

ANALISIS KEGAGALAN KOMPONEN SISTEM ENGINE DAN HIDROLIK EXCAVATOR PENYEBAB KEBOCORAN OLI MENGGUNAKAN METODE ROOT CAUSE ANALYSIS (RCA) DI PT INDAH KIAT PULP & PAPER TBK PERAWANG

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ABSTRAK

Kebocoran oli pada sistem *engine* dan hidrolik excavator merupakan permasalahan yang dapat menurunkan keandalan alat berat serta mengganggu efektivitas operasional perusahaan. Penelitian ini bertujuan untuk mengidentifikasi komponen penyebab kebocoran oli, menganalisis akar penyebab menggunakan metode *Root Cause Analysis* (RCA), serta menyusun rekomendasi perbaikan melalui *preventive maintenance*. Penelitian dilakukan di PT Indah Kiat Pulp & Paper Tbk Perawang dengan objek penelitian sebanyak 11 unit excavator. Data dikumpulkan melalui observasi dan dokumentasi, kemudian dianalisis menggunakan *Fishbone Diagram* dan metode *5 Why*. Hasil penelitian menunjukkan bahwa kebocoran oli terjadi pada komponen *hydraulic hose*, *hydraulic pump*, *seal dan gasket*, *control valve*, *sambungan fitting*, serta *swing bearing*. Faktor penyebab dominan berasal dari aspek *machine*, *method*, dan *material*, sedangkan akar penyebab utama adalah belum optimalnya pelaksanaan *preventive maintenance*. Rekomendasi perbaikan meliputi peningkatan inspeksi rutin, penggantian komponen sesuai umur pakai, serta pengawasan kondisi unit secara berkala. Penerapan rekomendasi tersebut diharapkan dapat mengurangi risiko kebocoran oli dan meningkatkan keandalan operasional excavator.

Kata Kunci: *Excavator*, Kebocoran Oli, *Root Cause Analysis*, *Fishbone Diagram*, *Preventive Maintenance*.

**ANALYSIS OF COMPONENT FAILURES CAUSING OIL
LEAKAGE IN EXCAVATOR ENGINE AND HYDRAULIC
SYSTEMS USING ROOT CAUSE ANALYSIS (RCA) METHOD AT
PT INDAH KIAT PULP & PAPER TBK PERAWANG**

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ABSTRACT

Oil leakage in the engine and hydraulic systems of excavators is a common problem that can reduce equipment reliability and affect operational efficiency. This study aims to identify the components causing oil leakage, analyze the root causes using the Root Cause Analysis (RCA) method, and develop corrective action recommendations through preventive maintenance. The research was conducted at PT Indah Kiat Pulp & Paper Tbk Perawang using 11 excavator units as the research objects. Data were collected through field observations and documentation, then analyzed using the Fishbone Diagram and the 5 Why method. The results showed that oil leakage occurred in several components, including the hydraulic hose, hydraulic pump, seals and gaskets, control valve, fitting connections, and swing bearing. The dominant contributing factors were machine, method, and material, while the main root cause was the ineffective implementation of the preventive maintenance system. The proposed corrective actions include improving routine inspections, replacing components according to their service life, and enhancing regular monitoring of equipment conditions. The implementation of these recommendations is expected to reduce the risk of oil leakage and improve the operational reliability of excavators.

Keywords: Excavator, Oil Leakage, Root Cause Analysis, Fishbone Diagram, Preventive Maintenance.