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Solar Energy Based Mobile Charger

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Abstract- we have use other methods to charge the mobile it is so costly. The solar energy is highly efficient and economical to use. Works on the principle that when light falls on the solar cell, electron -hole pairs are created in the n-type emitter and in the p-type base. The generated electrons (from the base) and holes (from the emitter) then diffuse to the junction and are swept away by the electric field, thus producing. Certain modules are selected and worked out to suitable specifications. Solar energy is generated by nuclear fusion reactions within the Sun. The energy that radiates from the Sun is a mixture of ultraviolet, visible, and infrared radiation. The intensity of this radiation when it reaches the Earth is 1361 W/m2. Our project intension is to create a solar mobile charger. The project design solar energy and stores it in a rechargeable battery form. This system has ability to serve dual role, both as a protective case and act as power backup for the mobile phone in solar energy.

1.INTRODUCTION

A solar power system is an energy store device that obtains energy from the sun and uses it to charge/power various electronic gadgets, like phones, tablets, laptops, and torches, bulbs, and televisions etc.Solar cell phone chargers use solar panels to charge cell phone batteries. It has in-built solar panel which converts the solar energy to electrical energy. It is estimated that the world oil reserves will last for 30 to 40 years, whereas solar energy is forever. Solar energy has two big advantages over fossil fuels. The first is in the fact that it is renewable; it is never going to run out. The second is its effect on the environment. Flaming of fossil fuels is harmful pollutants into the atmosphere and contributes to global warming and acid rain. Solar cell directly converts solar energy into electricity. The solar cells that are connected together make up the solar panel. This can last up-to several decades without replacement.

2.PROBLEM STATEMENTS

Intermittency. One of the biggest problems that solar energy technology poses is that energy is only generated while the sun is shines. That means nighttime and overcast days can interrupt the supply.. During disasters and power outages, it can be used with ease and with a long and forever durability of device and power. Even in the remote areas having scarcity of electricity, such models can be used. In rainy and foggy weather, there may be some rust and some maintenance may be required**.** We initiated this project because it is one of the few charging systems that uses renewable energy sources, which allows us to avoid power and charge weariness. It is both user-friendly and environmentally friendly. It has long-lasting equipment and high power endurance, making it especially helpful in distant places with limited energy. It may corrode on rainy or foggy days, necessitating extra attention.

2. LITERATURE SURVEY

As proposed by Shushi Sharma, Kamesh Kumar and Ash tosh Kumar in their report on Solar Cells .In this research, we explored the applications of solar cells and how they can be implemented. Battery management and capacity of solar cell and the price range is being covered in this paper. Current solar cell relevance and pertinence is analyzed as proposed by Ansari Mohammad, Bather, Marzari Mohamed, Abdi Valid, and Mirhabibi Mohsen in their report on types of solar cells and applications. The project laid emphasis upon types of cells that can be implemented for the project. The paper talks about the vast uses of solar cells and the categories in which they are available in market. Decision making on the basis of these categories and choosing the best solar cell /panel was covered. As proposed by N.Gupta, G.F ALAPATT, R. PODHILA, R.Singh, K.F Poole in their report on prospects of Nanostructures-based on solar cells for manufacturing photovoltaic modules. We inferred the scope of the project as well as the future implementation of it. The Paper describes new ways in which integration of Nano structures can make regular Solar cells impactful. The potential changes and novelty was understood. Published in IEEE Explore papers. Solar powered mobile phone: An innovative experiment. INSPEC Accession Number: 16980832.

3 COMPONENTS REQUIRED

3.1 BATTERY:

A parallel connection of two 2200 mAh and 2600 mAh batteries is Connecting the batteries in series increases the voltage but not the amperage capacity. All batteries in a series must have the same ampere-hour rating. Connecting the cells in parallel increases the total current capacity by reducing the total resistance and overall amp-hour capacity

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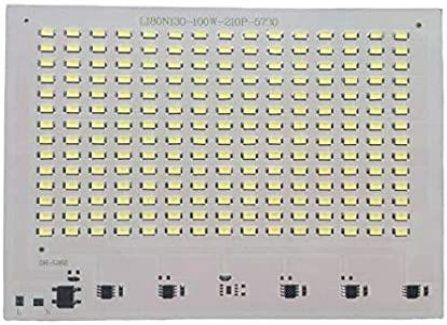
Battery, 2200 mAh, 3.7 V

3.2 LED

- 0.5watt LED.
- With high mode and low mode



3.3 SMD DRIVER

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3.4 SOLAR PANEL

As a renewable energy source, solar energy plays an important role in reducing greenhouse gas emissions and mitigating climate change, which is important for protecting people, wildlife and ecosystems. Solar panels are also used to charge devices. Solar power can also improve air quality and reduce the use of water for electricity generation.

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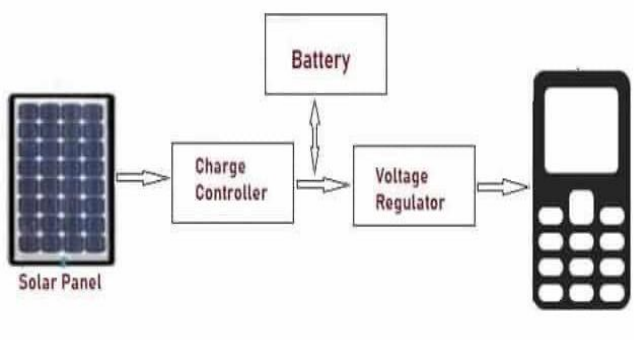
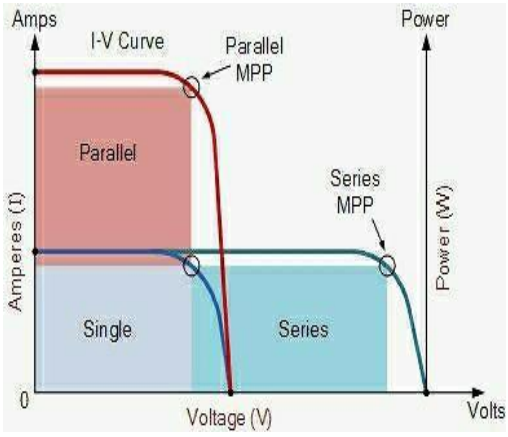
4 WORKING

A solar power bank uses the sun to charge itself instead of electricity. Then the accumulated power is fed into the rechargeable batteries, which will hold that power until need it. Environment Friendly: Charging the phone through a solar power bank saves energy works on the principle that when light falls on the solar cell, electron -hole pairs are created in the n-type emitter and in the p-type base. The generated electrons (from the base) and holes (from the emitter) then diffuse to the junction and are swept away by the electric field, thus producing. On average Assuming the device is not subject to any interference, it will take 25-50 hours to fully charge. sunlight when the sun's rays strike them directly, the electrons contained in the more external layers of the photovoltaic cells absorb the radiation and generate direct current electricity..

5. BLOCK DIAGRAM



6. VI GRAPH



7 WORKING MODEL

7.1 BACK VIEW

HIS FIGURE SHOWS THE BACK VIEW OF THE DEVICE, WITH THE ASSEMBLY OF ALL THE COMPONENTS, AS SOON AS THE USB WIRE IS INSERTED INTO THE PORT IT STARTS CHARGING THE PHONE WHICH CAN BE SEEN

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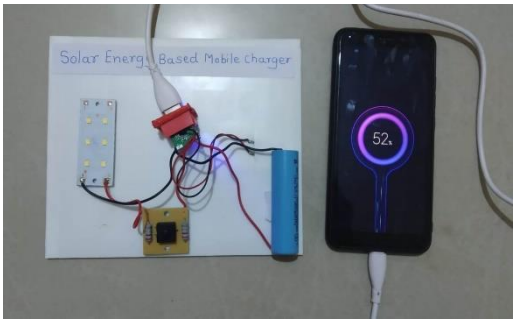

7.2 FRONT VIEW

8. NOVELTY

We selected one large solar panel over two little solar panels to make it more portable, convenient and handy. A relay circuit has been introduced to increase the circuit, battery, and mobile phone's safety. If the phone is overworked or undercharged, the relay will cut power, saving both the battery and the phone. We imprinted a microprocessor-based indicator on the battery that indicates when it is completely charged, when it is charging, and when the phone is connected to the USB PORT.

9. CONCLUSION

Recapping the work we accomplished during this project, we set out with several design goals which we strived to meet. Our product collects and stores light energy via solar cells and can generate more than 5W in both an indoor and outdoor setting. The design moves power from the battery, through both a transmission and receiving inductive coupling circuit using matching networks to optimize power transfer, tune coils, and minimum losses. The system supports any charging standard through the use of a female USB Type-B port located on the receiving circuit.
Additionally, through the modular design of the table itself, we were able to create an aesthetically pleasing, polished looking final product which was easy to service, repair, and assemble. Finally, in the development of our wireless charging system and our product design,.

10.REFERENCES

1] Chapin, D. M.; Fuller, C. S.; Pearson, G. L. Affiliation. Applied. Phis, vol. 25, 1954, pp. 676.
[2]Green, M. A, "Clean Energy from Photovoltaic ", World Scientific Publishing Co., Hackensack, NJ, 2001.
[3]B.Mills, Internet: http://commons.wikimedia.org/wiki/File: Silicon-unit-cell-3Dballs.png, September 2007.
[4] Key Liu, John Malaren, "Design of a solar powered battery charger", Electrical Power & Energy Conference (EPEC), 2009 IEEE, 2009, pp. 1-5

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[5] K.Jaiganesh, K.Duraiswamy, "Dump Power Control Techniques for standalone Hybrid Wind / Solar Power Generation Control", 2012 - International Conference on Emerging Trends in Science, Engineering and Technology, pp. 422-428.

[6]Rena working paper, "Renewable Energy technologies: cost analysis series", IRENA, vol. 1, 2012, issue 4/5.

[7] Kevin Otto & Kristin Wood, Product Design –Techniques in Reverse Engineering and New Product Development, 4th ed. Noida (U.P): Pearson Education, 2014, pp. 51-409.