➢ INTRODUCTION

In world now the energy demand increases rapidly.

So to fulfilling energy demands more fossil fuels are used which will be extinguish if they are used at such a rate.

So renewable energy are need to be used more and more as they are freely available and also adequate.

Also uses of greener power reduces pollution and global warming.

WORKING PRINCIPLE:

In the street lighting we have the charge controller circuit which is charged the battery in the day time by solar panel and by conventional power at night.

This switching between conventional and solar occurs through the relaying action.

The relaying action is done by two NOT logic operated transistor through LDR .

Photoconductive device LDR (Light Dependent Resistor) whose resistance changes proportional to the extent of illumination, which switches ON or OFF the LED during day and night and also Dusk to Dawn operation is done.

NEW ALL IN ONE SOLAR LED STREET LIGHT / INTEGRATED SOLAR STREET LIGHT UNIqUE

Features:

- Unique integrated lens and robust lampshade design, high beam pattern definition, brightness uniformity.
- Green environment, impact resistance, shock-proof, no lead, no mercury, no UV, no IR.
- PWM constant current technology, high efficiency, low heat, high precision constant current, DC working, no strobe flashing, safety and reliability.
- EMI of the global universal index, lowest loss of line, circuit and power, good power factor, high brightness efficiency.
- LED light source of ultra high power, high brightness; lowest attenuation of brightness, extraordinary energy saving, tremendous long life.
- Global and wide working voltage, various and universal standard bases, easy and directly replacement.

ADVANTAGE

- All in one (compact) type.
- This design is to put high efficiency monocrystalline silicon solar panel, LED lamps, long life Lithium battery and controller all in one box.
- Without any cable, very easy for shipment , installation and maintenance .
- With motion sensor- full power output if there is any motion(60s) and the other time is 30% power output .
- We are the main factory who manufacturing "All in one" type with power range up to 40watts for LED lamps .
- Complete elimination of manpower.
- Reduced energy cost.
- Reduced green house gas emission.
- Higher community satisfactory.

Normal street light v/s Solar led Street light

- In normal style we use Lead acid battery and gel battery, the lifetime is about 2 to 3 years, In All-in-one type we use Lithium-ion / LiFe PO4 battery and lifetime is 5 years in average.
- For normal style, we have too many parts, including LED lamp, controller, solar panel, battery & Waterproof box, RVV Cables and other accessories, it is complicated and need to pay a lot of time and money for installation and maintainence. For All-in-one type, we only have one part, everything is inside, very easy for installation and maintenance.
- For normal type normally will use polycrystalline silicon solar panel, for All-in-one type we use high efficiency monocrystalline silicon solar panel.

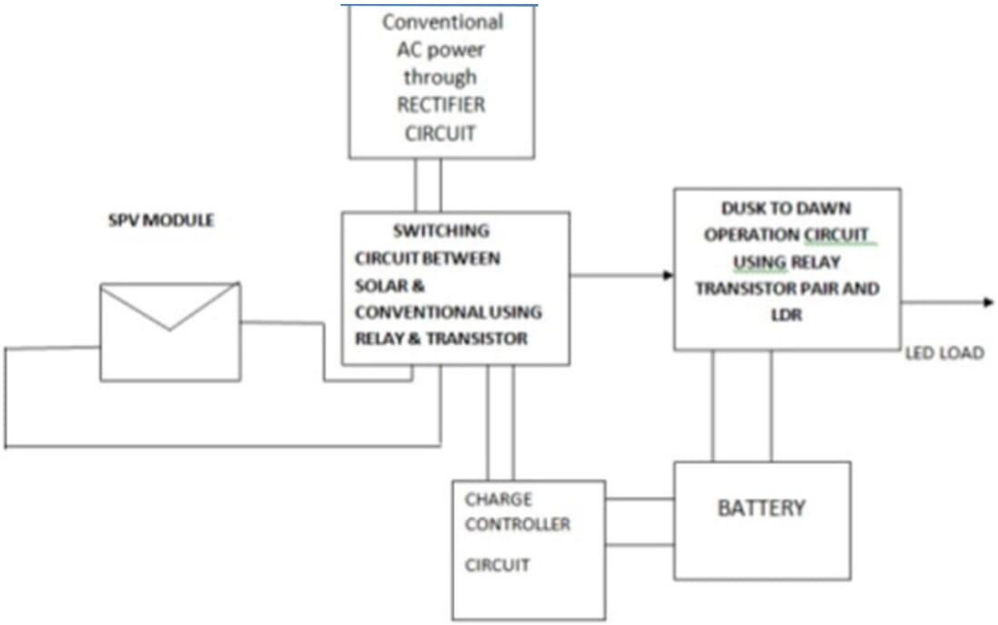
Standard FeatureS

- Solar Panel: over 25 years of power generation capacity, with a 5-year warranty.
- LED Light: CREE LEDs provide super-bright light from little power, need simple thermal management, and last up to 50,000 hours, with a 2-year warranty. LED wattage is equivalent to approximately half the wattage of high pressure sodium light.
- Controller: over 8 years of typical operating life, with a 2-year warranty, automatic operation from dusk to dawn or timed ON/OFF operation
- Pole: up to 25 years of long life time
- Battery: 5 ~ 7 years of maximum life, with a 2-year warranty

Benefits

- No line voltage, trenching, or metering
- No power outages
- Battery backup for cloudy or rainy days
- Distributed light and power - no single point of failure for enhanced security
- Easy to install with quick connect plugs - less than 1 hour
- No scheduled maintenance for up to five years
- No cost of replacing concrete, asphalt or landscaping
- No cost of transformers or meters to be added for electric service
- Qualify for savings from various state and federal taxes and incentives
- No monthly electric bills
- Controlled charging to prolong battery service life
- Long-life PV modules with more than 25 years of power generation capacity
- Environmentally friendly - 100% powered by the sun, solar panels reduce fossil fuel consumption, eliminating pollution
- Self-contained solution - Light on/off controlled by automatic daylight sensing or hour preset, no running or maintenance cost
- Better light source - LED lights feature cool white light without flickering and higher brightness than sodium light
- Safe 12 volt/24 volt circuit, no risk of electric shock

LAYOUT:


Conventional AC power through RECTIFIER CIRCUIT
SPV MODULE
SWITCHING CIRCUIT BETWEEN SOLAR & CONVENTIONAL USING RELAY & TRANSISTOR
DUSK TO DAWN OPERATION CIRCUIT USING RELAY TRANSISTOR PAIR AND LDR
LED LOAD
CHARGE CONTROLLER CIRCUIT
BATTERY

MAIN COMPONENT USED

- SOLAR PANEL
- CONTROLLER KIT
- BATTERY
- LED ASSEMBLY

SOLAR PV MODULE

Solar modules use light Energy (photons) from the sun to generate electricity through the photovoltaic effect

In our solar street light we using 20w, 30w, 40w, 50w, 60w, 70w, 80w

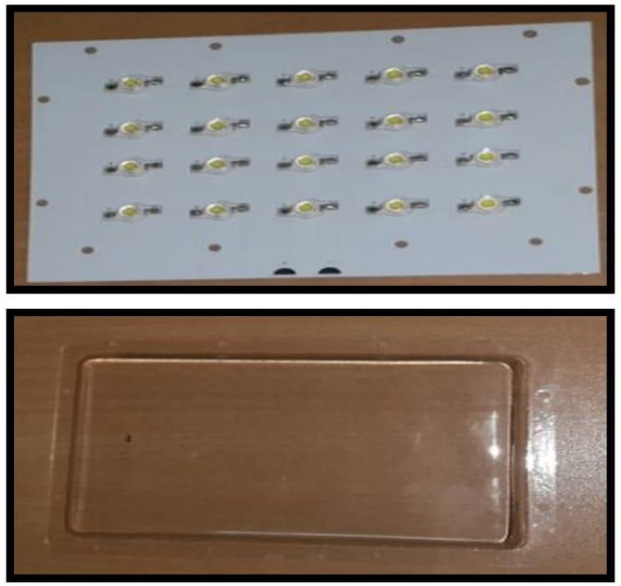
BATTERY:

It works as a storage unit. Solar and conventional source charge the battery through charge controller kit.

We are using here 14.8v 9ah, 12ah, 15ah, 18ah battery

LED (LIGHT EMITTING DIODE)

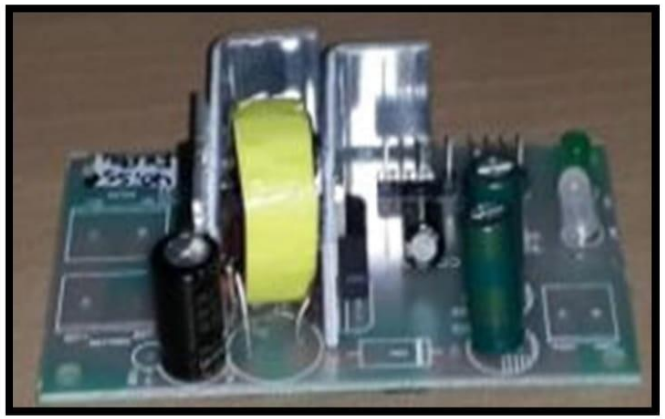
- LEDs have more lifespan than CFL lamps.
- They consume less energy.
- Unlike conventional lamps they can be recycled.
- Less Maintenance & less heat generation.



Use best led bridgelux brand with 105lm per watt and good led cover glass with gasket rubber

CirCuitaries:

- Here four circuits are used with proper functioning.
- Charge Controller Circuit
- Dusk to dawn operation circuit
- Switching circuit between conventional and solar
- Power circuit
- Make high efficiency 95% pwm controller with dimmer programming according to lion/lifepo4 battery



VARIOUS IMPACTS:

Impact of engineering solution in economic context

During the entire course of completion of the project, we have always kept in mind the price constraint. We have succeeded in designing a project that is affordable and such that the cost of the product is justified by its fair performance. Hence, we can say that this project is economically effective.

Impact of engineering solution in environmental context

In our project we have utilized the most convenient source of energy that is the energy that is harnessed from the sun. The sun gives enormous amount of heat which is received by the solar panel and converts it into electrical energy. As we are using the renewable source of energy it does not cause any kind of pollution and it is very eco-friendly.

FINAL PRODUCT:

conclusion:

This project of 'SOLAR STREET LIGHTING' is a cost effective , practical , eco friendly and the safest way to save energy.

It clearly tackles the two problems that world is facing today, saving of energy and also disposal of incandescent lamps, very efficiently.

According to statistical data we can save more electrical energy that is now consumed by the highways.

THANK YOU