WIRELESS VIBRATION MONITORING SYSTEM (WVMS)

By

WONG YOON KHANG

APRIL 2007
ACKNOWLEDGEMENTS

It always disturbing when life seems to imitate Engineering. First of all, thank God for letting me complete this assignment without much obstacles and made thing easy for me during my Final Year Project. I started planning this report in the first two weeks I started to construct the Hardware part of my final year project. I sincerely hope that there is nothing in these pages that will cause grief or offence to anyone. I owe many people many things for the help and guidance throughout this project.

I wish to express my appreciation to my University, UniMAP for its utilization and wonderful facilities. I would like to particularly extend my deepest appreciation to my supervisor Mrs. Sabarina, who patiently provided me many valuable suggestion and constructive criticism that greatly influence this report to its present shape. The information and insights that I gleaned from her had been invaluable. To my friend who has been very supportive and willing to give me a hand when I needed. And for Electrical Mega Shop at Jitra, I would like to thank all of you, for helping me getting the resources (description of component parts and etc) that I need. I also would like to thank Mr. Khor Chew Hun and Mr Nasrul Helmei for his willingness to fill me in on the handling on the major enquires. Again I am deeply indebted to my supervisor, Mrs Sabarina who made it possible offered me positive feedback, suggestion for improvement, and pointed out the mistakes in this report and proposal.

Many capable people have been part of this report. It has been thoroughly reviewed and checked for both content and accuracy. My school mate at field, who has contributes greatly to this project throughout the many phase of development and research. Nasrul Helmei bin Halim, whose attention to details is unbelievable, have done an outstanding job
for putting it together. Not to forget the technician at the lab, Mr. Haris for his trust lay on me letting me test my project at the lab. Highly gratitude goes to the library that provide the books and educational disc that I needed for my project.

Lastly, I was grateful for being able to complete the report that been given to me. Once again, I was truly, deeply appreciate to those already mention as well as others whose not being mention, this work will not be as it is if it not your help. Without your help, this report would be at a place without people. This is ‘our’ work. Thank you.
This project report titled Wireless Vibration Monitoring System (WVMS) was prepared and submitted by Wong Yoon Khang (Matrix Number: 031080526) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Communication Engineering) in Universiti Malaysia Perlis (UniMAP).

Checked and Approved by

(SABARINA BINTI ISMAIL)
Project Supervisor

School of Computer and Communication Engineering
Universiti Malaysia Perlis (UniMAP)

April 2007
SISTEM PENGAWASAN GEGARAN TANPA KABEL

ABSTRAK

WIRELESS VIBRATION MONITORING SYSTEM

ABSTRACT

The purpose of developing this project is to monitor the vibration naturally through wireless. The idea of this project is to make the data transfer wireless between sensor and PC, based on the RF technology. Generally a set of system design requirements are developed that cover 3 main parts, which consists of the hardware module transmitter and receiver which is the RF wireless data transfer, the design of the vibration sensor circuit to detect vibration surroundings within certain ranges, and software for the monitoring capabilities for vibroseis data access and management. RF wireless technology was chosen to implement the wireless module for its low cost, low power and its ability to be incorporated into small control board. Besides that, Personal Computer (PC) can be an extremely useful tool for data acquisition and control because it enables the collection of sensory information as well as the control of systems. A practical vibration detector using typical vibration sensor is used to trace the vibration signal that is within the operation range and the transmitter is used for the transmission. PC will receive the digital signal from Analogue Digital Converter (ADC) through the receiver that will receive the entire signal. At the software interface, Visual Basic software is used for monitoring system purpose which can display all the critical vibroseis data in binary digit in line graph and numeric views of data at sample rates per second. The vibration signal detected from the sensor is very sensitive to the disturbance surroundings. The problem can be solved by using Microcontroller to realize the transmission of the vibroseis signal more effectively.