UNIVERSITI TEKNOLOGI MARA

COMPARATIVE STUDY OF DRAG AND LIFT FORCE FOR DIFFERENT SHAPES OF HYDROFOILS

AINUL IFFAT BIN MOHAMAD ROSDI

Diploma

MARCH 2022

ACKNOWLEDGEMENT

All praise and thanks are due to Allah SWT for providing me with the chance to finish my research with good health and endurance. I appreciate the mechanical engineering department instructors giving me this opportunity. The option to register for this Final Year Project II (MEC300) course is one of the requirements for the course's graduation. Additionally, I want to acknowledge and convey my gratitude to my supervisor, TS. Nik Mohd Khairuddin Bin Nik Ismail, for his help and patient direction throughout the semester. I want to first and foremost wish everyone pleasure and success in everything they do. I pray to Allah that life will be better for us and that we would always succeed.

ABSTRACT

An important industrial requirement in recent years has been for better engineering designs, especially for connected structures. Nowadays, there is a desire to do optimizations so as to obtain ideal system properties. The research on hydrofoils as a device has not yet been expanded to the core. Therefore, there are still a lot of items that could be researched to enhance the manufacture of this device. The research focuses on creating two different types of hydrofoils only utilising a 3D printer. Hydrofoil must want more than just one of their own designs. It will be more expensive for them to produce more of them. The goals are to use a 3D printer to create and design hydrofoils, and to examine the hydrofoil's lift and drag forces utilising the CWC (Circulating Water Channel). Information is gathered via consulting books, websites, and articles. Such a hydrofoil design, 3D printer, or CWC (Circulating Water Channel).

TABLE OF CONTENTS

		Page
CON	NFIRMATION BY SUPERVISOR	i
AUT	THOR'S DECLARATION	ii
ABSTRACT		ii
ACŀ	KNOWLEDGEMENT	iv
TABLE OF CONTENTS		v
LIST	T OF FIGURES	vi
СНА	APTER ONE: INTRODUCTION	1
1.1	Background of Study	1
1.2	Problem Statement	1
1.3	Objectives	1
1.4	Scope of work	2
1.5	Significance of Study	2
СНА	APTER TWO: LITERATURE REVIEW	3
2.1	Hydrofoil	3
2.2	3D printer	4
2.3	Three Different Types of 3D Printing Technologies	5
2.4	3D printing method	5
2.5	Utilizing a 3D printer to create hydrofoils	6
СНА	APTER THREE: METHODOLOGY	7
3.1	Introduction	7
3.2	Flowchart	8
3.3	Result	8
	3.3.1 SolidWorks STL Design	9
	3.3.2 CWC-Circulating Water Channel	11

CHAPTER FOUR: RESULT AND DISCUSSION		14
4.1	Introduction	14
4.2	Result of Fabricated product	15
4.3	Result of CWC- Circulating Water Channel Experiment	16
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS		17
5.1	Conclusions	17
5.2	Recommendations	17

18