



## Design and Fabrication of Producing Electricity by Trapping Photon from Light Sources

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### Abstract

The replacement of fossil fuels with renewable energy to sustain the life on Earth is one of the biggest challenges in recent days. The renewable energy resources are solar energy, wind energy, hydro power etc. Among these, solar energy transpires possible solution to defy this problem since sun is the most abundant and cheap energy resource. The development of solar cells for utilizing the solar energy. In this work, we have developed a prototype of compact fluorescent lamp (CFL) along with a solar panel produced about 5.86V (1.75W) of electricity in an hour. The light illuminates an electric bulb; it emits photons for 360° radius in all directions. 180° illumination in all directions glow the bulb is enough for our use. Current invention focuses on conversion of light energy travelling upward direction to electric energy using photovoltaic cell. Light being commonly used energy about one third of electric power of world is being used for light energy. Storing the light energy emitted from the CFL lamps using photovoltaic panel coupled with battery will not only save enormous amount of energy spent on power generation, the stored electricity from this system can also be used for the functioning home appliances in case of power shutdown by replacing conventional model of inverter or UPS. This low cost approach of producing renewable electricity from the working light can be applied for other lamps to cut down the power expenditure.

**Key Words:** CFL, photovoltaic cell, 360° radius, semiconductor material.



Fig1.1.Resources of photons energy into electrical energy

## 1. Introduction

The world is screaming for high and rising energy prices. The present days there are almost 1.5 billion people in the world that do not have access to electricity. The population is expected to be increasing in the world. In 2020 energy demand and climate change will continue to raise innovative research. In fact, the world energy consumption is predicted an increase in the present and future years, mainly driven by the growth in developing countries. Solar energy is one of the most replace of saving electricity of the world. Solar energy is pollution free and stability with energy power consumption. Solar power can be utilized in a number of ways where the most important technologies for recent years. The solar power used in the energy source, light source, bio-application and nano materials etc. The mainly solar power focus on the street light of the human uses and safety for our future life. Street lighting ensures visibility in the dark for motorists, cyclists and pedestrians, thereby reducing road accidents. Street lighting effects can also boost the appeal of cities, towns and communities as commercial and cultural centres by highlighting attractive local landmarks or accentuating the atmosphere during important public events. The financial savings from efficient street lighting are based on the technology and the related reduction of energy used and maintenance costs, relative to older street lighting models. The majority of costs stem from the operation of the lighting system and not from the investment itself. The total cost in minimum amount of street light in urban, city, down areas another forest lighting installation covered the years 2050. Herein, the light sources use full for car Drivers, saving of current and not affected climate. We have report the work of energy storage and long life time and the renewable of current.

## 2. Working Principle

Some light energy which emits from the CFL goes as unused/ waste in day today life. Here, the waste/ unused is trapped by using the photovoltaic cell which converts the light energy into electrical energy and then it is stored in compatible battery. The stored energy could be used when the power shut down occurred. Thereby, we can save the energy as well and minimize the power cost.

## 3. Background Invention



Fig2.1.Fabrication of PV, LED, Battery

## 4. Description

A recent development in polymer solar cells has improved power conversion efficiency. Based on the semiconducting polymer, the solar cells are fabricated from solution processing technique and are having unique properties for achieving solar energy harvesting, besides to their material and manufacturing advantages.

## 5. Unwanted photons



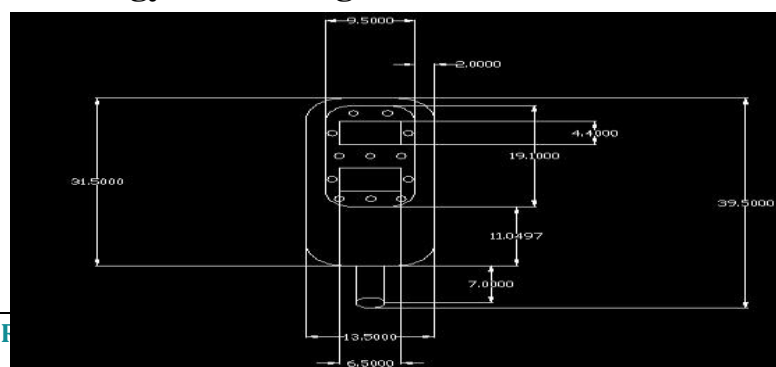
Fig.1.2.1. Not Resources of photon energy

## 6. Problem Solving

This method improves the illumination so street lights have been placed by our Government gives more illumination. Solar energy is an abundant and renewable energy source. The annual solar energy incident at the ground in India is about 20,000 times the current electrical energy consumption. The use of solar energy in India has been very limited. The average daily solar energy incident in India is 5 kWh/m<sup>2</sup> day and hence energy must be collected over large areas resulting in high initial capital investment; it is also an intermittent energy source. Hence solar energy systems must incorporate storage in order to take care of energy needs during nights and on cloudy days. This results in further increase in the capital cost of such systems.

Solar power is the conversion of sunlight into electricity, either directly using photovoltaic (PV), or indirectly using concentrated solar power (CSP). Photovoltaic convert light into electric current using the photoelectric effect. In this project we have developed a prototype of compact Fluorescent lamp (CFL) powered by solar panel with a capacity of 11.72 V/hr. As the lamp glows it emits Photon energy along its surface area. In this model lamp post the light energy is focused towards the ground using reflector, in place of reflector we are using the voltaic cell which absorbs the photon energy and generates electricity.

## 7. Innovation and Technology CAD Design



## 8. ANALYSIS OF RESULTS:

**Table1: Parameters obtained by outside solar cell**

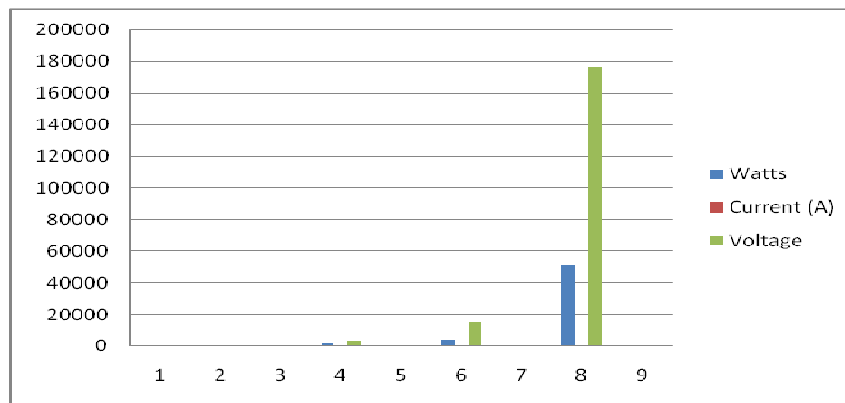
S. No	Power (W)	Current (A)	Voltage(V)
12 Hour	120	0.58	206.9
Weekly	1680	0.58	2896.55
Month	7200	0.58	12413.8
Year	87600	0.58	151034.48

**Table 2: Parameters obtained by inside solar cell**

S. No	Watts	Current (A)	Voltage
12 Hour	20.4	0.30	70.32
Weakly	142	0.30	492.24
Month	612	0.30	2109.6
Year	7344	0.30	25315.2

**Table 3: Parameters obtained by outside & inside solar cell**

S.No	Watts	Current (A)	Voltage
12 Hour	140.4	0.88	277.22
Weakly	982.8	0.88	3388.79
Month	4212	0.88	14523.4
Year	51246	0.88	176349.68



Graph denotes power(W) obtained by solar cell

## 9. Next Generation Materials and Technologies

1. Advanced Functional Materials
2. Advanced Polymers & Membranes
3. Biomaterials
4. Nanomaterials
5. New Generation Building Materials
6. Next Generation Computing (Quantum Computing)
7. *Silicon Solar Cells (Photovoltaics)*
8. Space Engineering.

## 10. Application

1. It is used the Street light
2. It is used the Poultry
3. It is used the Hospital
4. It is used the Home
5. It is used the Industrial
6. It is used the Ship & used the vehicles

## 11. Conclusions

The above mentioned work plays a vital role by converting solar energy into electrical energy large quantity of electricity is produced when it has been installed in solar power plants area, street light, poultry, industrials, organization, and household application. Developing smart street light using optical sensors coupled with above mentioned invention. We hope smart street light would have great market potential. Power generation using fossil fuels is common method proposed by many countries. Owing to all this, fossil fuel has been depleted very faster, and it leads huge number of shortages. Hence, we recommended for reducing this kind of risk and the reutilization of waste photon energy from light sources to produce the electrical energy Market Analysis.

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