

FINAL YEAR PROJECT REPORT

DIPLOMA IN ELECTRICAL ENGINEERING (INSTRUMENTATION)

SCHOOL OF ENGINEERING

MARA INSTITUTE OF TECHNOLOGY

SHAH ALAM, SELANGOR

BUILDING AUTOMATION SYSTEM

BY

MOHD RAZIF BIN ZAINAL ABIDIN

ITM IC : 85099200

HAMZAH BIN MASTOR

NAONG A/K BIJU

JUNE 1989

ACKNOWLEDGEMENT

In the name of Allah S.W.T., we are thankful because we belief without His help we would not have been able to achieve the objective of our project succesfully.

It is our pleasure to acknowledge the help that we have received from several individuals in the preparation of this project. In particular we are indebted to our project advisor, Ms. Norlida Buniyamin for her great advise and encouragement in making this project a success. The others who we are also indebted for their cooperations are :-

- * Mr. Zainal and Mr. Badrul of Daya Urus Sdn.Bhd.
- * Mr. Raizohd b.Bukhari, Deputy Chief Engineer of PWTC
- * Mr. You, BAS Supervisor of Menara Boustead
- * Mr. Rozalan, BAS Supervisor of Wisma Sime Darby
- * Mr. Syed Hanafiah, Building Engineer of Bangunan Sultan Salehuddin Shah, Shah Alam

Hamzah Mastor

Naong a/k Biju

Mohd Razif Zainal Abidin

| | <u>TABLE OF CONTENT</u> | <u>PAGE</u> |
|-------------|----------------------------------|-------------|
| Chapter 1.0 | INTRODUCTION | 1 |
| | 1.1 Synopsis | 1 |
| | 1.2 Definition | 1 |
| | 1.3 Objectives | 2 |
| Chapter 2.0 | BASIC FUNCTION OF BAS | 3 |
| | 2.1 Hard-wired system | 5 |
| | 2.2 Data carrying system | 5 |
| | 2.3 Distributed computing system | 6 |
| Chapter 3.0 | HARDWARE COMPONENTS | 9 |
| | 3.1 Detector and sensor | 10 |
| | 3.2 Transducer and actuator | 10 |
| | 3.3 Field processing units | 11 |
| | 3.4 Communication links | 12 |
| | 3.5 Central processing units | 13 |
| | 3.6 Computer peripheral devices | 13 |
| Chapter 4.0 | DATA COLLECTED | 15 |
| | 4.1 Kompleks Dayabumi | 15 |
| | 4.1.1 Water level system | 16 |
| | 4.1.2 Security system | 19 |
| | 4.1.3 Fire-safety system | 20 |
| | 4.1.4 Air-conditioning system | 24 |

| | | |
|-------------|----------------------------|----|
| 4.2 | Menara Boustead | 25 |
| 4.2.1 | Water level system | 25 |
| 4.2.2 | Security system | 26 |
| 4.2.3 | Fire-safety system | 27 |
| 4.2.4 | Air-conditioning system | 28 |
| 4.3 | Wisma Sime Darby | 28 |
| 4.3.1 | Water level system | 28 |
| 4.3.2 | Security system | 29 |
| 4.3.3 | Fire-safety system | 30 |
| 4.3.4 | Air-conditioning system | 30 |
| 4.4 | Comparison and comment | 31 |
| 4.4.1 | Water level system | 31 |
| 4.4.2 | Security system | 32 |
| 4.4.3 | Fire-safety system | 32 |
| 4.4.4 | Air-conditioning system | 32 |
| Chapter 5.0 | OWN PROPOSAL | 38 |
| 5.1 | Background of the building | 38 |
| 5.2 | System available | 39 |
| 5.3 | Suggestion | 41 |
| Chapter 6.0 | CONCLUSION | 43 |
| APPENDIX A | | 44 |
| APPENDIX B | | 53 |
| APPENDIX C | | 68 |
| REFERENCES | | 93 |

1.0 INTRODUCTION

1.1 Synopsis

A building is a dynamic entity, it has to provide and protect the internal environment and the whole range of support activities in a constantly changing scene. For example, the weather and outside environment are constantly changing, the occupation and function within the building are constantly changing and also the security and safety measure are constantly changing.

As modern building grew larger and taller, the mechanical and electrical equipment within the building grew more complex. It became increasingly more difficult for the operation and maintenance staff to manage the many plants and equipment in the building.

So, in this situation we require and need building that can respond, supervise and drive extensively installed services equipment automatically. With the increase in energy cost and the increase in demands on supervisory, operational, maintenance and repair personal, the automated building is highly required to reduce those operational cost.

1.2 Definition

BUILDING AUTOMATION SYSTEM is a computerized monitoring, controlling and regulating system for building services automatically. Its main purpose is to maximize the comfort and to minimized the energy consumptions.