ABSTRAK

Peningkatan aktivitas *overhaul* komponen mayor pada unit *Dump truck* Komatsu HD785-7 di Plant Rebuild Center (PRC) Narogong PT Saptaindra Sejati mendorong perlunya strategi efisiensi biaya perawatan, khususnya pada elemen biaya *spareparts* yang menjadi komponen terbesar dalam struktur biaya *overhaul*. Salah satu upaya yang dilakukan perusahaan adalah meningkatkan penggunaan suku cadang OEM/substitusi sebagai alternatif dari suku cadang *genuine*. Namun, keputusan penggunaan OEM/substitusi tidak dapat hanya didasarkan pada harga awal yang lebih rendah, melainkan juga perlu mempertimbangkan tingkat keandalan dan biaya siklus hidup komponen secara keseluruhan. Penelitian ini bertujuan menganalisis efisiensi biaya *overhaul* komponen mayor HD785-7 melalui perbandingan penggunaan suku cadang OEM/substitusi dan genuine. Penelitian menggunakan pendekatan kuantitatif dengan memanfaatkan data riwayat komponen dan pencatatan perawatan pada sistem SAP periode 2024–2025. Objek penelitian meliputi komponen *Engine, Torque flow, Differential*, dan *Final drive*. Analisis dilakukan melalui pengukuran keandalan berbasis umur pakai aktual (*service life*) dan kejadian perawatan tidak terjadwal (*redo*), serta evaluasi ekonomi menggunakan *Life Cycle Cost Analysis* (LCCA) berbasis *Cost per Hour* (CpH). Hasil penelitian menunjukkan bahwa rata-rata umur pakai komponen OEM/substitusi sebesar 33.000 HM, lebih rendah 8,3% dibandingkan komponen *genuine* yang mencapai 36.000 HM. Selama periode pengamatan, kejadian redo teridentifikasi pada kelompok OEM/substitusi, sedangkan kelompok *genuine* tidak menunjukkan *redo*. Dari sisi ekonomi, CpH komponen OEM lebih rendah dibandingkan *genuine* pada seluruh komponen yang dianalisis, yaitu *Engine* (2,18 vs 2,46 $/HM), *Torque flow* (1,43 vs 1,52 $/HM), *Differential* (0,96 vs 1,07 $/HM), dan Final drive (1,22 vs 1,38 $/HM). Analisis sensitivitas menunjukkan komponen *Torque flow* memiliki margin toleransi paling sempit terhadap kenaikan harga OEM, sehingga memerlukan pengendalian mutu dan pemantauan performa paling ketat. Secara keseluruhan, penggunaan OEM/substitusi dinilai layak secara ekonomi dengan syarat umur pakai tidak turun melewati titik impas dan risiko *redo* tetap terkendali.

Kata kunci: LCCA, *cost per hour*, OEM, *genuine*, *overhaul*, HD785-7, keandalan.

ABSTRACT

The increasing volume of major component overhaul activities for Komatsu HD785-7 dump trucks at PT Saptaindra Sejati's Plant Rebuild Center (PRC) Narogong has created a strong need for maintenance cost efficiency, particularly in spare parts procurement, which represents the largest cost element in overhaul activities. One of the company's strategic efforts is to increase the use of OEM/substitute spare parts as an alternative to genuine parts. However, the decision to use OEM/substitute parts cannot be based solely on lower initial prices, but must also consider component reliability and total life cycle cost. This study aims to analyze the cost efficiency of major component overhaul for HD785-7 through a comparison between OEM/substitute and genuine spare parts. The study employed a quantitative approach using component history and maintenance records extracted from the SAP system for the 2024–2025 period. The research objects consisted of Engine, Torque Flow/Transmission, Differential, and Final Drive components. The analysis was carried out by measuring reliability based on actual service life and unscheduled maintenance events (redo), as well as by evaluating economic feasibility using Life Cycle Cost Analysis (LCCA) based on Cost per Hour (CpH). The results show that the average service life of OEM/substitute components was 33,000 HM, which was 8.3% lower than genuine components at 36,000 HM. During the observation period, redo cases were identified only in the OEM/substitute group, while the genuine group showed no redo. From an economic perspective, OEM components resulted in lower CpH values across all analyzed components, namely Engine (2.18 vs 2.46 $/HM), Torque Flow (1.43 vs 1.52 $/HM), Differential (0.96 vs 1.07 $/HM), and Final Drive (1.22 vs 1.38 $/HM). Sensitivity analysis indicated that the Torque Flow component had the narrowest tolerance margin to OEM price increases, requiring stricter quality control and performance monitoring. Overall, the use of OEM/substitute spare parts was considered economically feasible, provided that service life does not fall below the break-even threshold and redo risk remains controlled.

Keywords: *LCCA, cost per hour, OEM, genuine, overhaul, HD785-7, reliability.*