

SIMULATION AND EXECUTION OF ROBOTIC WELDING

HUDZAIFAH BIN Z.ARIFUDIN

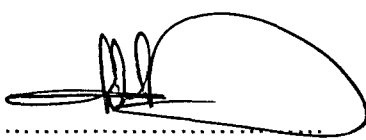
(2006882479)

A thesis submitted in partial fulfillment of the requirement for award of Bachelor
Engineering (Hons) Mechanical

Faculty of Mechanical Engineering
Universiti Teknologi Mara (UiTM)
40450 Shah Alam,
Selangor Darul Ehsan.

NOVEMBER 2009

"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any bachelor degree and is not concurrently submitted in candidature of any bachelor degree."

Signed: 
Date : 25 NOV 2009

HUDZAIFAH BIN Z.ARIFUDIN

UiTM No: 2006882479

ACKNOWLEDGEMENT

In the name of ALLAH Most Gracious and Most Merciful. I wish to express my sincere gratitude to everyone who has helped me to ensure this project can be finish successfully. I am gratefully acknowledging the assistance of many talented reviews that provided valuable critics, guidance and support during several review stages. First of all, I would like to thank my supervisor, Dr. Ing. Yupiter HP Manurung for his guidance and advice throughout my project. without his support and advices this project might not have been successful. I also would like to express my deepest gratitude and my appreciation to those below who have been giving me a lot of support and help whenever needed:

- Mr. Ghalib Tham Lecturer of Applied Welding Engineering
- Mohd Fathi Abdullah Robotic Engineer from ABB Malaysia
- Technicians of Advanced Manufacturing Laboratory

I also like to thank my families for their endless support in especially source of money and my spirit.

Thanks again, Wassalam.

ABSTRACT

The purpose of this project is to explore the features and generate basic understanding of robotic welding using IRB 2400_16kg which is a series of ABB Robot. This robot came with its own software ABB RobotStudio 5.10™. ABB Robot allows users to execute the program by two methods which are virtual controller method using the software and real controller method using Teach Pendant on robot. For this project, the author used both methods in order to complete this study. In virtual controller method, the study case is done by several steps involving CAD modeling, layout arrangement, rapid programming, I/O programming and simulation. The author used study cases for each step such as simple geometry for generate rapid program, creating new mechanism and synchronize it with robot using I/O programming and creating movement function in advanced rapid programming. In real controlling method, author used direct robot programming using Teach Pendant. To understand this method, the example of scale down ship panel is used. This involving creating target and movement of the robot manually. Besides that, there are some preparations of the program data on the robot that need to be determined and it is shown together as example in this study cases. Since this involving the study of welding ship panel, the appropriate welding parameter is also needed for real data documentation. As conclusion, all these activities above are used as guidance for beginner to understand both virtual and real controller in ABB Robot together with the relationships between each other. They also able to start creating their own programs and executing with the robot so that they can familiarize with the software and robot.

TABLE OF CONTENTS

CONTENTS

PAGE TITLE		i
ACKNOWLEDGEMENT		ii
ABSTRACT		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		viii
LIST OF FIGURES		ix
CHAPTER I	INTRODUCTION	1
	1.1 Objective of the Project	3
	1.2 Scope of the Project	4
	1.3 Significance of the Project	4
CHAPTER II	LITERATURE REVIEW	5
	2.1 Introduction to Robots	5
	2.2 Applications and Advantages of Robotic Welding	8
CHAPTER III	PROJECT METHODOLOGY	9
	3.1 Literature Review	11
	3.2 Training on Software	11