

INTISARI

Pada tanggal 6 Maret 2019, salah satu unit *Bulldozer* D85ESS-2A Komatsu milik PT Kaltim Prima Coal dengan nomor lambung E263 mengalami kerusakan *high blow-by pressure*. *High blow-by pressure* merupakan peristiwa banyaknya kebocoran tekanan hasil pembakaran yang mengalir menuju *crankcase* sehingga tekanan di dalam *crankcase* melebihi batas yang diizinkan. Dampak dari kerusakan *high blow-by pressure* yaitu penurunan tenaga pada mesin. Penelitian ini dilakukan untuk mengetahui empat hal: penyebab, dampak, cara memperbaiki, dan rekomendasi perawatan untuk mencegah kerusakan *high blow-by pressure*.

Penelitian ini dilakukan dengan mengidentifikasi data pada *technical analysis report*, program analisis pelumas, dan hasil *overhaul*. *Technical analysis report* dilakukan dengan cara mengukur *blow-by pressure* dan *engine speed* untuk mengetahui performa *engine*. Program analisis pelumas dilakukan dengan mengambil sampel oli pelumas lalu dianalisis di laboratorium untuk mengetahui keausan dan kontaminan pada oli pelumas *engine*.

Dari hasil penelitian, dapat ditarik kesimpulan bahwa penyebab kerusakan *high blow-by pressure* adalah tingginya kebocoran tekanan hasil pembakaran akibat masuknya kontaminan berupa debu ke dalam ruang bakar yang menyebabkan gesekan abnormal pada *piston*, *piston ring*, dan *cylinder liner* sehingga celah di antara komponen tersebut semakin besar dan kebocoran tekanan hasil pembakaran semakin banyak. Dampak yang ditimbulkan dari kerusakan *high blow-by pressure* adalah penurunan tenaga mesin, sehingga unit *Bulldozer* D85ESS-2A Komatsu milik PT Kaltim Prima Coal harus dilakukan perbaikan dengan mengganti komponen yang rusak agar unit dapat bekerja dengan optimal.

Kata kunci: mesin diesel, *blow-by*, kebocoran tekanan, *bulldozer*.

ABSTRACT

On 6 March 2019, one of bulldozer D85ESS-2A Komatsu owned by PT Kaltim Prima Coal with serial number E263 had high blow-by pressure damage. High blow-by pressure is a high leakage of the pressure from combustion chamber that flows into the crankcase, so the pressure inside the crankcase exceeded the permitted limit. The effect of high blow-by pressure damage is the decreasing of the engine power. This research aims to find out four things: impact of high blow-by pressure, cause of high blow-by pressure, solutions to fix high blow-by pressure, and recommendation to prevent high blow-by pressure.

This research was done by identifying the data of technical analysis report, history maintenance, and overhaul. Technical analysis report was done by measuring blow-by pressure and engine speed to find out the engine performance. The lubricant analysis program was done by taking a sample of lubricating oil and then analyzing it in a laboratory to find out wear and contaminants in the engine lubricating oil.

According to the result of this research, it can be concluded that the cause of the high blow-by pressure damage is the high pressure leakage from combustion chamber caused by contaminants admission from the dust into the combustion chamber which causes the abnormal friction between piston, piston ring, and cylinder liner so the gap between them increases so the pressure that leaks from combustion chamber increases. The effect of this damage is the decreasing of the engine power so it must be repaired by replacing the damaged components to make the unit can work optimally.

Keywords: diesel engine, blow-by, pressure leakage, bulldozer.