



**DAYLIGHTING TECHNOLOGY FOR ENERGY EFFICIENCY AND  
THERMAL COMFORT FOR WILAYAH MOSQUE IN KUALA LUMPUR**

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## ABSTRACT

My Final Project course under Prof. Dr. Azni Zain Ahmed is to perform a field evaluation and an analysis of energy efficiency by using daylighting technology as the main source of illumination and as a replacement for the usage of conventional artificial light due to energy savings at the Wilayah Mosque, Jalan Duta, Kuala Lumpur. The efficiency of the daylight illumination and indoor thermal comfort, which spread out in the prayer hall for prayer activities, reading and gathering is the main objective of my analysis.

My methodology is to measure indoor illumination by using lux meter for direct and global illumination, indoor thermal comfort such as relative humidity, temperature, wind speed by using RH meter, thermocouple and anemometer. This evaluation and analysis were performed at the main prayer hall only.

From my analysis it was found that the daylighting system functioned efficiently to light up most of the entire prayer hall. This illumination level was within the accepted level and more than enough for religious activities following Malaysia Standard MS 1525:2001 (page 16).

It was found that air conditioning system provided good level of relative humidity due to human comfort for sweat evaporation process but the temperature was too cold. New settings of air condition temperature are needed to provide better condition for any religious activities.

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## **CHAPTER I**

### **INTRODUCTION**

It was found that in the early seventies much attention was focused on energy saving through the development and use of energy efficient lamps. This led, for instance, to large scale production and implementation of highly efficient High Frequency lighting appliances however the quality of luminaires and additional electronics such as controls did not stay behind. Nowadays the interest in the utilisation of daylight is apparent due to the energy saving concept because daylight can provide excellent lighting, lower maintenance costs and reduce A/C load in many buildings such as commercial buildings, institutions, library or religious buildings.

Daylighting, when done well using system control daylight intensity can reduce building energy use substantially by reducing its need for electric lighting energy cost for an example as much as RM 200 000.00 per year in the Wilayah Mosque. Designing buildings to make a maximum use of natural light (daylight) will lead to energy savings, productivity improvement, a general feeling of well being, reduce stress and increases positive moods. A carefully planned daylighting scheme must be incorporated in the design of the buildings, and it must be integrated with lighting controls, air conditioning and ventilation systems. Many new skylight technologies that provide an array of sun tracking technique to maximize output are also on the market.

Malaysia as a tropical region has a constant climate and is not affected by autumn or winter season. This constant climate provides our nations with enough capability to harvest skylight, produced by the sun by using the latest technology of the sun tracker and other reflector equipment to get maximum efficiency of the daylight.