

## INTISARI

Salah satu unit *haul truck* Caterpillar 789D milik PT Kaltim Prima Coal dengan *equipment number* T776 mengalami *engine jammed* pada mesin diesel model 3516. Salah satu komponen yang terjadi kegagalan adalah *crankshaft*. *Crankshaft* merupakan komponen mesin yang berfungsi untuk menerima momen inersia yang dihasilkan piston dan mentransfer penuh tenaga mesin yang akan dikeluarkan. Dampak dari kerusakan pada *crankshaft* yaitu mesin tidak dapat berputar (*engine jammed*). Penelitian ini dilakukan dengan tujuan menganalisis permasalahan penyebab kegagalan *crankshaft*.

Penelitian dilakukan berdasarkan data *maintenance history*, riwayat pemasangan, hasil *oil sampling*, data *oil top up* dan pengamatan komponen hasil *overhaul*. Hasil *oil sampling* dilakukan dengan mengambil sampel oli lalu dianalisis di laboratorium untuk mengetahui kandungan *wear metal* dan kontaminasi pada oli. Mengidentifikasi hasil *overhaul* berupa temuan kerusakan lainnya.

Hasil penelitian berdasarkan hasil pengumpulan data menunjukkan bahwa penyebab utama dari kegagalan *crankshaft* jika melihat umur *engine* yang masih dini ada kemungkinan terjadi *manufacturing defect* yang dialami *crankshaft*. Hasil *overhaul* berupa temuan keausan pada *bearing connecting rod* no 3 dan no 4, serta *discolorotion* pada beberapa komponen. Keausan dan *discolorotion* juga dapat mempercepat patahnya *crankshaft* yang dari awal sudah timbul keretakan.

**Kata kunci:** mesin diesel, *crankshaft*, *failure analysis*, *adhesive wear*.

## **ABSTRACT**

*One of the Caterpillar 789D haul truck units owned by PT Kaltim Prima Coal with equipment number T776 suffered damage engine jammed on the diesel engine model 3516. One of the components that fail is the crankshaft. The crankshaft is an engine component that functions to receive the moment of inertia generated by the piston and transfers the full engine power to be released. The impact of damage to the crankshaft is that the engine cannot rotate (engine jammed). This research was conducted with the aim of analyzing the problems causing crankshaft failure.*

*The study was conducted based on historical maintenance data, installation history, oil sampling results, oil top up data and observations of overhauled components. The results of oil sampling are carried out by taking oil samples and then analyzed in the laboratory to determine the content of wear metal and contamination in the oil. Identifying overhaul results in the form of other damage findings.*

*The results of the study based on the results of data collection indicate that the main cause of crankshaft failure if you look at the early age of the engine, there is a possibility of a manufacturing defects experienced by the crankshaft. The results of the overhaul are findings of wear on the connecting rod bearings no. 3 and no 4, as well as discoloration on several components. Wear and discoloration can also accelerate the fracture of the crankshaft, which has caused cracks from the start.*

**Keywords:** *diesel engine, crankshaft, failure analysis, adhesive wear.*