HEAT TRANSFER APPARATUS

By

Alvin Kusnadi
danielalvin47@gmail.com
11601051

BACHELOR'S DEGREE
in

MECHANICAL ENGINEERING – MECHATRONICS CONCENTRATION
FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

SWISS GERMAN UNIVERSITY
The Prominence Tower
Jalan Jalur Sutera Barat No. 15, Alam Sutera
Tangerang, Banten 15143 - Indonesia

Revision after Thesis Defense on 6 July 2020

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.

Alvin Kusnadi

_____ _____

Student Date

Approved by:

Dr. Yunita Umniyati, S.Si., M.Sc.

_____ _____

Thesis Advisor Date

(OPTIONAL)

Dr. Eka Budiarto, S.T., M.Sc.

_____ _____

Thesis Co-Advisor Date

Dr. Maulahikmah Galinium, S.Kom., M.Sc.

_____ _____

Dean Date

ABSTRACT

HEAT TRANSFER APPARATUS

By

Alvin Kusnadi
Dr. Yunita Umniyati, S.Si., M.Sc., Advisor
Dr. Eka Budiarto, S.T., M.Sc., Co-Advisor

SWISS GERMAN UNIVERSITY

In this era of globalization, scientific research is very useful in order for the students in university to learn about the subject itself. The main problem for each universities in Indonesia is that they are still lacking in terms of the completeness in the laboratory experiment tool. By doing this thesis, I hope that we can complete the experiment tool for the physics lab of Swiss German University one by one as many student will also create an experiment tool for the lab in the next few years. In this thesis, I will be making a heat transfer apparatus that can be use to conduct heat transfer experiment on the lab of physics in SGU, it will be controlled by arduino and the material for this thesis is very commonly used so that everyone can make the same heat transfer apparatus.

Keywords: Heat Transfer, Arduino, Thermocouple, Water.

DEDICATION

I dedicate this works to God

My Family

My Friends

My University

ACKNOWLEDGEMENTS

While working on this thesis, I learned a lot of new things that I didn't know while working together as a team. I learned how to do many things on my own and push myself to the limit. And I want to express my gratitude to these following people who have contributed to the completion of my Thesis with no particular order.

Firstly, I would like to thank my thesis advisor Mrs. Yunita Umniyati for the help and guidance during my thesis work. She is a very friendly person and helps me through a lot of hard times and keeps on motivating me to do my thesis. Secondly, I would like to thank Mr. Eka Budiarto, for all the help from during the first month of thesis until I am in quarantine at home because, he made me realize about a lot of things that are wrong with my thesis. Without him I won't know that I had a lot of mistakes. Also I thank Mr. Yohanes Freddy for helping me with my heat tranfser apparatus as he guides me on choosing the correct material for the apparatus. Lastly, I want to thank my family for the support, and their prayers for the 4 years of my study program in Swiss German University. I would like to thank my friends, to Group WA Keluarga, Audrey Satriajaya, Andrian Marcello, Agustinus Pratama, Billy Susantio, Einser Nahiman Turjono, Deo Marcellino Njoto, Heverett Louisicous, Ivan Goldy, Alvin Tri Hartono, Joseph Radya for being my friends these past 4 years in my uni life. Also, I want to thank PIKSI, my highschool friends for encouraging me to do my thesis, Joses Julius, Christopher Rolando, Kevin Sudjono, Axel Mannuel, Wibisana Jeremia, Caroline Wijaya, Michellyn Angelina, Levina Nathania, Ellen Dianty, Iola Novianty. Also to my friends Devin Alice Derian, Christopher Dog Clarence, Edwin Backdoor Salto, Andre Astral Pribadi, Elizabeth Vanessa, Charissa Naomi, Rizki Giovanni for giving me good humor everyday. I also would like to thank my classmates for helping me with my study during my university life. Lastly, I would like to thank my girlfriend Merry Oktofenti, for the support during the thesis work. I love you all.

And most importantly, Non of these is possible without the help of God's grace and blessings.

TABLE OF CONTENTS

Page

LIST OF FIGURES

Figures Page

LIST OF TABLES

Table Page