining service life 3.528 hours. The replacement date based on the component graphic is on 6th of April 2024 for track shoe, the track link is on the 15th of March 2024, the carrier roller is on the 20th of February 2024 and the track roller is on the 25rd of Juni 2024. The results of the data analysis by using FMEA were obtained the RPN value for the track shoe is 245, track link 252, carrier roller 294 and track roller 180.

Keywords : Excavator, Undercarriage, Track Shoe, Track Link, Carrier Roller, Track Roller, FMEA, RPN, Kobelco SK200-8