

Concept of Smart Solar Highways Light

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Abstract:- Today the spanning demands of the electricity and crunch of electricity are leads us to focus on the Renewable energy shift from the fossils fuel , this leads the Indian government to focus on renewable sources to full our daily electricity needs. Like highways needs badly and special attention not only the demands of electricity but also for the safety purpose. This is Eco-friendly and feasible purpose to city citizen. In this paper focus on the making of smart highways light and full scaled of safety purpose.

Keywords:- Solar panel, LDR , rechargeable battery, Smart lights.

INTRODUCTION

Highways light is an important and necessary needs for the daily life of the city. The electricity consumptions is more due to the not smart of the highways like in that point use of the lamps are High intensity discharge lamp (HID). Which consume more electricity as compared to the Light emitted diode(LED). But in this paper suggestions and purpose on the saving of electricity ,make the highways safer and vital. The main components which are use to make this possible like solar panel , LDR ,controlling system and battery. The main objective of this paper is to provide a better solution to minimize the electrical wastage in operating highways light.

Solar panel :-

Solar panel is working on the principle of electrons movement and photovoltaics. Solar is the system that does not required transmission line and also distribution line to providing electricity to the areas. It installed in areas like square ,parking ,field and also on the roof, it is the most important part of the highways light as solar energy converted into electricity solar panel. There are two types of solar panel which are as follow.

Mono-crystalline solar panel Poly-crystalline solar panel, conversion rate of mono-crystalline is more.

LDR:-

It is an important part of the automatic system which play role of controlling of the intensity of the light alike 10-100% by providing electricity to the LED lamps. It is known as light depend resistor when sun light is present then its work as switch off mode when the doom day its work as switch on mode. Basically it sending the message to the controlling units when start the system or not.

RECHARGEABLE BATTERY:-

Battery store electricity from the solar panel at the day time and it prove the same storage energy to the whole system fixture of the day and night as well. Because its important

that the life cycle of the battery is long life to storing capacity. Mainly two types of batteries are use in this systems like Gel Cell Deep Cycle and Lead Acid battery during this installation of this concept some important rules of INDIAN standards(BIS 1981) in street light , roads and specially in HIGHWAYS.

It has poor power quality.

Poor operations & maintenance practices.

Poor installation and design.

PROBLEMS DEFINED :-

Today in India electricity demands is a drastically a major problem for city life style. In the city there are many places where electricity huge for nonpurpose without a good controlling system like highways, roads and street lights.in this paper by which we can save much electricity from wastages cycles.

PROJECT WORKING:-

Firstly a solar panel is installed near to the battery storage which near by the controlling system. In day time solar panel observing the sun radiation from the sun as well as other light system and by the photovoltaics phenomena its converting the radiation energy into the electricity. it is only use in the day time specially till dust and converted energy like electricity is store in the battery bank as storage tank but one things that is use in this LCD 16x2 which is showing the voltages level and current rating. Battery mostly use in the night time or as a bad weather and critical condition as to proving the whole system as supply.

Other most enlarge system is controlling system which providing the control and viable to the system. LDR (light depend resistor) in the day light it can not operate the highways lamps after the day from the evening it switch ON and providing the system electricity. Usually working on the 10-100% of glowing the Led lamps. When the vehicle movement on the roads the IR sensor sense the movement send signal to the microcontroller like 8051 that next Led lamps will be glow on 100%. If not receive signal its mean working on 10% at night or bad weather .by this method we can use electricity which use in other purpose .

This method is use many places like where we want to saving of electricity purpose ,street light, public place and other rush areas. When the vehicle movement then next led lamps will be full glow other previous led lamps will be at minimum glowing position. Shown as below fig 1.



Fig 1 Hardware of the project system.

FUTURE SCOPE:-

India has a great scope of electricity demands and full fill it is great challenge for the Govt. as well as the electricity companies.

Many nations electricity efficiency and utilization of it is under the progress.

It can play a major role from the waste of electricity.

It can full fill scarcity of electricity of nations as 2030 the world will need more electricity from today date so we have to focus on such types electricity saving ideas.

It will be an eco-friendly and capable.

It will be most economically because electricity charge of the highways are 20-38% of the city.

CONCLUSION:-

In 2030 when the electricity demands will be a huge problem and whole world need more electricity demands by today demands , then such ideas will be play a major role to utilized that problem. This project elaborate as the solar panel converting the radiation in electricity and storing in the battery bank, LCD 16x2 showing the voltage and current ratings LDR working as the switch ON/OFF the led lamps system and the controller system is working as the sending/receiving the signal for working as the glowing led lamps as 10-100% as the requirements.

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