# ANALYSIS OF OVERALL EQUIPMENT EFFECTIVENESS (OEE) VALUE TO IMPROVE THE EFFECTIVENESS OF FLEXOGRAPHIC PRINTING MACHINE AT PT X

**UNDERGRADUATE FINAL PROJECT**

**Submitted as one of the requirements to obtain Sarjana Teknik (S.T.)**


**By:**

**ABDUL SIDDIQ SAMINAN**

**ID No. 004201900059**

**FACULTY OF ENGINEERING**

**INDUSTRIAL ENGINEERING STUDY PROGRAM**

**CIKARANG**


**JUNE, 2023**

# SIMILARITY CHECKING RESULT

abdul

ORIGINALITY REPORT

| 6% | 5% | 2% | 3% |
|---|---|---|---|
| SIMILARITY INDEX | INTERNET SOURCES | PUBLICATIONS | STUDENT PAPERS |

PRIMARY SOURCES

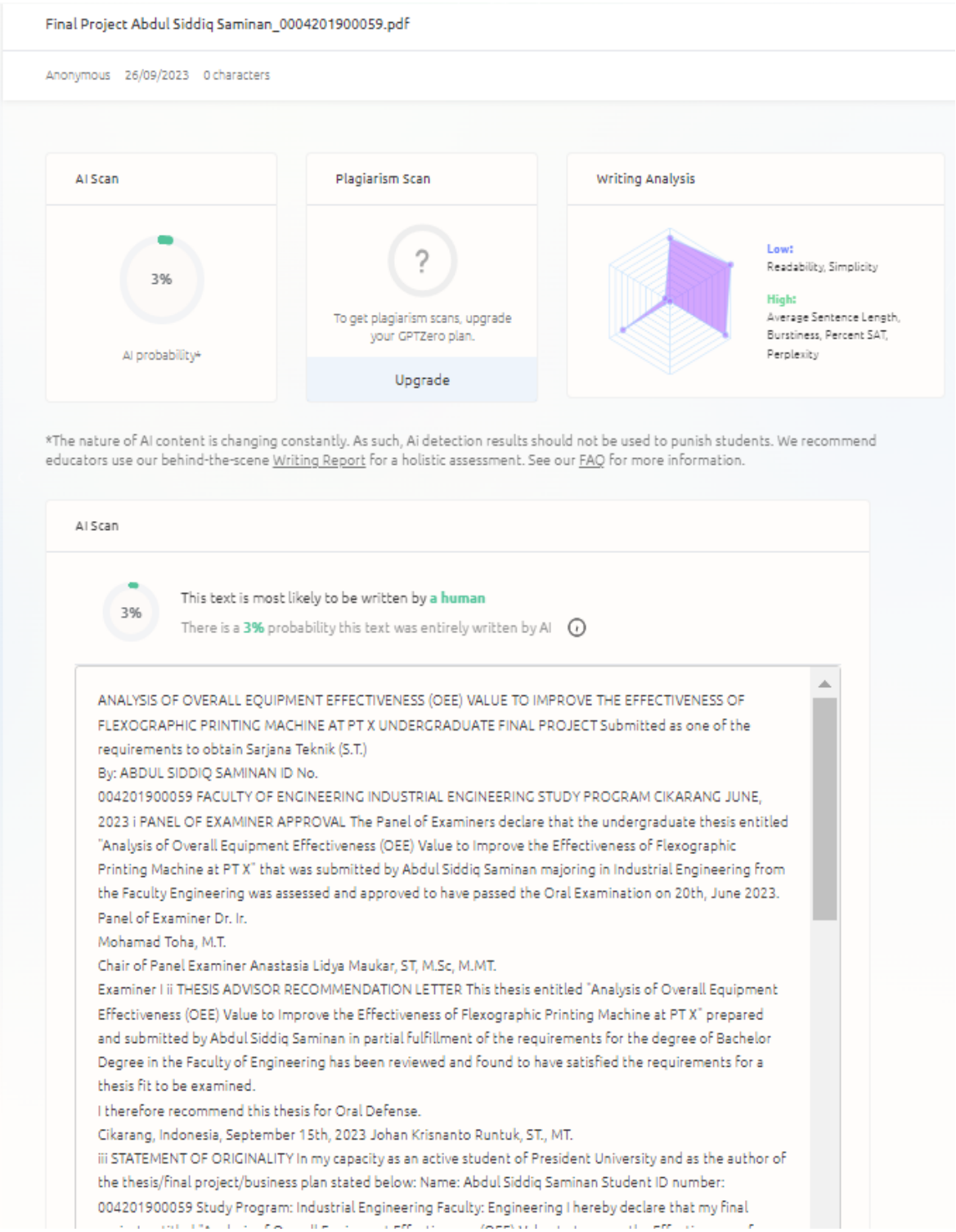
| | | |
|---|---|---|
| 1 | www.mdpi.com<br>Internet Source | 1% |
| 2 | www.journalcra.com<br>Internet Source | 1% |
| 3 | repository.president.ac.id<br>Internet Source | 1% |
| 4 | Submitted to President University<br>Student Paper | 1% |
| 5 | Submitted to Universitas Pendidikan Indonesia<br>Student Paper | 1% |
| 6 | Submitted to Kensington International College<br>Student Paper | <1% |
| 7 | Submitted to School of Business and Management ITB<br>Student Paper | <1% |
| 8 | www.coursehero.com<br>Internet Source | <1% |
| 9 | eprints.utar.edu.my | |

| | | |
|---|---|---|
| | Internet Source | <1 % |
| 10 | www.diva-portal.org<br>Internet Source | <1 % |
| 11 | fr.scribd.com<br>Internet Source | <1 % |
| 12 | repository.ub.ac.id<br>Internet Source | <1 % |
| 13 | Submitted to British University In Dubai<br>Student Paper | <1 % |
| 14 | Widy Setyawan, Akhmad Sutoni, Taufik Munandar, Mujiarto. "Calculation and Analysis of Overall Equipment Effektiveness (OEE) Method and Six Big Losses toward the Production of Corter Manchines in Oni Jaya Motor", Journal of Physics: Conference Series, 2021<br>Publication | <1 % |
| 15 | www.grin.com<br>Internet Source | <1 % |
| 16 | Damon S. Hartley, David N. Thompson, L. Michael Griffel, Quang A. Nguyen, Mohammad S. Roni. "Effect of Biomass Properties and System Configuration on the Operating Effectiveness of Biomass to Biofuel | <1 % |

Systems", ACS Sustainable Chemistry & Engineering, 2020
Publication

| | | | |
|---|---|---|---|
| Exclude quotes | Off | Exclude matches | Off |
| Exclude bibliography | Off | | |

# AI BASED PLAGIRISM CHECKING RESULT



# TABLE OF CONTENTS

THESIS ADVISOR RECOMMENDATION LETTER ..... ii
STATEMENT OF ORIGINALITY ..... iii
SCIENTIFIC PUBLICATION APPROVAL FOR ACADEMIC INTEREST ..... iv
ADVISOR APPROVAL FOR JOURNAL/INSTITUTION'S REPOSITORY ..... v
ABSTRACT ..... vi
ACKNOWLEDGEMENT ..... vii
TABLE OF CONTENTS ..... viii
LIST OF THE TABLE ..... x
LIST OF FIGURES ..... xi
CHAPTER I ..... 1
INTRODUCTION ..... 1
1.1 Background ..... 1
1.2 Problem Statement ..... 3
1.3 Objective ..... 3
1.4 Scope ..... 3
1.5 Assumption ..... 4
1.6 Research Outline ..... 4
CHAPTER II ..... 5
LITERATURE STUDY ..... 5
2.1 Effectiveness ..... 5
2.2 Overall Equipment Effectiveness (OEE) ..... 5
2.2.1. Availability Rate ..... 7
2.2.2. Performance Rate ..... 8
2.2.3. Quality Ratio ..... 8
2.3 PDCA Method ..... 9
2.3.1. Benefits of PDCA ..... 10
2.3.2. The process of the PDCA concept ..... 10
2.4 Fishbone Diagram ..... 12
2.5 Pareto Diagram ..... 14
2.6 Definition of 5W+ 2H ..... 15
CHAPTER III ..... 17
RESEARCH METHODOLOGY ..... 17
3.1. Theoretical Framework ..... 17

3.1.1. Initial Observation ..... 18
3.1.2. Problem Identification ..... 18
3.1.3. Literature Study ..... 18
3.1.4. Data Collection ..... 19
3.1.5. Data Analysis and Improvement ..... 19
3.1.6. Conclusion and Recommendation ..... 22
3.2. Research Framework ..... 22
CHAPTER IV ..... 23
DATA ANALYSIS AND IMPROVEMENT ..... 23
4.1. Initial Observation ..... 23
4.2. Data Collection ..... 24
4.3. Plan ..... 27
4.3.1. Analysis of Current Conditions with WAH &WSBH ..... 27
4.3.2. Analysis of Existing Causes ..... 30
4.4. Do ..... 36
4.4.1. Implementation of Plate Maintenance ..... 36
4.4.2. Revise Visual Management ..... 37
4.4.3. Determination of Standard Distance Between Crossbars ..... 39
4.4.4. Implementation of Determination of Standard Setting of anilox pressure. 41
4.5. Check ..... 43
4.6. Action ..... 47
CHAPTER V ..... 49
CONCLUSIONS AND RECOMMENDATIONS ..... 49
5.1 Conclusion ..... 49
5.2 Recommendation ..... 50
REFERENCES ..... 52

# LIST OF THE TABLE

Table 4.1 OEE machine data August - October 2022 (%) ..... 24
Table 4.2 WAH and WSBH tables ..... 28
Table 4.3 Table 5W + 2H ..... 34
Table 4.4 Table 5W + 2H ..... 35
Table 4.5 Table of Standard Determination of Maximum Distance Between Crossbars ..... 39
Table 4.6 Replication of Determination of Standard Distance of cross bar labels. ..... 41
Table 4.7 Frequency of Minor Stops Before and After Improvement ..... 44

# LIST OF FIGURES

Figure 2.1 Example of Fishbone Diagram .....14
Figure 2.2 Example of Pareto Chart.....15
Figure 3.1 Research Framework .....22
Figure 4.1 Flowchart of Print Process.....**Error! Bookmark not defined.**
Figure 4.2 Percentage diagram for AV, PR and QR F5 machine for the period August – October 2022 .....25
Figure 4.3 Average AV, PR & QR chart compared to Target F5 machine for the period August – October 2022 .....26
Figure 4.4 Pareto Minor Stop chart for the F5 machine for the period August – October 2022.....26
Figure 4.5 F5 Flexo Printing Machine Process Flow Chart.....28
Figure 4.6 Fishbone Diagram Concerning Miss Register.....33
Figure 4.7 Revised Visual Management for register plate.....38
Figure 4.8 Anilox pressure setting according to the Manual Book.....43
Figure 4.9 Pareto Chart of Minor Stops F5 machine from Nov 2022 to Jan 2023 46
Figure 4.10 Graph of OEE Achievements Before and After Improvement.....47