



FINAL YEAR PROJECT REPORT

STAIR HYDRAULIC LIFTER

In fulfillment of the requirement
For degree of
BEE

By

S.M. BILAL AHMED	19340	BEE
H.M.IBAD	19257	BEE
AYESHA AFZAL	19245	BEE

SUPERVISED

BY

BURHAN AHMED

BAHRIA UNIVERSITY (KARACHI CAMPUS)

STAIR HYDRAULIC LIFTER

ACKNOWLEDGMENT

Firstly we would like to thank Assistant Professor Engr.Burhan Ahmed for giving us the idea for this project and for agreeing to be our project advisor. His help and guidance assisted us in proceeding with our project.

We would also like to thank the following individuals for their assistance in the project:

Madam Nabiha Fasial

Mr. Engr. Masood

Mr. Sajid

Mr. Abdul Aziz

And our Special thanks to Mr. Abdul Rehman for motivating us right from start and helping us whenever we asked. He taught PLC Programming which enabled us to complete this Project

STAIR HYDRAULIC LIFTER

ABSTRACT

Our objective is to carry out the automation of the hydraulic stair lift machine so we are using different tools and techniques, complete described in the project report .we have to take control of the whole system with the help of microcontroller and interfacing, hence various parameters to be controlled are explicitly written and highlighted in the report so the reader may get an easy understanding of the project while having an aerial view of the report. Conclusion and further consideration of the project are discussed at the end of the report. And then project is discussed briefly so that reader may know what's really inside the project.

STAIR HYDRAULIC LIFTER

Table of Contents

CHAPTER # 01.....	(14)
OBJECTIVE OF PROJECT:.....	(15)
AIM OF THE PROJECT:	(15)
WHY STAIR HYDRAULIC LIFTER:	(15)
SCOPE OF PROJECT:.....	(15)
OVERVIEW OF PROJECT:	(16)
CHAPTER # 02.....	(17)
ASSEMBLY:.....	(18)
INTERFACING OF RELAYS:.....	(18)
INTERFACING OF DC MOTORS:	(18)
INTERFACING OF LIMIT SWITCHES:	(18)
INTERFACING OF SCREW JACKS:	(18)
INTERFACING OF DC BATTERIES:.....	(18)
CHAPTER # 03	(19)
1 st PHASE:	(20)
2 nd PHASE:.....	(20)
3 rd PHASE:	(20)
4 th PHASE:	(20)
5 th PHASE:.....	(21)
FLOW CHART:.....	(22)
CHAPTER # 04	(27)
EARLIER RESEARCH:.....	(27)
ALTERNATING CURRENT:	(27)
INTRODCTION:.....	(27)
FIGURE 4-1.....	(27)
AREA OF AC:	(28)
WHY NOT USING AC IN THIS PROJECT:	(30)
HYDROAULIC MACHINE:.....	(30)
INTRODCTION:.....	(30)

STAIR HYDRAULIC LIFTER

DESCRIPTION:.....	(30)
WHY NOT USING HYDRAULIC MACHINE IN THIS PROJECT:	(40)
MICRO-CONTROLER:	(41)
INTRODUCTION:.....	(41)
DIFFERENCE BETWEEN MICROCONTROLLER AND MICROPROCESSOR:	(42)
FIGURE 4-4.....	(42)
MICRO-COMPUTER SYSTEM:	(43)
FIGURE 4 5	(43)
FIGURE4-6	(44)
CPU:.....	(45)
FIGURE4-7	(45)
FIGURE4-8	(46)
ROM AND RAM:	(47)
THE BUSES:	(47)
INPUT/OUTPUT DEVICE:.....	(48)
PROGRAMS OR SOFTWARE:.....	(49)
MICROS,MINIS, AND MAINFRAMES:.....	(49)
DESIGN EXAMPLE:	(49)
EXAMPLE:	(50)
FIGURE4-9	(50)
FLOW CHART:.....	(50)
FIGURE4 10.....	(49)
CONCULUSION:	(50)
WHY NOT USING MC IN THIS PROJECT:	(50)
CHAPTER # 05	(52)
SCREW JACK	(53)
INTRODCTON:.....	(53)
WORKING OF SCRW JACK:.....	(53)
COMPONENTS OF AUTOMATIC SCRW JACK:	(53)
ADVANTAGES:	(53)
FIGURE4-11	(53)

STAIR HYDRAULIC LIFTER

USE OF SCREW JACK IN STAIR HYDRAULIC LIFTER:.....	(54)
L-KEY BOLT:	(55)
5.20 INTRODCTION:.....	(55)
FIGURE4-12	(55)
VERSTABILITY:.....	(56)
USE OF L-KEY BOLT IN THIS PROJECT:.....	(56)
BALL BEARING:	(57)
INTRODCTION:.....	(57)
PRUPOSE:	(57)
FIGURE4-13	(57)
MAINTANCE:	(57)
USED FOR:	(57)
USE OF BALL BEARING IN THIS PROJECT:.....	(58)
FIGURE4-14	(58)
DC:	(59)
INTRODCTION:.....	(59)
FIGURE4-15	(59)
DC CIRCUITS:	(60)
FIGURE4-16	(60)
APPLICATIONS:.....	(61)
Use DC CURRENT IN THIS PROJECT:	(62)
DC MOTOR:	(63)
INTRODCTION:.....	(63)
EXPLANATION:.....	(63)
COMPONENTS OF DC MOTOR:	(63)
DC MOTOR OPERATION:	(63)
VOLTAGE EQUATION:.....	(64)
SHUNT DC MOTOR:	(64)
FIGURE4-16	(65)
SERIES DC MOTOR:	(65)
FIGURE4-17	(66)

STAIR HYDRAULIC LIFTER

FIGURE4-18	(66)
CUMULATIVE COMPOUND MOTOR:.....	(66)
FIGURE4-18	(67)
BACK EMF:.....	(67)
SPEED VS TORQUE REGULATION:	(67)
ROTATIONAL LOSSES OF THE DC MOTOR:.....	(67)
SPEED CONTROL OF DC MOTOR:	(68)
5.513 ARMATURE RESISTANCE CONTROLL:.....	(68)
DRAWBACKS OF DC MOTOR:	(68)
FIELD RESISTANCE CONTROL:-	(68)
VOLTAGE CONTROL:-	(68)
STARTING OF MOTOR:	(69)
USE OF DC MOTOR IN THIS PROJECT:	(69)
LIMIT SWITCH:.....	(70)
INTRODUCTION:	(70)
PARTS OF LIMIT SWITCH:	(70)
FUNCTION OF ACTUATOR:	(70)
EXPLANATION OF LIMIT SWITCH:	(71)
TWO CIRCUIT VS FOUR CIRCUIT:.....	(71)
NORMALLY OPEN OR NORMALLY CLOSED:.....	(71)
FIGURE4--19	(71)
SIDE AND TOP PUSH ACTUATOR EXAMPLES:.....	(72)
FIGURE4-20	(72)
MECHANICAL ADVANTAGE OF LIMIT SWITCH:	(72)
ELECTRICAL ADVANTAGES OF LIMIT SWITCH:	(72)
DISADVANTAGES OF LIMIT SWITCH:.....	(73)
APPLICATION OF LIMIT SWITCH:	(73)
USING OF LIMIT SWITCH IN THIS PROJECT:	(73)
BATTERY:	(74)
INTRODUCTION:	(74)
FIGURE4-21	(74)

STAIR HYDRAULIC LIFTER

USE OF BATTERY IN THIS PROJECT:	(74)
RELAY:	(75)
INTRODUCTION:	(75)
FIGURE4-22	(75)
BASIC DESIGN AND OPERATION:	(76)
RELAY TYPE INSTRUCTION:	(76)
LATCHING RELAY:	(77)
USE OF RELAY IN THIS PROJECT:	(77)
CHAPTER # 06.....	(78)
CONCLUSION:	(82)
REFERENCES:	(83)
BOOKS:	(83)
WEBSITES:	(83)