



APPLICATION OF SOLAR ENERGY IN MALAYSIAN BUILDINGS

DAYLIGHT PERFORMANCE OF LIGHT PIPES

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ABSTRACT

Daylighting is another significant renewable energy potential in Malaysia, being endowed with more than 10 hour of sunshine daily all year round. Its high level of global solar radiation ranging from 12 MJ/m²/day to as high as 21 MJ/m²/day had encouraged daylighting system applications and technologies for both commercial and non-commercial use. Although Malaysia is still in the childhood stage of development in renewable energy, Malaysia has still got a wealth of renewable energy potential ready to be harnessed and utilized (Zain-Ahmed, 2000).

Daylighting is relatively new renewable energy resource application in building. It can contribute to energy savings since it can supplement and replace electric lighting. In addition, daylighting can also be improve indoor air and visual quality

This paper presents the performance of the system's optical component. A real model of light pipe and scale models of aluminum light pipes of different designs have been investigated experimentally under the sky conditions to identify the optimum design that is capable to capture, reflect and transmit daylight into the interior surface. The results of the scale modeling of the original system were compared with the actual system's performance under sky conditions.

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CHAPTER 1

INTRODUCTION

1.0 Background of the Study

The availability and cost of energy have become dominant factors in society today. Many schemes have been proposed for developing new energy sources and for conserving present ones. It is always possible to use less energy in any process. Therefore the objective of this studies are to investigate on the length of light pipes on the illuminance and the effect of the cross sectional area of the light pipe.

This project will develop a good qualitative and analytical understanding on the use of the renewable energy source such as light. The process of industrialization and the increase of technology in Malaysia have led to the creation of new man-made materials which are cheaper and the reduction of the energy such as electricity.