

**IMPROVING PHYSICAL AVAILABILITY KOMATSU DUMP TRUCK
HD785-7 BY OPTIMIZING MACHINE HEALTH MONITORING SYSTEM**

By

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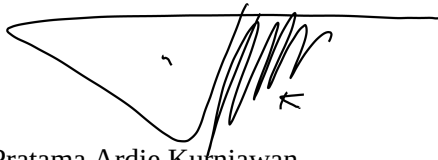


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STATEMENT BY THE AUTHOR

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.



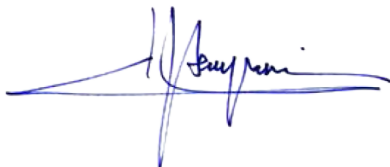
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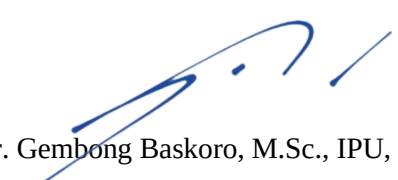


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ABSTRACT

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PT. XYZ, one of the coal mining contractors in East Kalimantan Province of Indonesia operates 10 machines of Komatsu dump truck HD785-7. Several Key Performance Indicators (KPIs) were formulated by PT. XYZ 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 PA is under the target by the end of July 2023. To overcome this problem, this research was carried out using the DMAIC framework. A machine health monitoring dashboard of dump truck HD785-7 was developed to visualize all parameters related to machine performance to predict impending failure. The result of the study shows that the machine health monitoring dashboard has been functioning properly. It can be seen by the result of the increase in average PA from 84,04% to 89,10%. This research recommends that the machine health dashboard of dump truck HD785-7 be implemented consistently and developed continuously to achieve the company's target.

Keywords: Predictive Maintenance, Machine Health, Physical Availability, Unscheduled Downtime, DMAIC.

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DEDICATION

I dedicate this thesis to my beloved family: my wife Luky Dian Setyowati, my three little kids: Maherza Zhafran Arrafif, Misha Farah Adzkiya, and Ganendra Shakeel Abqary for supporting my studies, my parents for the blessings and prayers, my MME lecturers for sharing and has opened up a way of thinking, and my beloved company PT. United Tractors Tbk. for giving me a chance to catch up on one of my goals as well as my dream.

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While studying for a Master of Mechanical Engineering, especially in Engineering Management, I gained a very useful and meaningful learning experience through a quality curriculum and program of international standard.

Hopefully, the knowledge I gain in the future can provide me with the opportunity to increase my potential to be more useful for my family, company, nation, and state.

TABLE OF CONTENTS

	Page
STATEMENT BY THE AUTHOR.....	2
ABSTRACT	4
DEDICATION.....	6
ACKNOWLEDGEMENTS	7
TABLE OF CONTENTS	8
LIST OF FIGURES	12
LIST OF TABLES	14
CHAPTER 1 - INTRODUCTION.....	15
1.1 Background.....	16
1.2 Research Problems	18
1.3 Research Objectives	19
1.4 Significance of Study	19
1.5 Research Questions	19
1.6 Hypothesis	20
CHAPTER 2 - LITERATURE REVIEW.....	21
2.1 Maintenance Management.....	21
2.2 Condition-Based Maintenance	23
2.3 Predictive Maintenance	24
2.4 Availability	25
2.4.1. Instantaneous or Point Availability	26
2.4.2. Average Uptime Availability (or Mean Availability)	26

2.4.3.	Steady State Availability	27
2.4.4.	Inherent Availability.....	27
2.4.5.	Achieved Availability.....	28
2.4.6.	Operational Availability	29
2.4.7.	Physical Availability (PA).....	29
2.5	Reliability	30
2.6	Continuous Data	31
2.7	Discrete Data	31
2.8	Vehicle Health Monitoring System	32
2.9	Periodic Inspection	35
2.9.1.	Scheduled Frequency	35
2.9.2.	Comprehensive Checklists	35
2.9.3.	Visual and Functional Examination	35
2.9.4.	Documentation	35
2.9.5.	Periodic Inspection Komatsu Dump Truck HD785-7	36
2.10	Lubricant Analysis Program	40
2.10.1.	Oil Sampling.....	41
2.10.2.	Laboratory Analysis	41
2.10.3.	Wear Particle Analysis	42
2.10.4.	Contamination Detection.....	42
2.10.5.	Oil Condition Monitoring.....	42
2.10.6.	Predictive Maintenance Strategy.....	42
2.10.7.	Extend Equipment Life	43
2.10.8.	Cost Savings	43
2.10.9.	Customized Maintenance Plans.....	43
2.11	Previous Study	44
CHAPTER 3 – RESEARCH METHODS		45
3.1	Scope of study	45
3.2	Research Timeline	45

3.3	Research Flow Process	46
3.4	Research Method Framework.....	46
3.5	Analytical Method	47
3.5.1.	Define	47
3.5.2.	Measure	51
3.5.3.	Analyze.....	54
3.5.4.	Improve	55
3.5.5.	Control.....	57
CHAPTER 4 – RESULTS AND DISCUSSIONS		59
4.1	Data Collection	59
4.1.1.	Physical Availability (PA) Data	59
4.1.2.	Downtime Summary Data	60
4.1.3.	Vehicle Health Monitoring System (VHMS) Data	61
4.1.4.	Periodic Daily Inspection Data.....	63
4.1.5.	Lubricant Analysis Program Data	65
4.2	Data Analysis.....	67
4.2.1.	Root Cause Analysis (RCA).....	67
4.2.2.	5-Why Analysis	67
4.3	Improvement.....	69
4.3.1.	Weighted Scoring	69
4.3.2.	Building Machine Health Monitoring Dashboard.....	71
4.3.3.	Maintenance Management Training.....	75
4.4	Control	76
4.4.1.	Downtime Calculation.....	76
4.4.2.	Physical Availability (PA) Calculation	78
CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS		79
5.1	Conclusions	79
5.2	Recommendations	79
GLOSSARY.....		81

REFERENCES.....	83
CURRICULUM VITAE.....	86

LIST OF FIGURES

Figures	Page
Figure 1.1 Open-Pit Coal Mining Process.	17
Figure 1.2 Komatsu Machine Population at PT. XYZ.....	17
Figure 1.3 Physical Availability Komatsu Dump Truck HD785-7.	19
Figure 2.1 Maintenance Strategy Classification (British Standard Institution, 2010). 21	
Figure 2.2 Maintenance Management Classification Tree showing Various Sub-Areas.	22
Figure 2.3 The V-Architecture of CBM.	23
Figure 2.4 Predictive Maintenance (PdM) Process and Technologies to Drive PdM. 25	
Figure 2.5 Illustration of Point Availability Approaching Steady State.	27
Figure 2.6 Workflow for developing data-driven ML model for fault detection.	30
Figure 2.7 VHMS wired data downloading and processing.	33
Figure 2.8 VHMS wireless data downloading and processing.	34
Figure 2.9 VHMS BAGUS Display.....	34
Figure 2.10 The basic of oil analysis for equipment maintenance.....	40
Figure 2.11 Hydraulic Oil Sampling of HD785-7	41
Figure 2.12 Illustration of contaminants contained in oil.	42
Figure 3.1 Research Flow Process.	46
Figure 3.2 Research Method Framework.....	47
Figure 3.3 Strategy Formulation.	50
Figure 3.4 Predictive Maintenance Workflow.	52
Figure 4.1 Downtime Summary HD785-7 PT. XYZ Jan-Jul'23.	60
Figure 4.2 Unscheduled Downtime Cause Classification HD785-7 PT.XYZ Jan- Jul'23.....	60
Figure 4.3 Ishikawa Diagram.....	67
Figure 4.4 Focus Group Discussion (FGD)	69
Figure 4.5 Machine Health Monitoring Dashboard – Summary	72

Figure 4.6 Machine Health Monitoring Dashboard – Single Machine Monitoring	74
Figure 4.7 Maintenance Management Training.....	76
Figure 4.8 Downtime Summary HD785-7 PT. XYZ Jan-Dec’23	77
Figure 4.9 Unscheduled Downtime Cause Classification HD785-7 PT. XYZ Jan- Dec’23	77
Figure 4.10 Summary PA HD785-7 PT. XYZ Before vs After Project.	78

LIST OF TABLES

Table	Page
Table 2.1 Inspection Zone 1 of HD785-7	37
Table 2.2 Inspection Zone 2 of HD785-7	38
Table 2.3 Inspection Zone 3 of HD785-7	39
Table 2.4 Previous Study	44
Table 3.1 Time Frame of Research Study	45
Table 3.2 Project Team	49
Table 3.3 Data Collection Plan	51
Table 4.1 Summary of Physical Availability HD785-7 PT. XYZ	59
Table 4.2 Pareto Problem by Duration HD785-7 PT. XYZ January – July 2023	61
Table 4.3 Summary VHMS Download Data January - July 2023.....	62
Table 4.4 Summary Periodic Daily Inspection HD785-7 January – July 2023.....	64
Table 4.5 Summary Lubricant Analysis Program January – July 2023	66
Table 4.6 5-Why Analysis	68
Table 4.7 Machine Health Parameter Weighted Scoring.....	70
Table 4.8 Dashboard Information – Summary Page.....	73
Table 4.9 Dashboard Information – Single Machine Monitoring Page.....	75
Table 4.10 Pareto Problem Summary HD785-7 PT. XYZ January – December 2023	78