Design and Development of a Solar Lighting Fixture for Metro Stations

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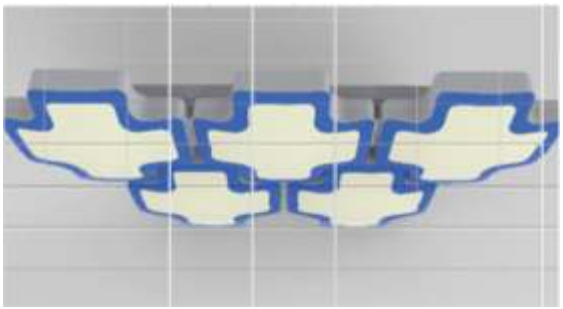
Abstract:

Without light, there would be no life on earth hence light is an essential factor for human beings. Lighting fixture design is a major branch in the field of product design with tremendous market scope. Lighting fixture design should be selected suitably according to environment and needs of customers. This project is an attempt to design and develop a solar lighting fixture for metro stations considering functionality, aesthetics and eco-friendly resources.

Literature survey was carried out to analyse the current trends and along with the bulbs and power source used in other metro stations. Ethnography research and other secondary researches were conducted to collect missing data and based on this Quality function deployment chart and Product Design specifications were derived. Concepts for lighting fixture that meets the requirement were developed and selection was made based on the weightage ranking. 3D models were developed using CAD programs and they were digitally rendered using keyshot. Finally a full scale working model was fabricated in wood.

The final model possesses a premium class look along with aesthetic colour combination of white and blue. The stacking design of fixture reduces the wastage of space and also enables to provide uniform lighting all around. The fixture can move along the guide rail and this helps to adjust the gap between lights according to the requirements. 20 watt LED bulbs were provided which could function on both solar and electric mains. A light strip formed in the shape of Bangalore metro logo is also connected which will glow during day time when the artificial light is not essential. The final product was validated for accepts of function and aesthetics and results were positive and satisfactory.

Various concepts of solar lighting fixture



Final concept

Working model