
FACULTY OF ENGINEERING

DEPARTMENT OF POLYMER, TEXTILE AND INDUSTRIAL ENGINEERING.

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DGI PROJECT REPORT

DESIGN OF AUTOMATED HAMMERING MACHINE

BY

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Abstract

This project aims at designing and fabricating an automated hammering machine that can perform hammering operations without the involvement of any human operator. This project is selected because no such machines are available in these industries. The introduction of an automated hammering machine in the industries will help the industries in prospering and it will make the operations safe and easy. Moreover, the project will have a greater impact on the metal industries. The machine will be capable of performing fast and accurate hammering operations with the help of a 16V battery. Mild steel is used for fabricating the machine. A large pulley and a shaft are connected with the help of a connecting rod. The spinning shaft will provide lateral motion to the rod. A mid-swinging arrangement is used for attaching the hammer and the connecting rod. A suitable bed will be developed for holding the work piece. Solid works is used for designing the machine.

The main objective of the project is to develop an automated hammering machine with the help of a pulley, shaft, connecting rod, hammer, and 16V battery to provide ease for the hammering operations. Future work may involve the development of a body case for the machine.

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We wish you all success

List of Acronyms (Symbols) used in the report:

| Symbol | Definition |
|--------|------------------------|
| V | Volt |
| Kg | Kilogram |
| Mm | millimeter |
| M | Meter |
| RPM | Revolutions per Minute |
| A | Ampere |
| W | Watt |
| T | Torque |

| | |
|-----|---------------------------------|
| P | Power |
| Nm | Newton-meter |
| N | Newton, Number of Cycles |
| FBD | Free Body Diagram |
| Sec | Second |
| D | Diameter |
| J | Polar Moment of Inertia, Joules |

List of Figures:

| | |
|--------------------------------------------------------------------------|----|
| Figure 1 Photo of the real system | 8 |
| Figure 2 Automated Hammering Machine | 11 |
| Figure 3 Automated Forging Machine | 12 |
| Figure 4 Results obtained by the authors | 13 |
| Figure 5 Residual Stresses against Plunger Stroke | 14 |
| Figure 6 Comparison of Materials for the Machine..... | 15 |
| Figure 7 Microscopic Image of the Defects and Stress Analysis | 15 |
| Figure 8 Architectural Design | 16 |
| Figure 9 Automatic Hammering Machine | 18 |
| Figure 10 Frame | 19 |
| Figure 11 1st Pulley | 19 |
| Figure 12 2nd Pulley | 19 |
| Figure 13 Shaft | 19 |
| Figure 14 Arm | 20 |
| Figure 15 Hammer | 23 |
| Figure 16 Assembly | 24 |
| Figure 17 Slider Crank Mechanism | 24 |
| Figure 18 Supporting Frame | 28 |
| Figure 19 Pulley One | 28 |
| Figure 20 Shaft | 29 |
| Figure 21 2nd Pulley | 29 |
| Figure 22 Arm | 30 |
| Figure 23 DC Motor | 30 |
| Figure 24 16 Volt Battery | 31 |
| Figure 25 Automatic Hammering Machine | 33 |
| Figure 26 Experimental Setup | 33 |
| Figure 27 Single hits obtained from the experiment (Time Vs Force) | 34 |

| | |
|--------------------------------------------------------------------------|----|
| Figure 28 Repeatability of the force | 35 |
| Figure 29 Force adjustment and repeatability of the adjusted force | 35 |
| Figure 30 FRF obtained from the manual hammering | 36 |
| Figure 31 FRF obtained from the automatic hammering | 36 |
| Figure 32 Task Division Chart | 40 |
| Figure 33 Members Contribution Chart | 43 |

List of Tables:

| | |
|-------------------------------------------|----|
| Table 1 The system measurements | 8 |
| Table 2 Constraints Table | 21 |
| Table 3 Time Duration Table | 41 |
| Table 4 Bill of Material of Project | 47 |

Table of Contents

| | |
|------------------------------------------------------------------|-----|
| Abstract | ii |
| Acknowledgments | iii |
| List of Acronyms (Symbols) used in the report: | iii |
| List of Figures: | v |
| List of Tables: | vi |
| Chapter 1: Introduction..... | 1 |
| 1.1 Project Definition | 1 |
| 1.2 Project Objectives | 1 |
| 1.3 Project Specifications..... | 1 |
| 1.4 Applications..... | 4 |
| Chapter 2: Literature Review | 5 |
| 2.1 Project background..... | 5 |
| Chapter 3: System Design..... | 7 |
| 3.1 Design Constraints and Design Methodology..... | 7 |
| 3.2 Engineering Standards and Codes | 14 |
| 3.3 Theory and Theoretical Calculations..... | 15 |
| 3.4 Product Subsystems and selection of Components | 20 |
| 3.5 Manufacturing and assembly (Implementation)..... | 24 |
| Chapter 4: System Testing and Analysis | 26 |
| 4.1 Experimental Setup, Sensors and data acquisition system..... | 26 |
| 4.2 Results, Analysis and Discussion | 27 |
| Chapter 5: Project Management..... | 31 |
| 5.1 Project Plan..... | 31 |
| 5.2 Contribution of Team Members..... | 35 |
| 5.3 Project Execution Monitoring..... | 36 |
| 5.4 Challenges and Decision Making..... | 38 |
| 5.5 Project Bill of Materials and Budget..... | 39 |
| Chapter 6: Project Analysis | 41 |
| 6.1 Life-long Learning | 41 |

| | | |
|-----|---------------------------------------------------|----|
| 6.2 | Impact of Engineering Solutions | 42 |
| 6.3 | Contemporary Issues Addressed | 42 |
| | Chapter 7: Conclusions and Future Recommendations | 44 |
| 7.1 | Conclusions | 44 |
| 7.2 | Future Recommendations | 45 |
| 8. | References | 46 |
| | Appendix A: CAD drawings and Bill of Materials | 47 |
| | International) | 50 |

Chapter 1: Introduction

1.1 Project Definition

This project is intended to design and manufacture a simple rotor test rig, where rotor faults can be inserted and tested. The test rig is to be fitted with vibration sensors to enable collecting data and use it to monitor the health of machines. The project is very important to the industry as through understanding the characteristics of failure, time and money will be saved. This is also very important from the safety perspective as this will lead to a safe operating environment for rotary machines.

1.2 Project Objectives

The main objectives of this project are:

1. To design an automated hammering machine that can give automated blows.
2. To replace the use of manual hammering for heavy-duty operations.
3. To fabricate an automated hammering machine that can help workers in hammering processes.
4. To increase the efficiency and accuracy of the hammering operations.

1.3 Project Specifications



Figure 1: Photo of the real system

The most reliable design of automatic hammering machine is described below along with their specification in order to show the different existing approaches to the small and portable automatic hammering concept.

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