

# A COST EFFECTIVE CONTROLLING AND MONITORING OF ELEVATOR

This thesis is presented in partial fulfillment for the award of the

**Bachelor of Electrical Engineering (Honours)**

**UNIVERSITI TEKNOLOGI MARA**

**(APRIL 2004)**



**AIMAN B MAT RIPIN (2001498808)**

**Faculty of Electrical Engineering**

**UNIVERSITI TEKNOLOGI MARA**

**40450 SHAH ALAM, SELANGOR**

## ACKNOWLEDGEMENT

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

I would like to take an opportunity to thank my Project Supervisor, Pn ROSidah Bt Sam for her invaluable suggestion, guidance and constant encouragement for making this project a success.

I would also like to express my thanks to Dr Ahmad Maliki B Omar, who help me very much and give guidelines especially on programming the Programmable Logic Controller (PLC).

Special thanks to all my friends for their assistance and support. Finally, this project is specially dedicated to my mom, family for the understanding, tolerate and all the assistance conferred.

## ABSTRACT

Nowadays, the controller of the elevator system, always be talk as not compatible with the environments today. Although it work as it need, but today's world required faster and quickness in every single activities, include while travelling in an elevator car.

Elevator become a famous transportation apply to tall buildings, hence the effectiveness of the transportation system must be as high technology as the building is.

In this project, it will introduce on how an elevator system, that can fulfil the today's requirement of fast and accurate system. The controller developed in this project is using Programmable Logic Controller(PLC) unit.

# TABLE OF CONTENTS

CHAPTER	PAGE
DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENTS	v-vii
LIST OF FIGURES	viii-xi
LIST OF TABLE	x
LIST OF ABBREVIATIONS	xi
INTRODUCTION	
1.1 Introduction	1
1.2 Scope of work	2
1.3 Methodology	2
LITERATURE REVIEW	
2.1 Elevator	5
2.1.1 History of Elevator	5
2.1.2 Types of elevator	7
2.1.3 The Elevator Algorithm	8
2.2 The Programmable Logic Controller (PLC)	9
2.2.1 What is a PLC?	9
2.2.2 What Inside a PLC unit ?	9
2.2.3 PLC Operation	11
2.3 CX-Programmer	13
2.3.1 CX-Programmer Version 3.0	13

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

The demand for more efficient vertical transportation is rapidly increasing, as citizens are living and working in ever higher buildings. The highest building in the world is now slightly over 100 storey, but the concept of a "kilometer-high" building has been under active consideration. Hong Kong will soon have her "highest building in the world," the Nina Tower, within four years, and Shanghai will have one as well. These high-rise buildings rely very much on an effective vertical transportation system which can provide superior quality and quantity of service. Quality of service refers to short waiting times and short journey times. Quantity of service refers to high handling capacity.

In accordance with Fortune 14, the key to efficient, mega high-rise elevator design is to stack local zones - served by their own local elevators - on top of one another. These local zones are then served by very high-speed, sky-lobby shuttle elevators, serving express between ground terminal floor(s) and the sky lobby(ies). Hence, new elevator drive concepts need to be explored for the future. Besides high-speed drives, the performance of an elevator system depends very much on supervisory control. An elevator system's supervisory control is responsible for coordinating the operation of individual lift cars within a group, in order to make efficient use of the lift group. A good supervisory control system must be able to maximize traffic flow with minimum installation, and it must be as flexible and user-friendly as possible. All control algorithms must be able to follow changes in passenger demand at all times. Applications of artificial intelligence (AI) are mainly in this area.