

SUPERVISOR DECLARATION

“I hereby declare that I have read this thesis and in my opinion this report is sufficient in terms of scope and quality for the award of the degree of Bachelor of Mechanical Engineering (Design and Innovation).”

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Date: 28/ June/ 2013

**SMART DAY AND NIGHT LIGHTING SYSTEM USING SOLAR LIGHT RAY
REFLECTION AND DEFLECTION**

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DECLARATION

“I hereby declare that the work in this report is my own except for summaries and quotations which have been duly acknowledged.”

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**SPECIAL FOR MY
BELOVED FATHER AND MOTHER**

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ABSTRAK

Laporan ini menghuraikan tentang proses merekabentuk satu system cahaya pintar dengan menggunakan konsep rekfliski dan penyebaran cahaya untuk waktu malam dan juga pada waktu siang hari. dengan menggunakan system penyebaran dan rekflési terhadap cahaya ini penggunaan tenaga elektrik dapat dijimatkan. Ini adalah kerana sistem rekabentuk ini lebih menggunakan tenaga cahaya matahari sebagai sumber utama pada waktu siang untuk menerangi ruang tamu ataupun ruang dalam bangunan. Kini, kempen penjimatan tenaga elektrik telah banyak diwarwakan oleh media massa tempatan mahupun luar Negara memandangkan penggunaan tenaga elektrik yang meningkat dikalangan masyarakat dan juga kos elektrik juga turut meningkat. Justeru itu, banyak startegi-startegi dan juga produk-produk yang dijual oleh syarikat-syarikat tempatan dan luar Negara bagi mencapai objektif kempen penjimatan tenaga elektrik. Fokus utama projek ini ialah untuk merekabentuk satu system cahaya pintar dengan menggunakan konsep refleksi dan penyebaran cahaya untuk waktu malam dan juga pada waktu siang hari. Di dalam laporan ini, terdapat sedikit kajian ilmiah dan dokumen lampau berkaitan dengan kajian terkini strategi penjimatan tenaga elektrik dengan menfokuskan bahagian pencahayaan. Selain itu, laporan ini juga menerangkan tentang keadah-keadah yang digunakan untuk membuat dan pemilihan rekabentuk produk. Daripada kajian ilmiah yang telah dibuat, beberapa konsep telah dilakukan dan dilukis sistem pemcahayaannya. Kesimpulan daripada projek ini adalah dapat mengetahui sistem yang terbaik untuk pencahayaan di dalam bangunan bertingkat.

ABSTRACT

This report describes the process of designing smart day and night lighting system using solar light ray deflection and dispersion. By using a system of deflection and reflection of light, electrical energy consumption can be saved. This is because the design of this system focuses in using solar energy as the main resources during the day and night to illuminate the living room or building. Now days, more electricity saving campaign has publicized by the local media as well as outside the country as electricity consumption increases and the cost of electricity also increases. Therefore, a lot of strategies and also the products (saving electricity product) those are sold by local companies and overseas to achieve energy saving campaign objectives. The main purposes of this project are to design an intelligent light system using the concepts of reflection and dispersions of light in the night and during the day. The scope of the report and the project is based on the existing products in the market. In this report, there is little literature review and historical documents related to the recent study of electrical energy saving strategy focuses on the lighting. In addition, this report also describes the method used to make the system design and selection of products. From literature reviews that have been made, a few of conceptual designs have been develop and sketch lighting system diagram. Conclusion of this project is to know the best lighting system by between using existing system or reflection and deflection system for office building.

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LIST OF SIMBOL

FYP I = Final Year Project I

FYP II = Final Year Project II

RE = Renewable Energy

NRE = Non-Renewable Energy

LIST OF APPENDIX

- A GANT CHART PSM
- B FLOW CHART PSM

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Energy is a resources part of our daily lives. We use energy to warm and cool our homes, schools and businesses. We use energy for lights and appliances. Energy makes our cars go, planes fly, boats sail, and machines run. All breathing things need energy too. Plants use the light from the sun to grow up. Animals and humans eat the plants and use the energy that was store. Food is fuel for our bodies' power needs like muscle power. There are many sources of energy that we use every day. Sources of energy in a variety of ways and resources are divided into two main groups, renewable energy sources (RE) and sources of non-renewable energy (NRE).

RE sources is a wind, solar, water, biomass and geothermal renewable naturally in a short time span. NRE resources such as oil, coal, natural gas and nuclear (uranium, plutonium, etc.) is limited and will run out someday. Electrical energy is the energy that safe and convenient for our use in the home or office. We should enjoy and take advantage of existing facilities to avoid wastage of electricity. Most electrical appliances are often used by consumers is purely inductive.

1.1 PROJECT BACKGROUND

According to the increase in electricity cost, the inventor tried various ways to find a solution to reduce and conserve electricity. There are many ways to save on electricity consumption but creation is "immediately" does not make the equipment more economical but it only increases the efficiency of the local electric grid systems such as electrical circuits of a house or building. In the meantime there are various types of electric energy saving devices. Normally this device advertised in the internet and also in the major newspapers. This shows that these tools are gaining momentum and attention of consumers. However, the effectiveness of this tool is unclear again. Features as well as information on how this tool works also not specified by the manufacturer. Therefore, this project will design a solar lighting system using reflective material and convey the light into the building of multiple store ray tall. In addition, it also aims to achieving more efficient use of energy and to employ renewable energy sources such as day lighting and passive solar.

1.2 OBJECTIVE

1. To design a solar lighting system using reflective material.
2. To convey the light into the building of multiple storey tall.
3. To achieving a more efficient use of energy.
4. To employ renewable energy sources such as day lighting and passive solar.

1.3 SCOPE

This project is aimed at the design of the tools that can save electricity consumption because the current electricity consumption is very prevalent and very important in our daily lives. This electrical energy saving system will focuses on multi storey buildings such as offices and flats. To conserve electricity, this project focuses only on the use of light in the office / home as the lamp, by designing a system using components of the deflections and reflections of existing as mirror, glass, fiber optic cables etc to channel light. Besides that, this project using solar mechanism and solar energy as the main source for channeling energy to this project.

1.4 PROBLEM STATEMENT

According to the increase in electricity cost, the inventor tried various ways to find a solution to reduce and conserve electricity. There are many ways to save on electricity consumption but creation is "immediately" does not make the equipment more economical but it only increases the efficiency of the local electric grid systems such as electrical circuits of a house or building. In the meantime there are various types of electric energy saving devices. Normally this device advertised in the internet and also in the major newspapers. This shows that these tools are gaining momentum and attention of consumers. However, the effectiveness of this tool is still not clear yet. Features as well as information on how this tool works also not specified by the manufacturer. Therefore, these projects will presents an implied analysis method that can be used as a product to assess the potential of lighting in saving electricity use associated with artificial lighting for store ray building.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

A literature review is a body of text that determines the aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources, and as such, do not report any new or original experimental work. Also, a literature review can be interpreted as a review of an abstract accomplishment. (Renewable Energy, 2012).