Design of LED lighting system based on solar power supply

Do solar-powered LED-based lighting systems save energy?
Aim of this paper is to illustrate and describe the trend of last technological innovations and new IoT-based devices employed in solar-powered LED-based lighting systems, in order to obtain energy savings, low mainteinance costs and to offer additional services to the users or community.

What is a solar powered LED lighting system?
A solar powered LED lighting system can include other different components, as reported in Figure-11, such as a device for anti-theft protection, an anti-corrosion treatment and a solar tracking device for following the solar movement to keep the PV panel facing the sun.

Can a stand-alone solar photovoltaic system supply a new business complex?
Provided by the Springer Nature SharedIt content-sharing initiative The paper outlines the concepts and design of an upcoming stand-alone solar photovoltaic system to supply the energy needs of a new proposed business complex. The purpose of this study is to develop a prediction method for the use of solar energy for commercial purposes.

Why are LED lights important for solar energy conservation?
Specific attention was paid to the usage of LED lights for illumination purposes as they play an important role in energy conservation. It also contains the solar radiation map of India. The crucial factors including designing the PV system is that the theory and calculation of the solar angles.

Can light-emitting diode (LED) reduce energy consumption?
Utilizing systems like light-emitting diode (LED) instead of traditional lamps can reduce electricity consumption19. The scope of the work is to design an effective solar photovoltaic system which would meet the complete energy demand of a proposed business complex without consuming conventional energy supply.

Do LED lights save energy in a business complex?
In the second phase,a typical layout of a business complex is shown and the annual energy demand of the business complex is calculated. Specific attention was paid to the usage of LED lights for illumination purposes as they play an important role in energy conservation. It also contains the solar radiation map of India.

To mitigate air pollution and CO 2 emissions, researchers have focused on two directions: first, the reduction of the power consumed by electrical appliances, and second, the use of clean (renewable) energy sources such as solar or wind. In terms of reducing power consumption by the load, researchers have confirmed that employing light-emitting diode ...

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This paper presents a conceptual design for a sustainable solar photovoltaic (PV) powered corridor lighting system for two blocks of buildings on the i-CATS University College campus. The solar PV system is expected to power at least 16 units of T8 20W LED tube lights with an average daily usage of 12 h.

In this paper, the design and implementation of a stand-alone solar power LED lighting system are the study objectives. The system architecture includes solar cells, high ...

This paper proposes a joint and conceptual approach for techno-economic design and dynamic rule-based power control of an off-grid solar/wind hybrid renewable energy system integrated with a ...

Aim of this paper is to illustrate and describe the trend of last technological innovations and new IoT-based devices employed in solar-powered LED-based lighting ...

D. A. Devi and A. Kumar, Design and Implementation of CPLD based Solar Power Saving System for Street Lights and Automatic Traffic Controller, International Journal of Scientific and Research ...

this paper presents the design and implementation of high performance closed loop Boost converter for solar powered HBLED lighting system. The proposed system consists of ...

The performance of parabolic trough based solar power plants over the last 25 years has proven that this technology is an excellent alternative for the commercial power industry.

In this paper, the design and implementation of a stand-alone solar power LED lighting system are the study objectives. The system architecture includes solar cells, high power light-emitting-diodes (HP-LED) modules, bi-directional buck-boost DC converters, lead-acid battery and a single-chip microcontroller (PIC).

As solar power (Wind) technology matures, solar and wind energy can efficiently match to form a wind/solar complementary systems, the combination between hybrid energy systems and energy-conscious LED lighting systems will be the ...

standard cities worldwide.1,2 The power supply is in the form of a centralized system which can create system errors, difficulties in fixation, high cost of installation, electrical accidents in extreme climate conditions, and unavailability in remote or inaccessible areas. Street lighting and traffic light systems based on solar

The major objective of the study was to design and develop a Smart Solar-Powered LED Street Lighting System for a Greener Community. The project is different from conventional street light- ing systems not only in the sense that it uses solar energy, but more importantly, it is also a stand alone device that provides for an efficient energy ...

Utilizing systems like light-emitting diode (LED) instead of traditional lamps can reduce electricity

consumption 19 . e scope of the work is to design an eective solar photovoltaic

180 AIMS Energy Volume 10, Issue 2, 177-190. ? A review, field survey, and analysis of energy demand for street lighting of past relevant applications were carried out. ? Analysis and assessment of the wind and solar radiation energy potential at the geographical location of the experimental setup were conducted. ? An estimation of the PV system size ...

Light-emitting diodes (LEDs) have shown advantages in simulating complex terrestrial solar spectrum. However, it has difficulty to simulate the geometric characteristics of direct sunlight with one solar constant (100 mW/cm 2) this paper, A method to collect full aperture light with hyper-hemispherical aplanatic lens has been proposed, and a multi-source ...

The objective of this paper is to provide an uninterruptable power supply to the customers by selecting the supply from various reliable power sources such as solar photovoltaic, AC mains and ...

This work presents an autonomous street lighting system based on solar energy as primary source, batteries as secondary source, and lighting emitting diodes (LEDs) as lighting source. It presents high efficiency, because all power ...

LED lighting is projected to reduce related energy consumption of 15% in 2020 up to 40% in 2030; in this contest, solar-powered LED lighting facilities offer a significant contribution to obtain ...

Nigeria is located between 4 o N and 14 o N latitude resulting in vast supplies of solar radiation all year round; and therefore, solar energy is a promising solution (Jadin et al., 2015;Dike et ...

With the motivation of high efficiency, energy saving and environmental protection, a solar LED lighting system was designed. The system implemented maximum power point ...

Intelligent LED plant light supplement system can improve and enhance plant photosynthesis, increase crop yields, especially for anti-season greenhouse cultivation in the facility agriculture.For ...

This paper proposes energy efficient of automatic street lighting system based on low cost Arduino. The main objective is to design energy efficient smart street light for energy conservation in ...

This article describes the design and development process of a solar photovoltaic LED illumination system for a company with autonomous outdoor lamps to reduce the ...

Design of Solar Power LED Lighting System using Horizontal Two-Axis Arduino Based Solar Tracking System P resh 1, S.Manojkumar 2, E.Rakesh 3, N.Saranraj 4