Abstract

Most current software for studying shading devices, such as the Solar Tools and the Sunshields has many limitations. Current software allows users to create and analyze only one opening at a time. Also, it is difficult for users to evaluate the effectiveness of the solar protection and there are only few choices of shading devices design are available for the designers. Therefore, the new software was developed to overcome the deficiency of the current software. The SketchUp program was selected as a platform for developing the new software because it allowed users to create 3D models conveniently and quickly. SketchUp was also suitable for the preliminary design while the flexibility of the schematic design development and time availability are the major concerns. Ruby language was the perfect script chosen to support this newly developed software because of the excellent compatibility with SketchUp program. The development of this new software was based on three aspects; namely, shading device performance, aesthetic of the whole building and outdoor vision for building occupants. With the features of this software, the users were allowed to select more than one openings with multiple sides selection of the building to design shading devices simultaneously. Moreover, varieties of shading device appearances were provided. This software could also perform numerical analysis of optimum area of shading devices based on the time-series solar shading information (office hours 9.00 am. to 4.00 pm.). After testing this software with an actual building, it was found that the software can: 1) enable users to quickly and easily reduce steps in design shading devices; 2) support users to visualize the overall shading performance of the whole building while designing shading device; and 3) enhance the understanding of light and solar radiation analysis with the display of space extension of shading device with reference to the whole year duration of shading.