

CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS

Physical Availability (PA) in relation to one of the performance criteria of mining equipment, is closely related to the strategy for carrying out maintenance in a company, especially mining contractors. PT. XYZ, which is one of the mining contractors in the East Kalimantan region, has a large quantity of heavy equipment, including 10x HD785-7 dump trucks. Currently, PT. XYZ has implemented a heavy equipment maintenance program that refers to continuous data management obtained from the vehicle health monitoring system (VHMS) installed on the HD785-7 as well as discrete data obtained from the lubricant analysis program and daily inspection program.

5.1 Conclusions

1. The result of the study in developing the Machine Health Monitoring Dashboard of Dump Truck HD785-7 project can answer PT. XYZ's operational problems in reducing monthly unscheduled downtime of Komatsu Dump Truck HD785-7 to below allowable downtime duration in average 587,6 hours. The use of this machine health monitoring systems is as pre-warning information that can prevent unscheduled breakdown.
2. The result of the study in developing the Machine Health Monitoring Dashboard of Dump Truck HD785-7 project can answer PT. XYZ's operational problems in achieving the Physical Availability (PA) of HD785-7 dump truck. The average PA of Komatsu HD785-7 dump truck significantly increased from 84.04% to 89.10% which achieved the target of 88.00%.

5.2 Recommendations

Several recommendations are given for further study as well as for improving the quality of the machine health monitoring dashboard even better:

1. This research is not perfect and still needs to be developed, considering that there are still manual processes, such as inputting in excel or spreadsheet to summarize condition-based maintenance: Summary Downtime, Lubricant Analysis Program, Periodic Inspection Program, and VHMS which must then

be uploaded to the data warehouse. So that in the future this project will be facilitated so that it can be included in the digitalization project at PT. XYZ.

2. The machine health dashboard was created to make it easier to carry out control and monitoring functions as well as better data visualization. However, following up on the information that has been displayed on the machine health dashboard becomes more important so that the performance especially Physical Availability (PA) of Komatsu dump truck HD785-7 can be achieved and maintained. So, the advice is to be consistent in using the dashboard and follow up so that the goals of Komatsu heavy equipment owners are achieved.

GLOSSARY

Condition Based-Maintenance a maintenance technique that uses sensor devices to collect real-time measurements (i.e. pressure, temperature, or vibration) on equipment.

HD785-7 a large off-highway dump truck designed and manufactured by Komatsu Ltd., a Japanese multinational corporation that specializes in construction, mining, and industrial equipment. The HD785-7 is part of Komatsu's HD 7 Series of mining trucks, specifically engineered for demanding mining and construction applications where the transportation of large quantities of materials over long distances is required.

Key Performance Indicators a measurable parameter used to evaluate the success of an organization, employees, etc. in meeting performance goals.

Lubricant Analysis Program a maintenance system implemented scientifically to detect wear and tear and symptoms of damage to components as early as possible caused by unnatural wear without having to disassemble the components.

Maintenance Management the process of maintaining a company's assets and resources, which has the primary goal of controlling and reducing costs, time, and resources.

Machine Health Monitoring summary of the overall health of the unit to make it easier to monitor the health condition of the unit and determine the unit's performance to get a high ready-to-use value as well as in terms of making predictive maintenance plans.

Mean Time Between Failure shows the average number of effective machine hours between the first failure and the next failure in a certain period.

Mean Time to Repair the average time required to carry out repairs every time damage occurs within a certain period.

Operation and Maintenance Manual a manual that contains procedures for maintaining and operating a machine.

Physical Availability a percentage that shows the availability of a tool to be used by considering lost time due to other than mechanical causes, for example breaks, slippery roads, damaged roads, rain, etc.

Periodic Inspection inspections are carried out periodically and repeatedly on equipment with the aim of determining the actual condition of the equipment.

Predictive Maintenance a maintenance technique that uses tools and data analysis techniques to detect anomalies in equipment operation and possible defects in equipment and processes so that equipment owners can repair them before they result in failure.

Run-to-Failure a maintenance strategy in which equipment or machinery is operated until it breaks down or fails, and only then is maintenance performed. In other words, no proactive or preventive maintenance is carried out, and the equipment is used continuously until it can no longer function. This approach is often considered a reactive maintenance strategy.

Subject Matter Expert

Vehicle Health Monitoring System a technology installed on Komatsu heavy equipment to monitor important parameters on the equipment to then be analysed and make strategic decisions.

Weighted Scoring a method of evaluating and ranking items or options based on predefined criteria, where certain criteria are assigned different levels of importance or priority, represented by weights. This approach allows decision-makers to give more significance to specific factors that are deemed more crucial in the decision-making process.

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"Result Never Betray The Process"

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Presentation
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TRAININGS & COURSES

- 2008
Apprenticeship of Heavy Equipment Instructor
- 2009
New Employee Orientation Program (NEOP)
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• Training of Trainers (TOT)
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• Aplikasi Penggunaan Alat - Alat Berat (APAAB)
• Konselor SEHATI
- 2012
• On-The Job Training : Komatsu Remanufacturing Asia
• Failure Analysis
• SuksesMulia
• Service Business Process Re-Engineering (SBPR)
- 2013
• Effective Self Management
• Sapta Pesona
- 2014
• Problem Solving & Decision Making
• United Tractors Guaranteed Product Support (UT-GPS)
- 2015
• KOMTRAX PLUS & PLM
• BNSP Assesor Competence for LSP-ABI
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- 2016
• Component Overhaul : Hydraulic System Dump Truck
- 2017
• Fundamental Communication & Interpersonal Skill
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- 2018
• Maintenance Management
• Customer Maintenance Improvement Program (CMIP)
• Customer Operation Improvement Program (COIP)
• Maintenance & Support Partnership Program (MSPP)
- 2019
• Pelatih Utama
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MACHINE SPECIALIZATIONS



PERSONAL

Serve ██████████
Organized ██████████
Leading ██████████
Uniqueness ██████████
Totality ██████████
Innovative ██████████
Open Mind ██████████
Networking ██████████

ACHIEVEMENTS

- Finalist of Best Instructor 2012
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- Best Innovation Champion 2016
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