



**AEROSPACE COMPONENT MANUFACTURING**

**RAZMI BIN ABD.MALEK**

**(98145176)**

**HARUN BIN MISNO**

**(98140110)**

**MOHD FAIEZAL MOHD ZAKI**

**(97327315)**

A thesis submitted in partial fulfillment of the requirements for the award of  
Diploma Mechanical Engineering

**Faculty of Mechanical Engineering  
Universiti Teknologi MARA (UiTM)**

**APRIL 2002.**

## ACKNOWLEDGEMENT

Assalamualaikum w.b.t. First of all we would like to thanks to Allah S.W.T for giving us the strength and patience to produce this report.

I wish to express my gratitude and appreciation to our lecture and project advisor En.Jamalludin Bin Mahmud ,who has given us a guidance and support throughout this project. Also I would like to convey appreciation to the management SME Aerospace Sdn Bhd. their engineer En. Akram bin Yusof for help us to produce this report, and thanks to En. Azman Nizbad (HR) for help us to equable the date for visit the factory. . Without them our project cannot be completed successfully. Also I with to thank to the staff of Mechanical Engineering Department, MARA University of Technology and all friends who has helped our directly or indirectly in completing this project work.

In addition our sincere thanks to our beloved fathers, mothers and family members for their encouragement in my studies in UiTM. Above all our greatest thanks to Allah in giving us good health and the trait of patience, both of which were instrumental in recomplishing this final year project.

## ABSTRACT

This project investigates how aerospace component manufacturing and their process. It also to review the process of aerospace component in local aerospace industry.

The process, based on programming planning, process planning, order raw material, QC check, store. Beside that we know the flow for sheet metal work. This process based on CNC rout; deburr of dress, temporary park mark, QC inspection, solution treatment and initial forming.

To study this process, we visit the aerospace company at Sungai Buloh. At there we know the data of present production. We also develop logbook to prove that we visit that company. After we get a data, we compile the data, do analysis and finally do recommendation and proposal project for future application.

We also study the material include advantage, disadvantage, failure, their density and thermal expansion coefficient.

## TABLE OF CONTENTS

CONTENTS	PAGE
PAGE TITLE	
ACKNOLEDGEMENT	i
ABSTRACT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	vii
LIST OF FIGURES	viii
COMPONY PROFILE	ix
PREFACE	xii

### CHAPTER I INTRODUCTION

1.1	Introduction To Composite Material	1
1.2	Composite	3
1.3	Composite Material	4
1.3.1.	Over A Wide Temperature Range Composite Material	
1.3.2.	Classification of Composite Material	4
1.4	Advantages Of Composite	7
1.5	Disadvantages Of Composite	8
1.6	Failure Modes Of Composites	
1.6.1	Delamination	9

1.6.2. Cracks	9
1.6.3. Hole Damage	9
1.6.4. Lighting Strike	10
1.7 Aluminum	
1.7.1 ALUMINUM USES	11
1.7.2 ALUMINUM FOR AEROSPACE	12

## CHAPTER II TYPE OF COMPOSITE

2.1 Metal matrix Composite (MMCs)	13
2.1.1 Application of MMCs	14
2.2 Ceramic Matrix Composite (CMCs)	15
2.2.1 Application of CMCs	16
2.3 Polymer Matrix Composite	17
2.4 Lamina Composite Material	20
2.5 Laminates	
2.5.1. Metal-Metal	21
2.5.2. Metal Organic	22
2.5.3. Metal Inorganic	22
2.5.4. Organic-Organic	22
2.5.5. Organic Inorganic	22
2.5.6. Inorganic-Inorganic	22
2.5.7. Particulate Composite Material	23
2.5.8. Material Background	
2.7.1. Matrix	24
2.7.2. Epoxy matrix	25
2.7.3. Polyester Matrix	26