ABSTRAK

Penelitian ini bertujuan untuk merancang jadwal perawatan mesin wheel loader di PT. Kraton dengan pendekatan Condition Based Monitoring (CBM), yang mengandalkan data kondisi aktual untuk mengidentifikasi kerusakan secara dini. Faktor utama yang diamati meliputi suhu mesin, tekanan oli, serta getaran pada bearing, mesin utama, dan fan. Pengumpulan data dilakukan selama 66 hari operasional dan dianalisis melalui uji keseragaman serta kategori kondisi (normal, waspada, anomali). Hasil penelitian menunjukkan bahwa metode CBM mampu mengidentifikasi tren kerusakan sebelum terjadi kegagalan, sehingga memungkinkan penyusunan jadwal perawatan yang lebih efisien. Penelitian ini juga menghasilkan perangkat monitoring harian hingga tahunan serta prosedur preventif yang mendukung stabilitas operasi alat berat. Penerapan CBM terbukti dapat mengurangi downtime, mencegah kerusakan fatal, dan meningkatkan umur pakai mesin.

Kata Kunci: Wheel Loader, Perawatan Mesin, Condition Based Monitoring, Getaran, Suhu, Tekanan Oli

ABSTRACT

This research aims to design a maintenance schedule for wheel loader machines at PT. Kraton using the Condition Based Monitoring (CBM) method, which relies on real-time machine condition data to detect early signs of failure. Key parameters observed include engine temperature, oil pressure, and vibration levels in the bearing, engine, and fan components. Data was collected over 66 operational days and analyzed using control uniformity tests and condition classification (normal, warning, anomaly). The results show that CBM effectively detects failure trends, allowing for more efficient maintenance planning. This study also produced daily to annual monitoring tools and preventive procedures to support stable heavy equipment operation. The CBM approach successfully reduces downtime, prevents critical failures, and extends machine lifespan.

Keywords: *Wheel Loader, Machine Maintenance, Condition Based Monitoring, Vibration, Temperature, Oil Pressure*