

INTI SARI

Unit top drive tesco HCIS 650ton dengan nomor lambung 486 milik PT. Nabors Drilling Technologies mengalami kerusakan pada mesin diesel dengan jenis kerusakan *make a window* di blok mesin. Penelitian ini dilakukan untuk menganalisis penyebab kerusakan pada mesin berdasarkan data riwayat perawatan, program analisa pelumas, *daily filter cut*, Riwayat penambahan oli, dan *overhaul*.

Penelitian ini dilakukan dengan mengidentifikasi data riwayat perawatan berupa data penambahan oli mesin, program analisis oli mesin, data *daily filter cut* & melakukan *overhaul*. Program analisis pelumas dan *daily filter cut* dilakukan dengan mengambil sampel oli pelumas lalu dianalisis di laboratorium untuk mengetahui keausan dan kontaminan pada oli pelumas mesin. *Overhaul* juga dilakukan meliputi mengidentifikasi hasil *overhaul* berupa temuan kerusakan kemudian dilakukan *root cause analysis*.

Riwayat perawatan mesin dan uji lab menunjukkan kenaikan wear metal, dan hasil overhaul menunjukkan kerusakan hanya pada *connecting rod no 1*. Berdasarkan hasil analisis, penyebab kerusakan pada mesin diesel Detroit Series 16V2000 pada unit *top drive* adalah kehilangan daya ikat pada *bolt Connecting rod* yang mengikat *connecting rod* dengan *cap bearing connecting rod*. Hilangnya daya ikat menyebabkan *fatigue fracture* pada baut, dan menyebabkan *connecting rod* terlepas dari *crank shaft*. Dampak lepasnya *connecting rod* dari *crankshaft* menyebabkan *connecting rod* menumbuk blok mesin sehingga menyebabkan blok mesin berlubang (*make a window*).

Kata kunci: mesin diesel, analisis kerusakan, sistem *top drive*,

ABSTRACT

Top drive unit tesco HCIS 650ton with unit number 486 belonging to PT. Nabors Drilling Technologies suffered a failure to the engine makes a window. This research was conducted to analyze the cause of engine failure based on history maintenance, oil analysis report, daily filter cut, additional engine oil, and overhaul.

This research was conducted by identifying maintenance history data in the form of engine oil addition data, engine oil analysis program, daily filter cut data & overhauling. The oil analysis program and daily filter cut are carried out by taking a sample of lubricating oil and then analyzing it in the laboratory to determine wear and contaminants in engine lubricating oil. Identify the results of the overhaul in the form of finding damage then root cause analysis is carried out.

Based on the results of the analysis that has been carried out, the cause of failure to the detroit series 16V2000 diesel engine on the top drive unit is the bolt connecting rod that binds the connecting rod to the cap bearing of the connecting rod loses its binding power, so that the bolt breaks, then that the connecting rod is separated from the crankshaft. The impact of the disconnection of the connecting rod from the crankshaft causes the connecting rod to hit the engine block, causing the engine block to have a hole (make a window).

Keywords: Diesel engine, damage analysis, top drive system.