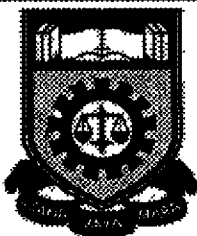


**LIQUID/WATER LEVEL CONTROL OF A SINGLE-TANK  
SYSTEM**

**(HARDWARE DEVELOPMENT)**

**This is presented in partial fulfilment for the award of the  
Bachelor (Hons.) in Electrical Engineering of  
INSTITUT TEKNOLOGI MARA**



**ROSHIMEE B. JAFFAR @ MUSTAPHA**  
**School of Electrical Engineering**  
**INSTITUT TEKNOLOGI MARA**  
**40450 Shah Alam**  
**DECEMBER 1996**

## ACKNOWLEDGEMENTS

In the name of ALLAH, the Beneficent and the Merciful. It is the deepest sense of gratitude of the Al-Mighty ALLAH who gives strength and ability to complete this project.

I would like to take this opportunity to express my most gratitude to my supervisor **Prof. Madya Dr. Yusof Md. Salleh** for his guidance, advice and willingly give, his ideas and suggestions for completing my project. Also wish to express my heartiest thanks to my co-supervisors En. Ahmad Jamal Salim and En. Uzir Kamaluddin, and same goes to the technicians in the Instrument Laboratory.

Lastly, but not least, thanks to all my friends and especially to Miss Nurul Hazleen who somehow or other had helped me directly or indirectly in successful completion of my project.

ROSHIMEE BIN JAFFAR @ MUSTAPHA

## ABSTRACT

The competitive pressures in batch processing plant productions and difficulties in planning and control all call for improved design of batch plants thus provide an incentive for application of computer-aided methods. The selected plant is a **Liquid/Water Level Control of Single Tank System**. In analyzing a system involving fluid flow, it is necessary to divide flow regimes into laminar and turbulent flow. Industrial processes often involve flow of liquids through connecting pipes and tanks, and it is often a turbulent flow. This project is a pilot plant of a batch process and looks up in controlling the water level as its variable. The system is designed for liquids (particularly water) at atmospheric pressure in non-hazardous area and can be applied for industrial process, house used and Jabatan Parit dan Saliran (JPS). This pilot plant gives the closer looks and the understanding about the real process in batch process plant.

**LIQUID/WATER LEVEL CONTROL OF A SINGLE-TANK SYSTEM**  
**(PILOT PLANT OF BATCH PROCESS PLANT)**

<b>CONTENTS</b>	<b>Page No.</b>
<b>DEDICATION</b>	<b>i</b>
<b>APPROVAL</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>CONTENTS</b>	<b>v</b>
<b>CHAPTER 1</b>	
1.0 Introduction	1
1.1 Concept of Batch Process	2
<b>CHAPTER 2</b>	
2.0 Batch Process Plant	3
2.1 Categories of Batch Process Plant	3
2.2 Plant for the Project	4

# CHAPTER 1

## 1.0 INTRODUCTION

This project looks up mostly in which more enhanced computer control can be provided in the batch process plant. This Liquids/Water Level Control of Single Tank System is a pilot plant to the batch process and controlling levels as the variable.

The plant is separated into two divisions of development :

- i. hardware
- ii. software

The hardware development is discussed in this paper and there are few aspects that should be considered as to achieve the target.