

ACHIEVING PHYSICAL AVAILABILITY TARGET OF EXCAVATOR  
PC210-10M0 USING FMEA AND TNA IN SITE SANGATTA AREA

By

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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

### ACHIEVING PHYSICAL AVAILABILITY TARGET OF EXCAVATOR PC210-10M0 USING FMEA AND TNA IN SITE SANGATTA AREA

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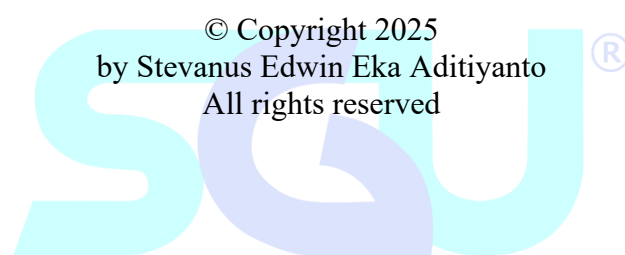
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PT. ABC has received a complaint from PT. XYZ as their customer because of poor performance excavator PC210-10M0. The research problem is PC210-10M0 machines' performance by Physical Availability (PA) of PT. ABC has been under target 85% for the last six months. Research objective is achieving target PA Excavator PC210-10M0 PT. ABC 85%. This research will follow the DMAIC framework with several analysis tools, including Fish Bone Diagram, Design Thinking, Training Need Analysis (TNA), and Failure Mode and Effect Analysis (FMEA) to find the most significant root cause of the problem. SWOT, TOWS, and QSPM analysis are used to find and select the most suitable strategies, then Cost-Benefit Analysis is used to determine the final action plan derives from the strategies. There are 5 action plans implemented: develop web-based applications, offer maintenance contracts, arrange basic maintenance training program, undercarriage replacement, and oil damper monitoring. After implementing the improvement activities, breakdown from undercarriage and engine reduce in duration and frequency. PA PC210-10M0 rise from 78.47% at the end of November 2024 to 88.56% at the end July 2025. The implementation of Preventive Maintenance along with mechanics' development programs, has a positive impact on the increase in PA of the PC210-10M0.

*Keywords: Availability, FMEA, TNA, DMAIC, SWOT.*



## **DEDICATION**

I dedicate this work to my beloved wife,  
whose unwavering support, patience, and love have been my constant source of  
strength throughout this journey.

And to my dear children,  
who inspire me every day with their joy, curiosity, and boundless dreams.



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## TABLE OF CONTENTS

|                                                  | Page |
|--------------------------------------------------|------|
| STATEMENT BY THE AUTHOR.....                     | 2    |
| ABSTRACT.....                                    | 3    |
| DEDICATION.....                                  | 5    |
| ACKNOWLEDGEMENTS.....                            | 6    |
| TABLE OF CONTENTS.....                           | 7    |
| LIST OF FIGURES .....                            | 10   |
| LIST OF TABLES.....                              | 13   |
| CHAPTER 1 - INTRODUCTION.....                    | 14   |
| 1.1. Background.....                             | 14   |
| 1.2. Research Problems.....                      | 20   |
| 1.3. Research Objectives.....                    | 20   |
| 1.4. Significance of Study.....                  | 21   |
| 1.5. Research Questions.....                     | 21   |
| 1.6. Hypothesis.....                             | 21   |
| 1.7. Research Scope .....                        | 21   |
| 1.8. Research Limitation .....                   | 21   |
| CHAPTER 2 - LITERATURE REVIEW .....              | 22   |
| 2.1. Theoretical Perspectives .....              | 22   |
| 2.1.1 Maintenance Strategy .....                 | 23   |
| 2.1.2 Failure Mode & Effect Analysis (FMEA)..... | 28   |
| 2.1.3 Pareto Diagram.....                        | 31   |
| 2.1.4 Training Need Analysis .....               | 32   |
| 2.1.5 Training Needs Assessment (TNA).....       | 36   |
| 2.1.6 Design Thinking .....                      | 40   |

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| 2.1.7 Design Thinking Process .....                                   | 41 |
| 2.1.8. Overall Equipment Effectiveness (OEE).....                     | 42 |
| 2.2. Previous Studies.....                                            | 43 |
| CHAPTER 3 - RESEARCH METHODS .....                                    | 48 |
| 3.1. Continuous Improvement.....                                      | 48 |
| 3.2. Define Phase .....                                               | 50 |
| 3.2.1 Design Thinking Analysis to Define Customer's Requirements..... | 51 |
| 3.2.2 Project Charter .....                                           | 52 |
| 3.2.3 Project Team Structure .....                                    | 53 |
| 3.2.4 Maintenance Contract Package Offering.....                      | 55 |
| 3.3. Measure Phase .....                                              | 57 |
| 3.3.1 Pareto Problem Analysis .....                                   | 58 |
| 3.3.2 Maintenance Competency Assessment .....                         | 58 |
| 3.3.3 Assessment Maintenance Process (CMIP).....                      | 59 |
| 3.4. Analyze Phase .....                                              | 60 |
| 3.5. Improve Phase.....                                               | 62 |
| 3.6. Control Phase .....                                              | 63 |
| CHAPTER 4 - RESULTS AND DISCUSSIONS .....                             | 64 |
| 4.1. Measure Phase .....                                              | 64 |
| 4.1.1 Data Collection Results .....                                   | 64 |
| 4.1.2 Pareto Problem Analysis Results.....                            | 64 |
| 4.1.3 Maintenance Competency Assessment Results.....                  | 66 |
| 4.1.4 Assessment Maintenance Process (CMIP) Results .....             | 67 |
| 4.2. Analyze Phase .....                                              | 68 |
| 4.2.1 Root Cause Analysis using Fish Bone Diagram.....                | 68 |
| 4.2.2 Design Thinking Analysis .....                                  | 70 |
| 4.2.3 Failure Mode and Effect Analysis (FMEA) .....                   | 72 |
| 4.2.4 Training Need Assessment (TNA) Analysis .....                   | 76 |
| 4.2.6 Selecting Strategy Implementation.....                          | 78 |
| 4.3. Improve Phase.....                                               | 81 |

|                                                        |     |
|--------------------------------------------------------|-----|
| 4.3.1 Develop Web-Based Applications.....              | 83  |
| 4.3.2 Offer PMC contract .....                         | 88  |
| 4.3.3 Arrange Basic Maintenance Training Program ..... | 91  |
| 4.3.4 Undercarriage Replacement .....                  | 93  |
| 4.3.5 Damper monitoring .....                          | 97  |
| 4.2. Control Phase .....                               | 98  |
| 4.2.1 Guidance Appsheet Application.....               | 98  |
| 4.2.2 New Check Sheet Periodic Service .....           | 99  |
| 4.2.3 Weekly Meeting Company and PT. ABC .....         | 99  |
| 4.2.4 Audit CMIP .....                                 | 100 |
| 4.3. Discussion.....                                   | 101 |
| 4.3.1 Review Pareto Problem .....                      | 101 |
| 4.3.2 Review Competency Assessment Score.....          | 104 |
| 4.3.3 Review Audit CMIP Score.....                     | 106 |
| 4.3.4 Review RPN (Risk Priority Number).....           | 107 |
| 4.3.5 Review Physical Availability (PA) .....          | 108 |
| CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS .....      | 110 |
| 5.1. Conclusions.....                                  | 110 |
| 5.2. Recommendations.....                              | 110 |
| GLOSSARY .....                                         | 112 |
| REFERENCES .....                                       | 113 |
| CURRICULUM VITAE.....                                  | 116 |

## LIST OF FIGURES

| Figures                                                                                                                         | Page |
|---------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Figure 1.</b> United Tractors Products .....                                                                                 | 14   |
| <b>Figure 2.</b> Komatsu PC210-10M0 General Specifications.....                                                                 | 15   |
| <b>Figure 3.</b> Sales Trend Komatsu excavator PC210-10M0.....                                                                  | 15   |
| <b>Figure 4.</b> Coverage Area of UT Site A .....                                                                               | 16   |
| <b>Figure 5.</b> PC210-10M0 Physical Availability Trend PT. ABC .....                                                           | 18   |
| <b>Figure 6.</b> Matrix Relationship between Physical Availability and Working Hours ...                                        | 19   |
| <b>Figure 7.</b> Relationship Chart Physical Availability, Utilization Availability, and Working Hours PC210-10M0 PT. ABC ..... | 20   |
| <b>Figure 8.</b> Mind Map Literature Review .....                                                                               | 22   |
| <b>Figure 9.</b> Availability Time of Equipment in Mining Operation.....                                                        | 23   |
| <b>Figure 10.</b> Maintenance Generation.....                                                                                   | 25   |
| <b>Figure 11.</b> Maintenance Strategy of PT. XYZ .....                                                                         | 27   |
| <b>Figure 12.</b> FMEA Methods Workflows .....                                                                                  | 30   |
| <b>Figure 13.</b> Pareto Diagram .....                                                                                          | 31   |
| <b>Figure 14.</b> Step to Conduct Training Need Analysis .....                                                                  | 35   |
| <b>Figure 15.</b> Mechanics' Development Process .....                                                                          | 39   |
| <b>Figure 16.</b> Design thinking frameworks .....                                                                              | 42   |
| <b>Figure 17.</b> DMAIC Framework and Research Methods .....                                                                    | 49   |
| <b>Figure 18.</b> DMAIC Methods and Techniques.....                                                                             | 49   |
| <b>Figure 19.</b> SOP Operation Excellence Partnership .....                                                                    | 50   |
| <b>Figure 20.</b> Define Phase Flow Process in DMAIC Framework.....                                                             | 51   |
| <b>Figure 21.</b> Empathy Map PT. ABC Current Business Situation.....                                                           | 52   |
| <b>Figure 22.</b> Project Charter .....                                                                                         | 53   |
| <b>Figure 23.</b> Partnership Organization Structure.....                                                                       | 54   |
| <b>Figure 24.</b> Various Maintenance Contract Package.....                                                                     | 56   |
| <b>Figure 25.</b> The Difference between PMC with Others Maintenance Package .....                                              | 56   |
| <b>Figure 26.</b> Measure Phase Flow Process in DMAIC Framework.....                                                            | 57   |
| <b>Figure 27.</b> Pareto Problem Analysis Flow Process in Measure Phase.....                                                    | 58   |

|                                                                                           |    |
|-------------------------------------------------------------------------------------------|----|
| <b>Figure 28.</b> Standard Operating Procedure (SOP) Training Need Analysis (TNA).....    | 58 |
| <b>Figure 29.</b> CMIP Audit Scheme for Customer .....                                    | 59 |
| <b>Figure 30.</b> Analyze Phase Flow Process in DMAIC Framework .....                     | 61 |
| <b>Figure 31.</b> Improve Phase Flow Process in DMAIC Framework .....                     | 62 |
| <b>Figure 32.</b> Control Phase Flow Process in DMAIC Framework .....                     | 63 |
| <b>Figure 33.</b> FGD for Data Collection .....                                           | 64 |
| <b>Figure 34.</b> Breakdown Contribution June-November 2024 PC210-10M0 PT. ABC .          | 65 |
| <b>Figure 35.</b> Pareto Problem June-November 2024 PC210-10M0 PT. ABC by Duration .....  | 65 |
| <b>Figure 36.</b> Pareto Problem Jun-Nov 2024 PC210-10M0 PT. ABC by Frequency .....       | 66 |
| <b>Figure 37.</b> Initial Maintenance Assessment Results .....                            | 67 |
| <b>Figure 38.</b> CMIP Score Milestone PT. ABC .....                                      | 68 |
| <b>Figure 39.</b> Fishbone Diagram.....                                                   | 69 |
| <b>Figure 40.</b> Solution Idea for Project Manager PT. ABC.....                          | 71 |
| <b>Figure 41.</b> Initial Average Competency Score of Participants.....                   | 78 |
| <b>Figure 42.</b> SWOT Analysis PT. ABC .....                                             | 79 |
| <b>Figure 43.</b> Strategies based on TOWS Analysis .....                                 | 80 |
| <b>Figure 44.</b> FGD Process to Select Final Solutions.....                              | 82 |
| <b>Figure 45.</b> Project Teams Conduct a Meeting with Head Office.....                   | 85 |
| <b>Figure 46.</b> Features Discussion and Development Application Process.....            | 85 |
| <b>Figure 47.</b> Homepage of Appsheet Application.....                                   | 86 |
| <b>Figure 48.</b> Socialization and Trial Appsheet Application to PT. ABC.....            | 87 |
| <b>Figure 49.</b> Weekly Meeting Appsheet Implementation .....                            | 87 |
| <b>Figure 50.</b> PMC Offering Presentation to PT. ABC Head Office.....                   | 88 |
| <b>Figure 51.</b> Example of Periodical Service Report.....                               | 89 |
| <b>Figure 52.</b> Periodical Service Execution and Update Activities in Application ..... | 90 |
| <b>Figure 53.</b> Weekly Meeting PMC with PT. ABC .....                                   | 90 |
| <b>Figure 54.</b> Initial Assessment Process for Mechanics PT. ABC.....                   | 91 |
| <b>Figure 55.</b> In-Class Training Process for Mechanics PT. ABC .....                   | 92 |
| <b>Figure 56.</b> On Job Instruction Training for Mechanic PT. ABC .....                  | 93 |
| <b>Figure 57.</b> P2U Officer Conduct Undercarriage Wear Measurement.....                 | 93 |
| <b>Figure 58.</b> Undercarriage Breakdown because of Track Loose and Track Off .....      | 94 |
| <b>Figure 59.</b> Undercarriage Cleaning and Washing Process.....                         | 95 |

|                                                                                                    |     |
|----------------------------------------------------------------------------------------------------|-----|
| <b>Figure 60.</b> Undercarriage Inspection and Track Adjustment Process.....                       | 95  |
| <b>Figure 61.</b> New Genuine Undercarriage for PC210-10M0 Next Replacement .....                  | 96  |
| <b>Figure 62.</b> Abnormal Condition of Engine Damper PC210-10M0 PT. ABC.....                      | 97  |
| <b>Figure 63.</b> Engine Damper PC210-10M0 Monitoring Program .....                                | 97  |
| <b>Figure 64.</b> Appsheet Application User's Guide .....                                          | 98  |
| <b>Figure 65.</b> New Periodical Check Sheet PC210-10M0.....                                       | 99  |
| <b>Figure 66.</b> Weekly Meeting Review Company with PT. ABC.....                                  | 100 |
| <b>Figure 67.</b> Audit Customer Maintenance Improvement Program Process for PT. ABC<br>.....      | 100 |
| <b>Figure 68.</b> Pareto Problems Dec 2024 – July 2025 PC210-10M0 by Duration.....                 | 101 |
| <b>Figure 69.</b> Pareto Problems Dec 2024 – July 2025 PC210-10M0 by Frequency .....               | 102 |
| <b>Figure 70.</b> Undercarriage Measurement Results Before and After Replacement.....              | 103 |
| <b>Figure 71.</b> Breakdown Duration and Contribution Trend PC210-10M0 June 2024-July<br>2025..... | 104 |
| <b>Figure 72.</b> Initial – Final Assessment Average Score Training PKPM PC210-10M0<br>.....       | 104 |
| <b>Figure 73.</b> Maintenance Assessment Results After in Class Training and OJI .....             | 105 |
| <b>Figure 74.</b> CMIP Score Milestone PT. ABC Include After Improvement .....                     | 106 |
| <b>Figure 75.</b> PC210-10M0 Average PA Trend PT. ABC Before – After Improvement<br>.....          | 108 |
| <b>Figure 76.</b> Improvement Maintenance Roadmap PT. ABC 2024-2026.....                           | 111 |

## LIST OF TABLES

| Tables                                                                                                                                                  | Page |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Table 1.</b> PC210-10M0 PA Trend Last 6 Month PT. ABC Analysis .....                                                                                 | 17   |
| <b>Table 2.</b> Description of The Maintenance Concepts Generations .....                                                                               | 26   |
| <b>Table 3.</b> Process Improvement Methods Comparation .....                                                                                           | 30   |
| <b>Table 4.</b> People Skill Development Methods Comparation .....                                                                                      | 38   |
| <b>Table 5.</b> Mechanics' Development Process .....                                                                                                    | 40   |
| <b>Table 6.</b> Previous Studies .....                                                                                                                  | 46   |
| <b>Table 7.</b> CMIP Levelling and Point Range Score .....                                                                                              | 59   |
| <b>Table 8.</b> Example of CMIP PC210-10M0 Audit Form .....                                                                                             | 60   |
| <b>Table 9.</b> CMIP Audit Result PT. ABC in 2024.....                                                                                                  | 67   |
| <b>Table 10.</b> FGD Process with question topic: What is the root cause problem underperformance physical availability of PC210-10M0 in PT. ABC? ..... | 68   |
| <b>Table 11.</b> Severity Rating and Value Criteria .....                                                                                               | 73   |
| <b>Table 12.</b> Occurrence Rating and Value Criteria Level .....                                                                                       | 74   |
| <b>Table 13.</b> Detection Rating and Value Criteria .....                                                                                              | 75   |
| <b>Table 14.</b> Risk Priority Number (RPN) Calculation Results .....                                                                                   | 76   |
| <b>Table 15.</b> The Training Mapping Process .....                                                                                                     | 77   |
| <b>Table 16.</b> Quantitative Strategic Planning Matrix (QSPM) Results .....                                                                            | 81   |
| <b>Table 17.</b> Cost-Benefits Analysis to Select Final Action Plan.....                                                                                | 83   |
| <b>Table 18.</b> Final Action Plan with Its Specific Target.....                                                                                        | 83   |
| <b>Table 19.</b> The Example of Daily Breakdown Record PC210-10M0 PT. ABC.....                                                                          | 84   |
| <b>Table 20.</b> Result of Machine Inspection Program (PPM) .....                                                                                       | 89   |
| <b>Table 21.</b> PC210-10M0 Periodical Service Schedule .....                                                                                           | 89   |
| <b>Table 22.</b> Cost per Hour Undercarriage Genuine vs non-genuine (in Rupiah).....                                                                    | 96   |
| <b>Table 23.</b> Maintenance Assessment Results Before and After Training.....                                                                          | 105  |
| <b>Table 24.</b> CMIP Audit Result PT. ABC After Improvement.....                                                                                       | 106  |
| <b>Table 25.</b> Risk Priority Number (RPN) Calculation Results After Improvement ....                                                                  | 107  |