

IMPROVEMENT OF LIGHTING EFFICIENCY AS A TARGET

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ABSTRACT

This project presents the design of efficient lighting systems. The main objective of this project is to analyze the energy management in a building and proposed an efficient lighting design. This project was focusing on lighting design; due to lighting contribute the highest amount of electricity usage in a building. Generally, lighting will consume from 20% until 50% of the electricity consumption. Thus, this project will help people to reduce the electricity usage that consumed by the lighting. In this project, there is new software that has been developed by using MATLAB Graphical User Interface (GUI). This software will help user to determine the ideal number of luminaries or lamps needed in a specific place. There are many factors that affect the lighting quality in order to minimize the quantity of lamps. The second part of the software development is the design for improvement of current lighting system. It is called Lamp Replacement which focused on energy efficiency and to the objective is to minimize the operating costs. The determination of saving cost is based on comparison between the old and new (suggested) lighting designs. Thus, from this software it can help users to minimize their electricity usage according to lighting design in a building. Moreover, users are able to determine the minimum lamps used in certain room or area without reducing the quality of lighting at that place.

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CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

The cost of doing business is not getting any cheaper, especially for energy intensive industrial businesses. To remain competitive, plants and factories are finding new ways to do more with less. Whether processing petroleum, making paper or manufacturing automobiles, the goal is the same which are improve efficiency, reduce costs, and increase productivity. One way to do all three is through improved energy management practices.

Although the cost and quality of electricity can significantly affect operations and profits, it has traditionally been accepted as a non-negotiable business expense--the utility bill is paid each month without question, and the cost goes unchallenged. But energy is not a fixed cost. It can be controlled. In fact, recent advances in energy management (EM) technology are helping businesses control costs, optimize processes, and prevent downtime.

Reports have shown that if not urgently checked energy depletion would become a major problem in years to come. This has seen an increase in internationally funded research and development into alternative energy. However, to date these alternatives are only available as a secondary source due mainly to costs and reliability. Conventional sources are still playing a major role, especially in developing countries.

In an international effort to tackle this issue, the United Nation Development Programme (UNDP) and the global environment has strongly supported the removal of barriers to efficient energy use in the manufacturing sector worldwide. The establishment of Energy Service Companies (ESCOs) and Energy Efficiency (EE) providers is seen as a major initiative towards efficient global energy management and conservation.

In Malaysia, various energy efficiency and energy conservation activities and programme were organized by the local authorities and agencies. All these activities have shown that the Malaysian industrial sectors have the opportunity to save approximately RM424.8 million per year for the next five year.