



**FABRICATION AND EXPERIMENTAL INVESTIGATION ON FILAMENT  
WOUND COMPOSITE**

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

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**APRIL 2005**

## ACKNOWLEDGEMENTS

### **Bismillahirrahmanirrahim....**

Alhamdulillah, after all I manage to complete this final project. First of all I would like to thank my project advisor Dr. Zahurin Halim for her enthusiastic support and advice during completing this project. I was very grateful for her help.

My deep thanks also go to Puan Zuraida Ahmad a Mechanical Engineering lecturer of “Kulliyah of Engineering” Islamic International University of Malaysia (IIUM). Her willingness to spend time and sharing useful information with me are very priceless. Her idea and suggestion are very valuable in completing this project.

I also would like to express my gratitude to all the lecturers, technicians and also lab assistant who are involved in this project. A lot of thanks for their technical advice while designing and setting up of the experiment equipments.

Special thank also goes to Puan Faizah Mohd Salleh from “Makmal Penyelidikan Sains” Universiti Teknologi Mara (UiTM) for her willingness to lend some equipments in completing this project

Last but not least, special thanks go to my family and friends for their never ending help and supports. Thank you.

## **ABSTRACT**

The project of “Fabrication and Experimental Investigation on the Filament Wound Composites” has been carried out by the final year student of Bachelor Engineering (Hons) Mechanical under supervision of Dr. Zahurin Halim. The purpose of this project is to understand and fabricate the filament wound composite (FWC) using the filament winding machine and also to do experimental investigation on the specimens fabricated. The experimental investigation consists of tensile test and constituent content experiment. The project has started with reading, collecting and gathering information process through several sources like books, journals, Internet and also by referring to lecturers and other experts. The fabrication process has been done in International Islamic University of Malaysia (IIUM) using the filament winding machine which has been fabricated earlier by Puan Zuraidah Ahmad a mechanical engineering lecturer in IIUM. The fabrication process used fibre glass and epoxy resin as raw materials. The tensile test has been done at the Strength Laboratory in Universiti Teknologi MARA (UiTM) Shah Alam which supervised by Mr. Ziyadi Zamri the staff of strength laboratory using the Instron tensile test machine. After completed the tensile test, the specimens had undergone the constituent content experiment. This experiment has been done in “Makmal Penyelidikan Sains” in Universiti Teknologi MARA (UiTM) under supervised by Puan Faizah Mohd Salleh as one of the researchers there. After all the test and experiment completed, the calculation to find the tensile strengths and the properties of the specimens started. All the results obtained were then compared to the journals for validation purposes.

## TABLE OF CONTENTS

<b>CONTENTS</b>		<b>PAGE</b>
TITLE		
ACKNOWLEDGEMENT		ii
ABSTRACT		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		viii
LIST OF FIGURES		ix
NOTATIONS AND ABBREVIATIONS		xi
<b>CHAPTER I</b>	<b>INTRODUCTION</b>	
1.0	Background of Project	1
1.1	Objective of Project	2
1.2	Scope of Project	2
1.3	Significant of Project	2

## **CHAPTER I**

### **INTRODUCTION**

#### **1.0 Background of Project**

In this final year project the main focuses are on fabrication and experimentation on the fabricated filament wound composite. For fabrication process the products were produced using the filament winding machine from the material science laboratory of International Islamic University of Malaysia (IIUM). There are 3 types of filament wound composite produced depend on their angle. The fabricated filament wound composite is fabricated with angle  $30^{\circ}$ ,  $55^{\circ}$ , and  $80^{\circ}$ .

These fabricated composites then will go through the experimental investigation process in order to find its properties such as stress, strain, volume fraction and the density of the product.

Along with the development of technology the demand for high strength but with lightweight products become one of the must in every product. If all these characteristics become a demand then composite is the best choice. Nowadays a lot of study and research has been carried out in order to find the new applications of composite.