PROJECT ON

AUTOMATIC SOLAR STREET LIGHT

REGENT EDUCATION AND RESEARCH FOUNDATION
GROUP OF INSTITUTIONS

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AUTOMATIC SOLAR STREET LIGHT

Introduction

Since people have been coexisting, there has been street lights. Ancient Romans used oil lamps filled with vegetable oil in front of their homes as early as 500 BC. William Murdock utilized a coal gas-powered gas light in 1802. Soon after, in 1807, the English city of London made the decision to employ gas lights to illuminate a full street rather than simply the fronts of homes. These gas lamps were first used in the United States in 1816, though. The first city to use gas lights was Baltimore, Maryland. Improvements were made to the gas lights, and the more energy-efficient electric lights were switched in their place.

The first electric street light to use arc lamps was the Yablochkov Candle, created by Pavel Yablochkov in 1875. In Paris, France, three years later, the city started replacing the gas lamps with electric ones and had already replaced roughly 4,000 street lights. In response, 130,000 arc lighting were placed on numerous city streets in the United States by 1890. Once electric street lights were introduced, advancements were made gradually. There are many different lights available today. Many conventional street lights are energy efficient, but some extremely old street lights that are still in use are not. If the systems are configured properly, solar photovoltaic street lighting have the potential to be very energy-efficient. The differences between conventional and solar illumination will be discussed.

Contrary to typical street lighting, solar street lighting is a relatively new invention. There is no electrical power grid connection for these street lights; instead, the solar light will generate its own energy from the sun (photovoltaic panel) and store it in a battery until it is sufficiently dark for the light to turn on. Off-grid solar illumination applications come in a variety of forms. A micro grid, which is effectively a miniature power grid used only for the lights, is one way the solar panels can be connected. Another option is for each street light to operate independently.

Solar photovoltaic technology uses an electronic process that takes place in specific materials known as semiconductors to produce power directly from sunshine. Nowadays, thin-film semiconductors or crystalline silicon are used to make the majority of solar cells. Although expensive, silicon has been found to be quite effective at turning sunlight into power. Thin-film materials are occasionally utilized because they are more affordable. The drawback is that these materials need greater surface area to generate electricity and are less efficient than silicon.

Proposed system for Trial:

Our proposed system is sub divided into four sections:

1. Solar Panel
2. Control Unit
3. Battery storage unit
4. DC Light.

During the day time solar panel receives its I/P from the Sun rays. At the same time the control unit is also functioning for charging the battery and giving the over voltage protection also. At sunset Solar panel is unable to receive the I/P from the sun and the light will be functioned through control unit.

When the battery storage unit is reaches to 90% discharge condition, the storage unit will be automatically disconnected and light will remain ON condition through the main power supply. This action is also being performed by the control unit.

Again, during the time of Sunrise, the light will be going to OFF condition through control unit and the battery will get charged and the cycle is going on.

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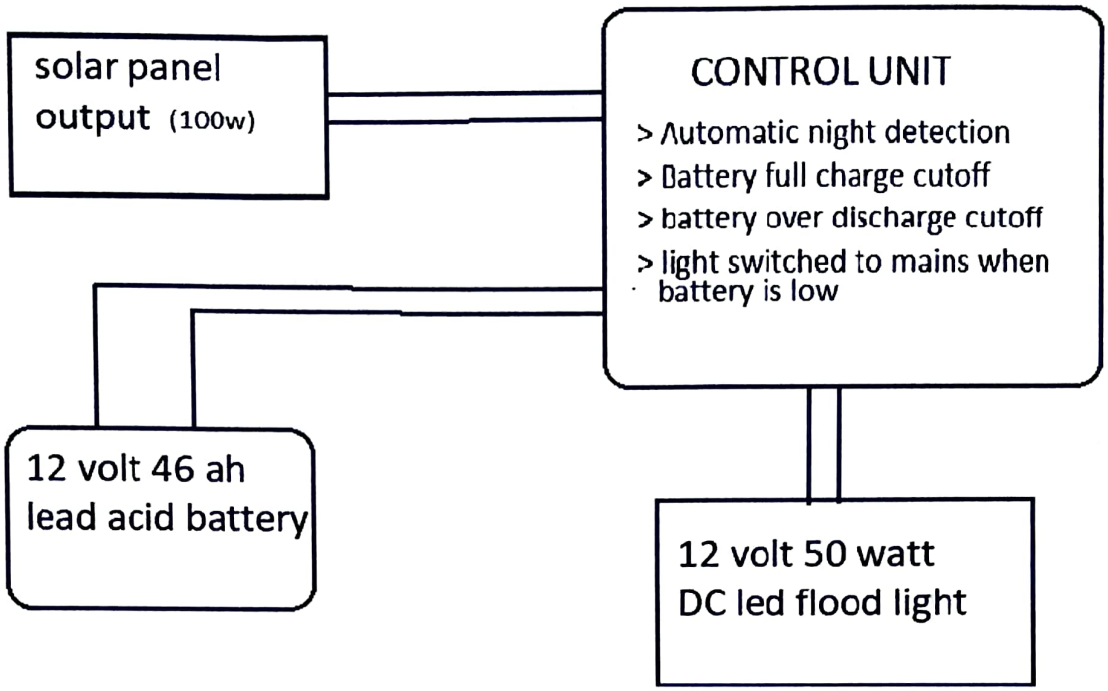
Block Diagram:



Cost:

SL.NO	APPARATUS NAMES	APPARATUS QUANTITYS	APPARATUS PRICES (in Rs.)
01	JUNCITION BOX	1	55
02	VERO BOARD	1	55
03	CONNECTER	4	52
04	555-IC	1	24
05	TRANSISTER	4	20
06	VR POT	4	25
07	INDICATOR LEDS	5	20
08	RELAY	2	50
09	WIRES		50
10	DC LED (25W)	2	300
11	MAKING COST		100
12	SMPS	1	500
13	NUTSPSCURES		50
14	BATTERY	12V 42AH	4000
TOTAL PRICES (in Rs.)			5301

Conclusion

By this project, we are trying to establish an approach through which we are provided hands on training of our students to the renewable energy as well as make our campus green. Definitely the initial cost of this type flood lighting system is higher in comparison with traditional flood lighting system type flood lighting system is higher

in comparison with traditional flood lighting system. But cost associated with energy consumption will be affected to some extent.

Last but not the least it should be mentioned that this system is implemented in trial basis but in future we will trying to cover all the flood lighting of our campus under this category.

Reference

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- http://www.lrc.rpi.edu/programs/NLPIP/PDF/VIEW/SR_StreetlightsLocal.pdf
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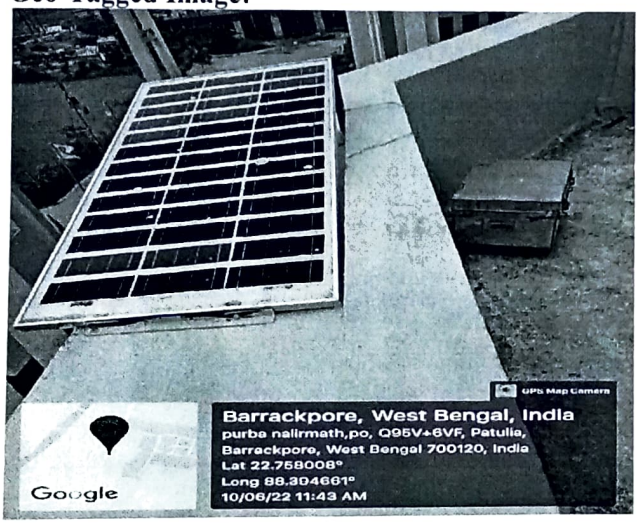
Geo-Tagged Image:



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overcharging and overloading and automatic protection for short circuit, boasting features such as automatic identification of day and night, automatic detection of voltage, automatic storage battery protection, easy installation and no pollution. The battery discharges electricity to the signal machine, transmitter, receiver and signal light via the controller.

Cost:

SL.NO	APPARATUS NAMES	APPARATUS OUANTITYS	APPARATUS PRICES (in Rs.)
01	SOLAR PANEL	1	600
02	CHARGE CONTROLLER	1	800
03	BATTERY	1	1500
04	RELAY	1	200
05	SIGNAL LIGHT	1	2000
06	POLE	1	2300
07	BATTERY MOUNTING BOX	1	500
TOTAL PRICES (in Rs.)			7900

Conclusion

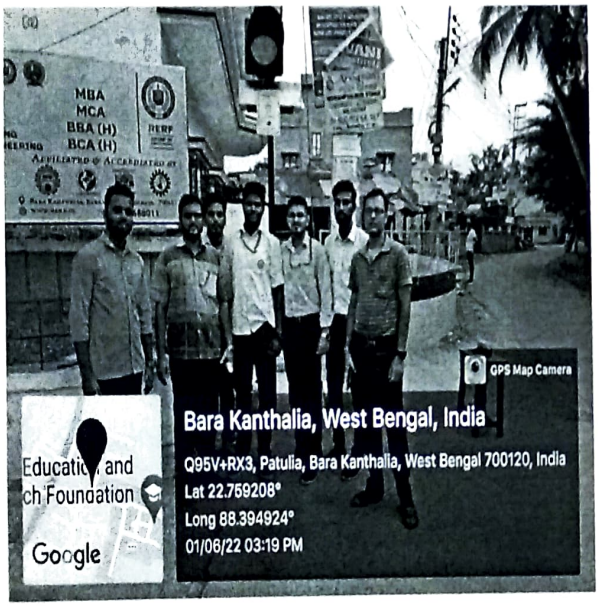
By this project, we are trying to establish an approach through which we are provided hands on training of our students to the renewable energy as well as make our campus green. In old scenario by making the poster or painting we have to intimate that school or college ahead. By implementing this project, we are conveying the same message digitally i.e., through signal.

Reference

[1] ELECTRONIC TRAFFIC SIGNAGE& EL SEGUNDO, CA US, "An illuminated display apparatus for supplementing street signals includes a housing containing an LED array capable of producing multicoloured and animated images, a bracket system holding the housings together wherein a row of multiple housings and LED arrays may be assembled together to create larger displays, and wherein a system of brackets supports the housings at an angle from vertical for viewing by passing vehicles below. The display may also include a solar array, loudspeakers, strobe apparatus and automatic brightness dimming."

[2] Emergency traffic light system & EL SEGUNDO, CA US, "A supplemental system of stop lights for use in conjunction with a primary stop light system. Solar powered supplemental stop light units are mechanically attached nearby the stop light units of the primary system. Should the primary system fail, the supplemental stop lights become active to re-establish control of the traffic flow and substitute for the disabled primary stop light system. The supplemental stop light system uses at least two visual displays: a graphics display and an alphanumeric verbal display. In an alternative use in conjunction with emergency vehicle traffic, an alphanumeric numeric display can be advantageously.

Geo-Tagged Image:



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