Renewable Energy Efficient Solar Lighting System Design for Buildings in UAE

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***Abstract*—Over the past few years, the electricity consumption in the United Arab Emirates(UAE) has beyonddoubledaccording to a study done by the management consultancy and strategy and it is still at a constant rise. Lighting accounts for a major part of this consumption. Hence there arises the need to reduce and conserve this energy for the sake of the environment and in turn our future generations.**

This paper aims at implementing the use of solar energy for electric energy generation for lighting systems in commercial and residential buildings. It also focuses on reducing energy consumptions by making use of LED lighting technology, daylighting and suitable lighting controls. Unlike traditional fossil fuel power generation by coal, oil or gas, energy generated through solar power is Renewable, clean and environment friendly and has no harmful gas emissions.Therefore, a shift to solar power could make a great difference in UAE where it is abundantly available all year round. An experimental prototype of a 20 Watt Solar powered Lighting system using LED's, a solar charge controller and a light detector sensor is constructed to demonstrate the working of such anenergy efficient lighting system on a small scale. Using a light designing software daylight harvesting, LED light planning and energy efficient building architecture has been demonstratedand the results have shown good satisfactory performance of the overall system design.

Keywords: **Lighting, Solar Energy, Renewable, LED lighting system,daylighting, lighting controls**

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