CERTIFICATION OF APPROVAL

Silo Management System

by

Nuraishah binti Zakaria

A project dissertation submitted to the
Electrical and Electronics Engineering Programme
Universiti Teknologi PETRONAS
in partial fulfilment of the requirement for the
BACHELOR OF ENGINEERING (Hons)
(EECTRICAL AND ELECTRONICS ENGINEERING)

Approved by,

_____
(Assoc Prof Dr Irraivan Elamvazuthi)
Project Supervisor

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

December 2009

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

_____

NURAISHAH BINTI ZAKARIA

ABSTRACT

Grain storage is very important in paddy industry. The grain is stored inside a tank called a silo. Although the grain is safely stored in the silo, the changing of temperature and humidity inside the silo will affect the grain. So, in order to control them, aeration system is implemented. Aeration is the process of moving air through a medium (grain storage) in order to control the temperature and moisture of the grain. Aeration system can prevent condensation from happening. It can also reduce microbial growth and remove bad odours caused by the microbial activity. Therefore, this project is designed to monitor and control the aeration process in the silo. This aeration system consists of a fan, vent, transition duct, perforated floor, sensors and a motor. When the temperature is higher than the set point, the fan will blow the air up through the silo. The heat from the warm grain will transfer to the air while the air is moving to the top. The air will flow out from the silo to the atmosphere through a vent. This report will discuss on the literature review, methodology, results and also discussion of this project. Literature review is more on the research of the aeration process. The methodology discusses the requirements needed to design an aeration system. The discussion consists of calculations of parameters such as the airflow rate and also the labview programming.

ACKNOWLEDGEMENTS

First of all, I would like to express my gratitude to my final year project supervisor, Assoc Prof. Dr Irraivan Elamvazuthi for giving me advices and support for this one year project. His encouragement has given me the strength to overcome the problems that I have encountered when the project is in progress.

Thanks to all the people that have helped me in achieving the objectives of the project especially the lecturers. The lecturers whom I consult have explained to me the basic theory to make this project works. I would like to thank to the mechanical and electrical technician for assisting me in finishing the prototype. Not forgetting Mrs Siti Hawa for helping me preparing the necessary document in order to make sure the project is running smoothly.

Most importantly, I would like to express my gratitude to my parent and sibling who had supported me in finishing the project. Their sacrifices and support has helped me a lot in this project.

Last but not least, I would like to extend my appreciation to my friends in University Technology PETRONAS (UTP) who has helped me and gave me some advices so that my project works and has successfully achieved the objectives.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES