

**DEVELOPING DATA ANALYTIC TOOLS FOR KOMATSU MACHINE'S
PERFORMANCE AT PT. FAJAR ANUGERAH DINAMIKA**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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PT. Fajar Anugerah Dinamika, one of the coal mining contractors in East Kalimantan Province of Indonesia operates 17 machines of Komatsu heavy equipment in the mining concession of PT. Berau Coal. Several Key Performance Indicators (KPI) formulated by PT. Fajar Anugerah Dinamika in maintaining its machine performance namely Physical Availability (PA), Mean Time Between Failure (MTBF), and Mean Time to Repair (MTTR). The problem is the average value of KPI is under the target by the end of 2021. To overcome this problem, this research was carried out using the Waterfall Methodology. A dashboard developed to visualize all parameters related to machine performance. The result of the study shows that the dashboard has been functioning properly. It can be seen by accuracy test of 75% and User Acceptance Test (UAT) result of 100% during dashboard development. User Experience Questionnaire (UEQ) result from some related respondents also in excellent level. Sequentially, the average PA, MTBF, MTTR of Komatsu machines also improved from 84,88% to 90,85%, 70,04 to 73,82 hours, 3,65 to 3,30 hours, almost achieve in each KPI target. This research recommends that the dashboard can be implemented consistently and developed continuously in order to achieve the company's vision.

Keywords: Key Performance Indicator, Machine Performance, Data Analytics, Dashboard, Waterfall Methodology

ABSTRAK

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PT. Fajar Anugerah Dinamika, salah satu kontraktor pertambangan batubara di Provinsi Kalimantan Timur Indonesia mengoperasikan 17 alat berat Komatsu di wilayah konsesi pertambangan PT. Berau Coal. *Key Performance Indicator (KPI)* yang dirumuskan oleh PT. FAD dalam menjaga performa mesinnya yaitu *Physical Availability (PA)*, *Mean Time Between Failure (MTBF)*, dan *Mean Time to Repair (MTTR)*. Perusahaan menghadapi masalah dimana nilai rata-rata *KPI* berada di bawah *target* pada akhir tahun 2021. Penelitian ini dilakukan dengan menggunakan Metodologi *Waterfall. Dashboard* dikembangkan untuk menampilkan semua parameter kinerja alat berat. Hasil penelitian menunjukkan bahwa *dashboard* berfungsi dengan baik. Hal ini terlihat dari hasil uji akurasi sebesar 75% dan hasil *User Acceptance Test (UAT)* sebesar 100% selama pengembangan *dashboard*. Hasil *User Experience Questionnaire (UEQ)* dari responden terkait juga berada pada *level excellent*. Secara berurutan, rata-rata *PA*, *MTBF*, *MTTR* mesin juga meningkat dari 84,88% ke 90,85%, 70,04 ke 73,82 jam, 3,65 ke 3,30 jam, hampir mencapai *target* setiap *KPI*. Penelitian ini merekomendasikan agar *dashboard* dapat diimplementasikan secara konsisten dan dikembangkan secara berkesinambungan guna mencapai visi perusahaan.

Keywords: Key Performance Indicator, Machine Performance, Data Analytics, Dashboard, Waterfall Methodology

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LEMBAR PERSEMBAHAN

Thesis ini saya persembahkan kepada orangtua, istri, anak-anak, teman-teman, dosen, dan perusahaan tercinta PT. United Tractors Tbk. yang telah mendukung studi saya sampai saat ini.

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