Abstract

The use of computer technology in buildings' lighting design has been employed by lighting designers both as a design tool and means of lighting analysis in order to determine suitability and efficiency. Lighting design software in the present, however, still remains limited by the use of grayscale graphics which have been generated through 3-D graphics software. These three-dimensional renderings are useful in a preliminary design process only. Instead of computer-generated outputs, designers' experiences are, therefore, often relied on as solutions to more complex conditions.

In this research, a software has been developed to respond more directly to the needs of lighting designers through simultaneous calculations of different design conditions and corresponding brightness values. This software is also a design tool that can readily analyze energy saving factors, leading to greater efficiency in lighting design.

This research on "CAAD Software Development for Energy Saving in Lighting Design System" has considered all the important factors in lighting system design such as the locations, quantity, category and types of ceiling-installed lanterns, values of brightness, material cost, and cost of energy usage, in order to analyze the changes and simulate the effects of these different factors. The software outputs which include 3-D renderings and a digital graph that represent a comparison between brightness values and energy usage will be an important alternative in choosing an appropriate lighting system that contributes to the greatest savings in energy usage.