

DESIGNING QUALITY INTO SERVICE AND ITS  
EFFECT ON CUSTOMERS

BY [Faint Name]

MANAGEMENT DEPARTMENT  
UNIVERSITY OF [Faint Name]



**DESIGNING OF WATER LEVEL SENSOR AND ITS MONITORING  
SYSTEM**

By  
Siti Salwa Binti Alias

A project report submitted in partial fulfillment of  
the requirements for the award of the degree of  
Bachelor of Applied Science (Physics Electronic and Instrumentation)

**DEPARTMENT OF PHYSICAL SCIENCES  
FACULTY OF SCIENCE AND TECHNOLOGY  
UNIVERSITI MALAYSIA TERENGGANU  
2008**



**JABATAN SAINS FIZIK  
FAKULTI SAINS DAN TEKNOLOGI  
UNIVERSITI MALAYSIA TERENGGANU**

## **PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: DESIGNING  
OF WATER LEVEL SENSOR AND ITS MONITORING SYSTEM

oleh SITI SALWA BINTI ALIAS, no. matrik: UK12352

telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah SMSG (FIZIK ELEKTRONIK & INSTRUMENTASI), Fakulti Sains dan Teknologi, UMT.

Disahkan oleh:

Penyelia Utama

Nama: PN WAN MARIAM BINTI WAN MUDA

Cop Rasmi: WAN MARIAM WAN MUDA  
Pensyarah  
Jabatan Sains Fizik  
Fakulti Sains dan Teknologi  
Universiti Malaysia Terengganu  
21030 Kuala Terengganu

Tarikh: 4/5/08

Penyelia Bersama (jika ada)

Nama:

Cop Rasmi

Tarikh: .....

Ketua Jabatan Sains Fizik

Nama: PROF. DR. SENIN BIN HASSAN


Cop Rasmi:

Tarikh: 4 Mei 2008

**PROF. DR. SENIN BIN HASSAN**  
Ketua  
Jabatan Sains Fizik  
Fakulti Sains dan Teknologi  
Universiti Malaysia Terengganu  
21030 Kuala Terengganu

**DECLARATION**

I hereby declare that this thesis entitled Designing of Water Level Sensor and Its Monitoring System is the result of my own research except as cited in the references.

Signature :  .....

Name : SITI SALWA BINTI ALIAS .....

Matrix No : 4K12352 .....

Date : 4/5/08 .....

## ACKNOWLEDGEMENT

First and foremost I would like to thank Allah The All Mighty for giving me strength to propose and finish this research project that have taken hours of my time for about a year. I would like to express my deepest and superior gratitude to my beloved supervisor and academic advisor **Mrs. Wan Mariam Wan Muda** for her guide and enduring support both academically and personally throughout this research project.

My sincere appreciation goes to **Mr. Mohd. Ibrahim Ghazali**, my industrial training supervisor and his **Reliability and Calibration Lab Team of ST Microelectronics Sdn. Bhd.** who was contributed an insightful advice, expert guidance, knowledge especially in electronics field and facilities throughout this research project.

Besides that, I would like to take this chance to thank to **all the staff in Physical Sciences Department**, Faculty of Sciences and Technology of Universiti Malaysia Terengganu who was willing to help me along the research project process. I also convey my thanks to **Mrs. Nur Farizan Munajat** as the final year project coordinator.

I would also like to thank my gentle and outstanding roommates **Nik Norainun Nik Hassan, Nurul Amzar** and to **all third year students of Physics Electronic and Instrumentation course** for moral, spiritual and technical support. Besides, I would like to extend my appreciation to my dearest friends **Nor Azwa Zakaria, Siti 'Aishah Mohamad, Siti Nur-Ilmi Mat Kamal and Aimi Hazwani Saijan** who are always catalyze me and made me love this life so much.

Last but not least, my special thanks to my loving parents, **Hj. Alias Abd. Rahman** and **Hjh. Khadijah Md. Yusof**, my brother, **Muhamed Hj. Alias**, my sister in law, **Norlin Hj. Abd Ghaffar**, and both of my sweetest nephew and niece, **Ahmad Farriz Muhamed and Nur Farisya Muhamed** who made me feel precious for their invaluable love, support and encouragement through my life.

*26<sup>th</sup> March 2008  
18 Rabiul Awal  
Hjh. Siti Salwa Hj. Alias*

## **ABSTRACT**

The Water Level Sensor circuit was designed to sense level of Dionized Water (DI Water) in Humidity Reservoir of HERAEUS HC4033 Climatic Chamber. This chamber is useful in order to test the life span of Integrated Circuits (ICs) in ICs manufacturing. The proposed system consists of a set of sensor for measuring level of DI Water in Humidity Reservoir and its monitoring system. This Water Level Sensor circuit is attached with floating switch to indicate level of DI Water in Humidity Reservoir in a range of 0 to 6 liters using 6 volt of direct current (DC). In this project, the designing of computer-based monitoring system for water level sensor was developed. Data acquisition (DAQ) card system was used to collect data regarding the installed system performance, for evaluation purposes. The collected data were first conditioned using precision electronic circuits and then interfaced to Personal Computer (PC) using data acquisition card. The MATLAB software program was used to further process, display and store collected data in PC disk. The proposed architecture permits the rapid system development and has the advantage of flexibility in the case of changes, while it can be easily extended for monitoring the water level sensor operation.

**ABSTRAK**

Litar pengesan paras air direka untuk mengesan paras air terion di dalam tangki kelembapan pada kebuk iklim HERAEUS HC4033. Kebuk ini berfungsi untuk menguji ketahanan litar bersepadu (IC) dalam industri pembuatan IC. Sistem ini terdiri dari alat pengesan untuk mengesan paras air terion dalam tangki kelembapan dan sistem pemantauan alat pengesan tersebut. Litar pengesan paras air akan disambung dengan suis pelampung untuk mengesan paras air terion dalam tangki kelembapan pada julat 0 hingga 6 liter dengan menggunakan 6 Volt arus terus (DC). Dalam projek ini, pembangunan sistem pemantauan menggunakan komputer untuk mengesan paras air dibina. Sistem kad pemerolehan data (DAQ Card) digunakan untuk mengumpul data sebagai perbandingan dengan perisian yang telah diprogramkan untuk proses penilaian. Data dari alat pengesan yang telah dikumpulkan akan diantaramuka kepada komputer persendirian (PC) menggunakan kad pemerolehan data (DAQ Card). Perisian MATLAB bertindak untuk memproses, menyimpan dan memaparkan data pada komputer persendirian. Rekabentuk sistem ini mempunyai kelebihan iaitu merupakan salah satu cara mencepatkan proses pemantauan alat pengesan paras air di samping bersifat fleksibel.