

**DESIGN AND BUILD OF AUTOMATIC SHUTDOWN
FOR BORING MACHINE**

By

Ellya Mahardika

1-1501-132

BACHELOR'S DEGREE
in

MECHANICAL ENGINEERING – MECHATRONICS CONCENTRATION
FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

SWISS GERMAN UNIVERSITY

SWISS GERMAN UNIVERSITY

EduTown BSD City

Tangerang 15339

Indonesia

March 2017

Revision after Thesis Defense on [16 February 2017]

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.

Ellya Mahardika

Student

Date

Approved by:

Edi Sofyan, B.Eng., M.Eng., Ph.D

Thesis Advisor

Date

Ir. Win Sukardi, M.Eng., MM., MBA., M.Hum

Thesis Co-Advisor

Date

Dr. Ir. Gembong Baskoro, M.Sc

Dean

Date

Ellya Mahardika

ABSTRACT

DESIGN AND BUILD OF AUTOMATIC SHUTDOWN FOR BORING MACHINE

By

Ellya Mahardika
Edi Sofyan, B.Eng., M.Eng., Ph.D
Ir. Win Sukardi, M.Eng., MM., MBA., M.Hum

SWISS GERMAN UNIVERSITY

This thesis presents how to make safety when student / operator which operate the machine make some mistake that make hazard happened. When hazard happened sometimes students will get panicked, and they doing something that can harm themselves, such as, touching the cutting tool, or sharp edges from materials.

Besides, when a machine is over load, it will impact to over current that cause the motor broken. To prevent this, author makes some tool that can detect over current, shutting down the machine automatically and sending a notification to instructor's / maintenance's smart phone.

The hardware is consists of, Current Sensor ACS 712, 1 Channel Relay Module, Arduino Uno, Ethernet Shield and connectivity to Internet Network. When Current Sensor measure value of current is more than set point, it will activated the relay and triggered Ethernet to push message to Smart Phone. If the relay active, the flow current will disconnected and the machine will automatically shut down.

The system has been demonstrated to be successful from 30 times experiments. The machine is 100% automatically shut down, and 97% message is delivered.

Key words : Automatically Shut Down, Arduino Uno, Ethernet, Smart Phone



DEDICATION

I dedicate this works for my beloved Mother.



ACKNOWLEDGEMENTS

Praise and great gratitude to Almighty God submitted by the author to the Lord Jesus Christ My Savior for blessings and help to complete this thesis on time.

On this occasion with great humility, I would like to thank you to all of those who have given me help and guidance so that this thesis can be finished. Completion of writing of this thesis, the author would like to thank to:

1. Mr. Dr. Ir. Gembong Baskoro, M.Sc as the Dean of Swiss German University
2. Mr. Edi Sofyan, B.Eng., M.Eng., Ph.D as my advisor and Mr. Ir. Win Sukardi, M.Eng., MM., MBA., M.Hum as my co-adviser in completing this thesis through the guidance and direction as well as the encouragement that are very useful and helpful for the preparation and writing of this thesis.
3. All lecturers in Mechatronics Concentration Faculty of Engineering and Information Technology, thanks for the knowledge during this time.
4. The biggest thanks especially to my lovely mom, who always pray, encouraging, giving love and compassion, giving material I need, working hard, always trying to do the best, to accompany me the day by day, support me all the time and given a smile and happiness in my life.
5. All of my friends for always pray for me so I can finish this well. I cannot mention them one by one here but I always remember and pray for them for all those who support and pray for me.
6. ATMI Cikarang, my workplace for giving me time to continue my study, and giving me time to finish my thesis.

Cikarang, Januari 2017

Ellya Mahardika

TABLE OF CONTENTS

	Page
DEDICATION	5
ACKNOWLEDGEMENTS	6
TABLE OF CONTENTS	7
LIST OF FIGURES	8
LIST OF TABLES	10
CHAPTER 1 – INTRODUCTION	11
1.1. Background.....	11
1.2. Research Problem	11
1.3. Research Objectives	12
1.4. Significance of Study	12
1.5. Research Question	12
CHAPTER 2 - LITERATURE REVIEW	13
2.1. Theoretical Perspectives.....	13
2.2. Previous Studies.....	20
2.3. Comparison of Case Study.....	29
CHAPTER 3 – RESEARCH METHODS	30
3.1. Hardware System Analysis and Design	30
3.2. Analytical Method	47
3.3. Design Justification.....	48
CHAPTER 4 – RESULTS AND DISCUSSIONS.....	54
4.1. Result.....	54
4.2. Discussion.....	56
CHAPTER 5 – CONCLUSIONS AND RECCOMENDATIONS	63
5.1. Conclusions	63
5.2. Recommendations	63
REFERENCES	64
CURRICULUM VITAE	66
ATTACHMENT	68